

## Recycling Component

## 4.4 RECYCLING COMPONENT

The Recycling Component identifies existing recycling activities, evaluates potential programs, and recommends programs to help the SCWMA achieve the waste diversion mandates of AB 939. Recycling is the process of collecting and preparing discarded materials to form the raw material for new products. Recycling activities channel reusable materials to processing facilities thereby reducing the need for landfill space. The two general categories of recycling activities are source separation and mixed waste recycling. A discussion of green purchasing programs designed to foster the purchase of goods made of post-consumer materials is also included, although these procurement programs cannot be counted towards the material diversion goals.

Sonoma County waste management needs are served by one landfill and five transfer stations. These solid waste facilities have been considered when selecting recycling programs. This approach is preferable because it minimizes public concerns that accompany solid waste facility siting, and it creates additional uses for the facilities now in operation. The planning framework expands the waste management uses at each facility by requiring moderate site enhancement and reconfiguration. The six facility sites, in conjunction with numerous private facilities, provide Sonoma County waste generators with separation, processing, and recovery capabilities for the municipal waste stream.

### 4.4.1 OBJECTIVES

In its 2000 Annual Report to the CIWMB, the SCWMA reported a diversion rate of 40 percent. As required by PRC Section 41820(a)(6)(B), the SCWMA filed a time extension request listing the estimated diversion from new and enhanced diversion programs. By the year 2003, the SCWMA member jurisdictions will increase residential recycling by 6.5 percent and commercial recycling by 4.5 percent. Goals for those programs that address this increased recycling diversion are discussed below. The priority waste categories that will be targeted for diversion include paper, glass, metal, wood, yard debris, and plastics.

#### 4.4.1.1 Source Separation Recycling Programs

Specific goals for source separation recycling programs include:

- **Single-Family Curbside Collection Program:** Expand the existing programs to recycle an additional estimated 30 tons per day (tpd), equivalent to 2.1% of the disposal tonnage, by the end of 2003.
- **Multi-unit Curbside Collection Program:** Implement new programs to recycle an additional estimated 10 tpd, equivalent to 0.7% of the disposal tonnage, by the end of 2003.
- **Material Reuse and Recovery Operation:** Expand existing programs to recycle an additional estimated 10 tpd, equivalent to 2.1% of the disposal tonnage, by the end of 2003.
- **Beverage Container Recycling Program:** Implement new programs to recycle an estimated one tpd, equivalent to 0.1% of the disposal tonnage, by the end of 2003.

#### 4.4.1.2 Mixed Waste Recovery Programs

- **Floor-Sort Activities:** Expand existing programs to recycle an additional estimated 20 tpd, equivalent to 2.1% of the disposal tonnage, by the end of 2003.

#### 4.4.1.3 Market Development Objectives

Since Sonoma County is subject to market forces beyond the county boundaries, a study was performed to help identify those forces and the materials affected and to formulate a market development strategy. The report titled "Sonoma County Recovered Materials Market Development Study" identifies a market strategy both the county

and individual cities can utilize. The components of that strategy include the following objectives.

- **Monitoring and influencing state policy development.** Local government can work to strengthen existing markets and create new ones by supporting market development legislation and monitoring the implementation of existing market development laws and agency actions.
- **Encourage adoption of public and private procurement policies.** Local governments have a significant effect on the marketplace by increasing their procurement of products made from recycled materials. Local government can encourage the private sector to develop similar procurement policies.
- **Encourage use of recovered materials by existing local businesses and attract new businesses that use recovered materials.** The cities and county can help identify materials that will be difficult to market in the short and medium term. They can encourage existing businesses to begin developing products to use those materials or develop a strategy to attract businesses that can use them.
- **Develop a strategic market plan.** In order to offset the potential statewide markets competition from the increase in the quantity of recovered materials from all jurisdictions, local communities can minimize the intra county competition for limited markets by coordinated approaches to program implementation.
- **Establishment of a regional market development roundtable.** The jurisdictions in Sonoma County can form a market development subcommittee within their regional agreement. This subcommittee can focus on local markets and participate in other groups that may form to address markets in Northern California or the Bay Area.
- **Monitoring and influencing national and international market development strategy.** To protect the viability of local programs, jurisdictions in Sonoma County can seek to influence federal activities. This can be achieved through monitoring the activities, joining existing organizations (National Recycling Coalition, Recycling Advisory Council, etc.), and by forming a regional policy organization, such as the roundtable discussed above.

#### **4.4.2 CURRENT RECYCLING ACTIVITIES**

Diversion efforts in Sonoma County have grown since 1985 from a network of drop-off/buyback centers and limited curbside collection service to a diversified system of recycling alternatives targeting all sectors of the community. By 1990, residential curbside and commercial recycling collection programs were widespread throughout the county. These ventures were supported by the existing network of drop-off and buyback centers and the reuse operations at the Central Disposal Site and the Healdsburg and Sonoma Transfer Stations. Table 4-9(a) to (o) summarizes recycling activities in each jurisdiction and wasteshed.

<b>Table 4-9(a): Recycling Activities for Cloverdale as of 2002</b>	
Buyback Centers	One buyback center (CRV only)
Residential Recycling	Single-family residential curbside recycling collection
Residential Yard Debris Collection	Every other week curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Healdsburg Transfer Station Serving Cloverdale</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(b): Recycling Activities for Cotati as of 2002</b>	
Drop-Off Centers	One drop-off center
Residential Recycling	<ul style="list-style-type: none"> <li>• Single-family residential curbside recycling collection</li> <li>• Multi-unit recycling collection</li> </ul>
Residential Yard Debris Collection	Every other week curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Central Landfill Serving Cotati</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(c): Recycling Activities for Healdsburg as of 2002</b>	
Buyback Centers	One buyback center (CRV only)
Residential Recycling	Single-family residential curbside recycling collection
Residential Yard Debris Collection	Every other week curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Healdsburg Transfer Station Serving Healdsburg</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(d): Recycling Activities for Petaluma as of 2002</b>	
Drop-off/Buyback Centers	Two drop-off/buyback centers; two 20/20 buyback centers (CRV only)
Residential Recycling	Single-family residential curbside recycling collection
Residential Yard Debris Collection	Every other week curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Central Landfill Serving Petaluma</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(e): Recycling Activities for Rohnert Park as of 2002</b>	
Buyback Centers	One 20/20 buyback center (CRV only)
Residential Recycling	Blue can, single-stream residential curbside recycling collection service
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Central Landfill Serving Rohnert Park</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(f): Recycling Activities for Santa Rosa as of 2002</b>	
Drop-off/Buyback Centers	Two drop-off/buyback centers; four 20/20 buyback centers (CRV only); two drop-off centers
Residential Recycling	Single-family residential curbside recycling collection
Residential Yard Debris Collection	Every other week curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Central Landfill Serving Santa Rosa</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(g): Recycling Activities for Sebastopol as of 2002</b>	
Drop-off/Buyback Centers	One drop-off center (cardboard only); two 20/20 buyback centers (CRV only)
Residential Recycling	Blue can, single-stream residential curbside recycling
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Central Landfill Serving Sebastopol</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(h): Recycling Activities for Sonoma as of 2002</b>	
Buyback Centers	One 20/20 buyback center (CRV only)
Residential Recycling	Blue can, single-stream residential curbside recycling
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Sonoma Transfer Station Serving Sonoma</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(i): Recycling Activities for Windsor as of 2002</b>	
Buyback Centers	One 20/20 buyback center (CRV only)
Residential Recycling	Blue can, single-stream residential curbside recycling
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Healdsburg Transfer Station Serving Windsor</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(j): Recycling Activities for Unincorporated County Annapolis Wastshed for 2002</b>	
Residential Recycling	Blue can, single-stream residential curbside recycling collection serving the Sea Ranch community
Residential Yard Debris Collection	Weekly curbside collection serving the Sea Ranch community
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> </ul> <ul style="list-style-type: none"> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Anapolis Transfer Station</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> </ul>

<b>Table 4-9(k): Recycling Activities for Unincorporated County Central Wastshed for 2002</b>	
Buyback Centers	Three buyback centers
Residential Recycling	<ul style="list-style-type: none"> <li>• Blue can, single-stream residential curbside recycling</li> <li>• Multi-unit recycling collection</li> </ul>
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> </ul> <ul style="list-style-type: none"> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Central Landfill</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(l): Recycling Activities for Unincorporated County Healdsburg Wastshed for 2002</b>	
Residential Recycling	<ul style="list-style-type: none"> <li>• Blue can, single-stream residential curbside recycling</li> <li>• Multi-unit recycling collection</li> </ul>
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> </ul> <ul style="list-style-type: none"> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Healdsburg Transfer Station</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>

<b>Table 4-9(m): Recycling Activities for Unincorporated County Guerneville Wastshed for 2002</b>	
Residential Recycling	<ul style="list-style-type: none"> <li>• Blue can, single-stream residential curbside recycling</li> <li>• Multi-unit recycling collection</li> </ul>
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Guerneville Transfer Station</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> </ul>

<b>Table 4-9(n): Recycling Activities for Unincorporated County Occidental Wastshed for 2002</b>	
Residential Recycling	<ul style="list-style-type: none"> <li>• Blue can, single-stream residential curbside recycling</li> <li>• Multi-unit recycling collection</li> </ul>
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Occidental Transfer Station</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> </ul>

<b>Table 4-9(o): Recycling Activities for Unincorporated County Sonoma Wastshed for 2002</b>	
Residential Recycling	<ul style="list-style-type: none"> <li>• Blue can, single-stream residential curbside recycling</li> <li>• Multi-unit recycling</li> </ul>
Residential Yard Debris Collection	Weekly curbside collection
Commercial Recycling	<ul style="list-style-type: none"> <li>• Corrugated cardboard</li> <li>• Office paper</li> <li>• Glass</li> <li>• Wood; pallets</li> <li>• Paper (magazines, newspaper, phone books, aseptic packaging, etc.)</li> <li>• Scrap metal</li> <li>• Aluminum</li> <li>• Plastic bottles</li> <li>• Pallet shrink wrap</li> </ul>
<b>Recycling Facilities at the Sonoma Transfer Station</b>	
	<ul style="list-style-type: none"> <li>• Drop-off recycling center</li> <li>• Material reuse/recovery operation</li> </ul>



#### 4.4.2.1 Current Source Separation Recycling Programs

Source separation recycling programs require separation of recyclables from non-recyclables at the place the waste is generated. Sonoma County residents and businesses are offered a number of source separation programs.

##### Residential Source Separation Programs

Table 4.9 provides a summary of the residential source separation programs by jurisdictions and wastesheds for Sonoma County. Programs include:

- 1. Residential Curbside Collection:** Residential curbside collection is available to all single-family homes in Sonoma County. All curbside collection programs collect cardboard; paper (newspaper, magazines, carton board, phone books, junk mail, etc.); plastic food and beverage containers 1 through 7; glass food and beverage containers; aluminum cans, foil, and foil containers; tin, steel and bi-metal cans; aerosol cans; and aseptic packaging (milk cartons, juice boxes). Curbside programs in the cities of Rohnert Park, Santa Rosa, Sonoma, and the unincorporated county include used motor oil and used oil filters. In 2002, the curbside programs in the unincorporated county managed by Empire Waste Management began collecting small electronics, such as printers, telephones, calculators, VCRs, camcorders, stereos, fax machines, answering machines, cell phones, radios, hair dryers, curling irons, toasters, and blenders.

Residential curbside collection is currently transitioning from the three-bin stacking system (used in most areas) to a single-stream 95-gallon blue bin (with smaller sizes available upon request). Rohnert Park and unincorporated county residents received blue bins in 2001. Residents of Sebastopol, Sonoma, and Windsor will receive blue bins in 2002. The remaining jurisdictions are considering single-stream recycling as collection services are being renegotiated or put out to competitive bidding. Local haulers have constructed the sorting lines necessary to process single-stream recyclables.
- 2. Drop-Off Recycling Centers:** A number of drop-off centers are located throughout Sonoma County. Depending on the operational capacity of a drop-off center, materials collected may include glass food and beverage containers; aerosol cans; aluminum cans, foil, and foil containers; tin, steel and bi-metal cans; scrap metal; brown paper bags, cardboard, and carton board; computer and office paper; magazines; mixed paper and junk mail; newspaper; telephone and soft cover books; CRV plastic bottles; non-CRV plastic food and beverage containers 1 through 7; and aseptic packaging.
- 3. Buyback Recycling Centers:** Most buyback recycling centers are the 20/20 recycling centers funded by the Department of Conservation. These centers buy back glass, plastic, and aluminum CRV beverage containers. A few of the drop-off recycling centers in Sonoma County also buy back the CRV beverage containers.
- 4. Multi-unit Recycling Programs:** Many of the haulers offer multi-unit residential recycling services in their franchised service areas. These programs collect most of the same materials as the single-family residential recycling program, depending on the type of program requested by building managers. Except for the City of Rohnert Park where the hauler is required to provide recycling services to multi-unit residents free of charge, most multi-unit buildings are provided commercial services, and are, therefore, charged for recycling services.
- 5. Wood Debris Recovery Programs:** Christmas tree recycling is offered to all Sonoma County residents. Nine drop-off locations are set up for three weeks beginning December 26<sup>th</sup> of each year. Residents who have residential yard debris collection can cut the tree to fit into their green container and recycle it at any time. Rohnert Park and Windsor residents can place their whole tree on the curb for collection on scheduled days. Appointments for collection by a local non-profit can be scheduled for a \$5.00 donation. Once collected, Christmas trees are processed into mulch and compost products at the Central Disposal Site.

Curbside collection of other wood debris is not offered to Sonoma County residents. Those residents with wood debris must take the material to one of the county-owned solid waste facilities or private businesses that process wood debris into various mulch products.

### Commercial and Industrial Source Separation Programs

Table 4.9 provides a summary of the commercial and industrial source separation programs by jurisdictions and wastesheds for Sonoma County. Programs include:

1. **Commercial Collection Programs:** Twenty-six recycling operators listed their commercial collection services in the 2002 Annual Recycling Guide. Depending on the recycling operator, materials collected include glass food and beverage containers; aluminum, tin, steel and bi-metal cans; scrap metal; cardboard and carton board; computer and office paper; magazines, newspaper; telephone and soft cover books; plastic beverage containers; pallets, yard debris and wood waste; and concrete and asphalt.
2. **Confidential Paper Shredding and Recycling Services:** Five recycling operators listed their confidential paper shredding and recycling services in the 2002 Annual Recycling Guide.
3. **Plastic Shrink Wrap Recycling:** In 2002, three recycling operators began collecting plastic pallet shrink wrap (polyethylene film) to meet increasing demands from manufacturers for feedstock for products such as home siding and plastic lumber.
4. **Special Events Recycling:** Local haulers provide containers and recycling collection service for special events.

#### 4.4.2.2 Mixed Waste Recycling Programs

Mixed waste recycling refers to the recovery of materials after they have entered the waste stream. Load checking programs operating at the solid waste facilities in Sonoma County target self-haul customers that bring their own solid waste to the facilities. Load checking redirects banned materials, such as yard debris, wood waste, tires, and appliances to specific collection areas for processing prior to marketing the materials. In addition, other banned materials, such as CRTs and hazardous waste are handled separately for proper disposal.

Sonoma County disposal sites offer reduced disposal rates for wood waste and yard debris, which are processed into mulch and compost products at the Central Disposal Site. Materials are collected in separate bays at the transfer stations prior to transporting them.

#### 4.4.2.3 Local Government Programs to Procure Recycled Products

Local government programs include municipal purchasing preference policies designed to increase the use of materials made with post-consumer materials, local government policies that restrict the use of materials that are not recyclable, and programs that require manufacturers to use minimum percentages of post-consumer materials in the manufacture of new goods produced in a jurisdiction.

The SCWMA adopted a Green Purchasing Policy on June 20, 2000 and is working with its member jurisdictions to adopt and implement similar policies. The SCWMA's Green Purchasing Policy includes:

- purchasing recycled products;
- requiring contractor and consultants to use products manufactured with the highest amount of postconsumer material practical;
- purchasing, leasing, or renting equipment compatible with the use of recycled products;
- requiring contractors to use recycled paper;
- promoting the use of recycled products; and
- using remanufactured products

#### 4.4.2.4 Current Recycling Levels

Table 4.10 shows the current levels of recycling, by material type and program, in Sonoma County from programs funded by the SCWMA or its member jurisdictions.

#### 4.4.2.5 Anticipated Decrease in Recycling Activities

The SCWMA does not anticipate a decrease in recycling activities in the future for any of the six wastesheds in Sonoma County.

### 4.4.3 EVALUATION OF RECYCLING ALTERNATIVES

Title 14, Chapter 9, Section 18733.3 outlines the evaluations process to be used for the alternatives, including analysis of diversion alternatives affecting residential, commercial, and industrial wastes; existing recycling programs and their possible expansion; and the advantages and disadvantages of public versus private ownership or operation of recycling programs and facilities. This section presents a general discussion of the recycling program alternatives evaluated and the evaluation criteria.

#### 4.4.3.1 Evaluation Process

The purpose of the alternatives evaluation process is to choose appropriate recycling programs for the various areas in Sonoma County by applying a set of technical, economic, and institutional criteria to a wide range of recycling alternatives. Each alternative is evaluated using the criteria in Table 4.11, including the issues specified in Section 18733.3(b) of the regulations: consistency with local planning, barriers to implementation, and public versus private operations. In Table 4.11, the weight of the evaluation criteria represents the relative importance of one criteria to the others and is used in the evaluation of any new programs that may be considered in the future. The alternatives evaluated are listed in Table 4.12, and the results are found in Table 4.13.

#### 4.4.3.2 Description of Recycling Alternatives

The recycling alternatives identified cover a wide range of systems and services focusing on each of the four major waste sources (residential, commercial, industrial, and other). These programs are tailored to the specific recycling needs of rural areas to ensure high levels of participation and diversion. Table 4-12 provides a list of these alternatives.

Salvaging at waste disposal facilities was not considered due to existing anti-scavenging ordinances at the Central Landfill adopted for health and safety reasons. Instead, material reuse and recovery operations that accomplish similar goals are considered.

#### 4.4.3.3 Source Separation Alternatives

##### Rural Recycling Issues

Due to the different types of residential and commercial land use patterns in Sonoma County, it is necessary to tailor selected recycling programs to meet the needs of the rural recycler. The county areas adjacent to cities and established population centers in the Highway 101 corridor area often have a decidedly urban or suburban character. Many residents subscribe to regular waste collection services, their lifestyles contribute to substantial per capita waste generation rates, and the opportunities for recycling are usually numerous and convenient. These residents are included in existing curbside recycling programs, and they usually do not require additional recycling opportunities.

There are many areas of Sonoma County that exhibit a more rural land use pattern. These rural areas are usually defined as regions with long travel distances to major population centers, fewer consumer and governmental services, limited commercial and industrial operations, non-traditional employment opportunities, and very low

per square mile population densities (under 100 people per square mile). A significant number of residents of rural areas already practice sound waste management by buying goods in bulk, growing some of their own produce, generating less packaging, and repairing and reusing durable goods (i.e., appliances, furniture, and vehicles) at a higher rate than their urban or suburban counterparts. Because of these geographic and social conditions, many of the more accepted recycling programs (i.e., curbside and commercial collections, and industrial recycling programs) are not readily adaptable or cost-effective in these areas.

Different waste management strategies are required to generate additional diversion rates set for remote areas. Past experience in rural recycling has shown that the most effective approaches are those that use existing infrastructure and organizations available to these areas. Community-based organizations, civic groups, churches, special service districts (including University of California Cooperative Extension, fire, school, sewer and water districts) serve a quasi-governmental role in remote areas. These organizations act as a social hub for residents. It is logical to use these groups and volunteer labor, in cooperation with the county and/or waste hauling operations, to staff and operate recycling services. Such use of the local human resource base improves the cost-effectiveness of selected programs by bringing a local flavor to new activities. The most common approach is usually a variation of the cost-effective drop-off recycling program.

**Table 4-10: 2001 Recycling and Composting Quantities for SRRE Programs Funded or Operated by the SCWMA or its Member Jurisdictions (in tons of materials diverted)**

Commodity	County Drop-offs, Floor-sort and White Goods	Residential Curbside Recycling	Commercial Recycling Collection	Yard Debris Composting	Wood Waste Recovery	Tire Recycling	Total
Newspaper	821.82	20,907	1,444.25				23,173.07
Magazines	1.23						1.23
Cardboard	873	1,108	20,191.67				22,172.67
Office paper			1,339.44				1,339.44
Mixed paper	311.59	4,418.10	1,550.29				6,279.98
Poly cartons		112	38				150
Glass	537.49	9,909.38	2,004.33				12,451.20
Tin cans		1,102.33	196.02				1,298.35
Scrap metal	7,378.01						7,378.01
Aluminum cans	33.24	203.66	6.19				243.09
Foam	3.16						3.16
Rock/concrete		66					66
Mixed plastics	129.1	899.73	75.11				1,103.91
HDPE			9				9
PET		488.61	3				491.61
Reuse	525.48						525.48
Tires						153.68	153.68
Yard debris				70,660			70,660
Wood waste					9,465.00		9,465
Total	10,256.51	38,697.67	27,225.38	62,433.71	12,373.66	178.85	157,179.42

**Recreational Area Recycling**

Sonoma County is host to numerous county and state-sponsored tourist facilities. These tourist and recreational areas include county and state beaches, marinas, parks, and public and private campgrounds. The county also is a host to a wide variety of special events including agricultural and viticultural promotions, county fairs, and other regularly scheduled special events. These facilities generate substantial amounts of recyclable materials (primarily consisting of beverage containers and paper products) that are not always targeted for diversion at the point of generation. Because of the cyclical nature of the use of these facilities (i.e., vacation and peak season use) the establishment of a easily managed material recovery program is preferable. Most facilities only require the location of a modified recycling container. Servicing these containers can be provided by a community-based organization, the present waste hauling contractor or recycling operator.

Table 4-11: Criteria and Ranking for Evaluating Recycling Alternatives	
Criteria	Weight
• Waste Diversion Potential	10
• Ease of Tracking Diversion	5
• Environmental Impacts/Benefits	11
• Operating Experience	6
• Conformity with Local Markets	8
• Facility/Program Requirements	6
• Capital Cost	6
• Cost Effectiveness	9
• Operating Costs	8
• Conformity with State Hierarchy	4
• Ease of Implementation	6
• Private Sector Participation	6
• Changes in Waste Type Generation/Use	7
• Adaptability to Changing Social Conditions	8
• Consistency with local policies and conditions	7
• Local barriers to implementation	7
• Implementation Cost	7
• Availability of end uses for recovered materials	7

Table 4-12: Recycling Alternatives	
Program Type	Program Alternative
Source Separation	Drop-off centers Mobile drop-off operation Buyback centers Mobile buy-back operation Curbside recycling Single-stream curbside recycling Multi-unit recycling Commercial collection Office paper recovery Material reuse/recovery operations
Mixed Waste Recovery	Floor-sort Activities (manual) Line-bale recovery (mechanical)
Local Government Programs	Recycled material procurement

**Table 4-13: Recycling Alternatives Analysis**

<b>CRITERIA</b>	<b>Drop-Off Centers</b>	<b>Buyback Centers</b>	<b>Mobile Buyback/Drop-Off Operations</b>
<p><b>1. Waste diversion potential</b></p>	<ul style="list-style-type: none"> <li>· Typically very low compared with other recycling options.</li> <li>· Multi-material centers generally divert less than 2% of materials from established centers.</li> <li>· May divert more if other alternatives are not available.</li> </ul>	<ul style="list-style-type: none"> <li>· Usually target CRV materials for high profit margins.</li> <li>· Programs can attain higher diversion rates when market prices are strong.</li> <li>· Waste diversion generally greater than drop-offs, but less than 2%.</li> </ul>	<ul style="list-style-type: none"> <li>· Usually target CRV materials for high profit margins.</li> <li>· Waste diversion potential not well documented, but expected to be less than 2%.</li> </ul>
<p><b>2. Ease of tracking diversion</b></p>	<p>Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.</p>	<p>Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.</p>	<p>Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.</p>
<p><b>3. Environmental impacts</b></p>	<ul style="list-style-type: none"> <li>· Few instances of environmental violations or hazards; minimal noise and litter.</li> <li>· Pollutants can be adequately contained.</li> <li>· Requires little or no energy/natural resource use.</li> </ul>	<ul style="list-style-type: none"> <li>· Few instances of environmental violations or hazards; minimal noise and litter.</li> <li>· Pollutants can be adequately contained.</li> <li>· Requires little or no energy/natural resource use.</li> <li>· Traffic congestion controllable with proper siting.</li> </ul>	<ul style="list-style-type: none"> <li>· Few instances of environmental violations or hazards; little or no nuisance effects.</li> <li>· Pollutants can be adequately contained.</li> <li>· Requires some energy/natural resource use for vehicles.</li> </ul>
<p><b>4. Operating experience</b></p>	<ul style="list-style-type: none"> <li>· High degree of technical reliability; few periods of reduced operation or technical failure.</li> <li>· 2,000+ multi material programs nationwide.</li> <li>· Appropriate to urban and rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>· Established in nearly all metropolitan areas where materials markets exist.</li> <li>· Several thousand single and multi materials operations in the U.S.</li> </ul>	<p>New programs designed to provide services to areas that may not have sufficient population base to warrant full time buyback or curbside collection operations.</p>
<p><b>5. Conformity with local markets</b></p>	<ul style="list-style-type: none"> <li>· Compatible with existing regional materials markets.</li> <li>· Local markets are available and stable.</li> </ul>	<ul style="list-style-type: none"> <li>· Compatible with existing regional materials markets.</li> <li>· Local markets are available and stable.</li> </ul>	<ul style="list-style-type: none"> <li>· Compatible with existing regional materials markets.</li> <li>· Local markets are available and stable.</li> </ul>
<p><b>6. Facility program requirements</b></p>	<p>Additional processing capacity for existing drop-off centers will be required.</p>	<p>Additional processing capacity for existing buyback centers will be required.</p>	<p>Implementation will require new program development.</p>
<p><b>7. Capital cost</b></p>	<ul style="list-style-type: none"> <li>· Depending on program design, capital costs ranges from less than \$10,000 to \$50,000 per site.</li> <li>· Minimal processing equipment and facility requirements.</li> </ul>	<ul style="list-style-type: none"> <li>· Capital costs for multi-material facility with processing capability is greater than \$100,000.</li> <li>· Level of equipment depends on targeted materials and market specifications.</li> </ul>	<ul style="list-style-type: none"> <li>· Capital costs for equipment usually does not exceed \$100,000 per vehicle collection unit.</li> <li>· Maintenance and operations costs are typical of collection vehicle expenses.</li> </ul>

**Table 4-13: Recycling Alternatives Analysis**

<b>CRITERIA</b>	<b>Drop-Off Centers</b>	<b>Buyback Centers</b>	<b>Mobile Buyback/Drop-Off Operations</b>
<b>8. Cost effectiveness</b>	<ul style="list-style-type: none"> <li>Material revenues may be sufficient to cover operating costs.</li> <li>Dependable markets and local hauling service needed.</li> <li>Approximate cost per diverted ton ranges from \$10 to \$50.</li> </ul>	<ul style="list-style-type: none"> <li>Material revenues typically sufficient to cover operating costs.</li> <li>Dependable markets and local hauling service needed.</li> <li>Management, staffing, and facility requirements can be substantial compared to drop-off centers.</li> <li>Approximate cost per diverted ton is \$30 to \$60.</li> </ul>	<ul style="list-style-type: none"> <li>Material revenues may be sufficient to cover operating costs.</li> <li>Dependable markets and local hauling service needed.</li> <li>Requires operating agreements with centralized buyback and/or processing operations.</li> <li>Approximate cost per diverted ton has yet to be determined.</li> </ul>
<b>9. Operating costs</b>	Alternative has a relatively small potential for reducing waste management operating costs.	Alternative has a relatively small potential for reducing waste management operating costs.	Alternative has a relatively small potential for reducing waste management operating costs.
<b>10. Conformity with state hierarchy</b>	The alternative is considered recycling.	The alternative is considered recycling.	The alternative is considered recycling.
<b>11. Ease of implementation</b>	Implementation time is less than one year. Little or no county/city staff time required to implement.	Implementation time is less than one year. Little or no county/city staff time required to implement.	Implementation time is less than one year. Some county/city staff time required to implement.
<b>12. Private sector participation</b>	Typically there is a large opportunity for private sector participation.	Typically there is a large opportunity for private sector participation.	Typically there is a large opportunity for private sector participation.
<b>13. Changes in waste type, generation, or use</b>	The alternative could create a positive shift from one waste type to another; i.e., it could cause a shift in the generation or use to a more desirable material (e.g., recyclable or marketable).	The alternative could create a positive shift from one waste type to another; i.e., it could cause a shift in the generation or use of a more desirable material (e.g., recyclable or marketable).	The alternative could create a positive shift from one waste type to another; i.e., it could cause a shift in the generation or use to a more desirable material (e.g., recyclable or marketable).
<b>14. Adaptability to changing social conditions</b>	The alternative provides small-to-moderate opportunities for increasing awareness in waste-reducing behavior.	The alternative provides small-to-moderate opportunities for increasing awareness in waste-reducing behavior.	The alternative provides small-to-moderate opportunities for increasing awareness in waste-reducing behavior.
<b>15. Consistency with Local Conditions</b>	Consistency with County siting requirements is performed on a case-by-case basis.	Consistent with local conditions.	Consistent with local conditions
<b>16. Institutional Barriers to Implementation</b>	None.	None.	The California Beverage Container Recycling and Litter Reduction Act does not allow certification which limits operators' ability to collect CRV for beverage containers purchased or redeemed affecting economics.
<b>17. Public Versus Private Ownership/Operation</b>	Typically operated by the private sector/nonprofit groups. Public sector often provides site and some promotional support. Public-sector involvement is often to enhance private operations or to fill a void in the absence of private operation.	Public sector establishment is appropriate when it does not create competition with existing private operations or when the public does not have reasonable access to a local buyback center.	Operations in state-certified convenience zones are likely to be dominated by private-sector involvement. Some similar programs are operated by local private waste haulers.

**Table 4-13: Recycling Alternatives Analysis**

CRITERIA	Drop-Off Centers	Buyback Centers	Mobile Buyback/Drop-Off Operations
<p><b>18. Availability of end uses for recovered materials</b></p>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Single-colored glass cullet more desirable for new glass containers</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans and ferrous metals bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Nonferrous metals used by foundries, smelters, fabricators, etc.</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Single-colored glass cullet more desirable for new glass containers</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans and ferrous metals bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Nonferrous metals used by foundries, smelters, fabricators, etc.</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Single-colored glass cullet more desirable for new glass containers</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>



<b>Table 4-13: Recycling Alternatives Analysis</b>		
<b>CRITERIA</b>	<b>Single Family/Single-Stream Curbside Recycling</b>	<b>Multi Unit Recycling</b>
<b>1. Waste diversion potential</b>	<ul style="list-style-type: none"> <li>High potential for source separation recycling alternatives.</li> <li>5 to 25% single family residential waste diversion is attainable. Single-stream may be higher.</li> <li>5 to 10% diversion of total community waste stream is attainable with effective operations. Single-stream may be higher.</li> </ul>	<ul style="list-style-type: none"> <li>High potential for source separation recycling alternatives.</li> <li>5 to 25% multi unit residential waste diversion is attainable.</li> <li>Typically, no more than 5% diversion of total community waste stream is attainable.</li> </ul>
<b>2. Ease of tracking diversion</b>	Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.	Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.
<b>3. Environmental impacts</b>	<ul style="list-style-type: none"> <li>Minor additional traffic impact from collection vehicles servicing routes.</li> <li>Minimal adverse impacts.</li> </ul>	<ul style="list-style-type: none"> <li>Minor additional traffic impact from collection vehicles servicing routes.</li> <li>Minimal adverse impacts.</li> </ul>
<b>4. Operating experience</b>	<ul style="list-style-type: none"> <li>1,000+ programs nationwide.</li> <li>Program design and results have varied significantly; becoming more standardized.</li> </ul>	<ul style="list-style-type: none"> <li>100+ programs nationwide.</li> <li>Program design and results have varied significantly; becoming more standardized.</li> </ul>
<b>5. Conformity with local markets</b>	Compatible with existing Sonoma County regional markets.	Compatible with existing Sonoma County regional markets.
<b>6. Facility program requirements</b>	<ul style="list-style-type: none"> <li>Single-stream will require more capacity.</li> <li>Few or no changes in current local waste collection and disposal practices.</li> </ul>	New processing capacity will be required for multi unit curbside collection.
<b>7. Capital costs</b>	<ul style="list-style-type: none"> <li>Capital costs are based on the size of the service area and the number of accounts.</li> <li>Costs for containers, collection vehicles, and processing capabilities capital costs range from \$10,000 to \$100,000+.</li> </ul>	<ul style="list-style-type: none"> <li>Capital costs are based on the size of the service area and the number of accounts.</li> <li>Costs for containers, collection vehicles, and processing capabilities capital costs range from \$30,000 to \$100,000+.</li> </ul>
<b>8. Cost effectiveness</b>	<ul style="list-style-type: none"> <li>Material sales alone are often insufficient to cover collection and processing costs.</li> <li>If waste diversion credits are applied, program may be self-sustaining.</li> <li>Cost per diverted ton may exceed \$100.</li> </ul>	<ul style="list-style-type: none"> <li>Material sales alone are often insufficient to cover collection and processing costs.</li> <li>If waste diversion credits are applied, program may be self-sustaining.</li> <li>Cost per diverted ton may exceed \$100.</li> </ul>
<b>9. Operating costs</b>	Alternative has small-to-moderate potential for reducing waste management operating costs.	Alternative has small-to-moderate potential for reducing waste management operating costs.
<b>10. Conformity with state hierarchy</b>	The alternative is considered recycling.	The alternative is considered recycling.
<b>11. Ease of implementation</b>	Implementation time is usually more than one year. Some county/city staff time required for rate approval and implementation.	<ul style="list-style-type: none"> <li>Implementation time is usually more than one year. Some county/city staff time required for rate approval and implementation.</li> <li>Identification and cooperation of building owners required; potential time-consuming process.</li> <li>Anti-scavenging ordinances, new contracts for services, and public awareness campaigns are required.</li> </ul>
<b>12. Private sector participation</b>	Typically, there is a large opportunity for private-sector participation.	Typically, there is a large opportunity for private-sector participation.

**Table 4-13: Recycling Alternatives Analysis**

<b>CRITERIA</b>	<b>Single Family/Single-Stream Curbside Recycling</b>	<b>Multi Unit Recycling</b>
<b>13. Changes in waste type, generation, or use</b>	The alternative could create a positive shift from one waste type to another; i.e., it would cause a shift in the generation or use of a more desirable material (e.g., recyclable or marketable).	The alternative could create a positive shift from one waste type to another; i.e., it would cause a shift in the generation or use of a more desirable material (e.g., recyclable or marketable).
<b>14. Adaptability to changing social conditions</b>	The alternative provides small-to-moderate opportunities for increasing awareness/waste reducing behavior.	The alternative provides small-to-moderate opportunities for increasing awareness/waste reducing behavior.
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.	Consistent with local conditions.
<b>16. Institutional Barriers to Implementation</b>	None.	None.
<b>17. Public Versus Private Ownership/Operation</b>	Public and private involvement. Local franchise agreements include providing service to customers.	Most programs in Sonoma County are operated solely by the private sector. Rohnert Park began requiring multi-unit service in its new franchise agreement in 2001.
<b>18. Availability of end uses for recovered materials</b>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>

**Table 4-13: Recycling Alternatives Analysis**

CRITERIA	Commercial Source Separation Recycling	Office Paper Recovery
<b>1. Waste diversion potential</b>	<ul style="list-style-type: none"> <li>· 5 to 15% recovery of commercial/industrial waste stream can be accomplished, depending on targeted materials.</li> <li>· Typically less than 5% recovery of total waste stream.</li> </ul>	<ul style="list-style-type: none"> <li>· Recovery rates can be significant for government offices, banks, and office buildings.</li> <li>· Generally low waste diversion potential overall.</li> </ul>
<b>2. Ease of tracking diversion</b>	Tracking may be difficult as materials will be collected by several different recycling companies.	Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.
<b>3. Environmental hazards</b>	<ul style="list-style-type: none"> <li>· Minor additional traffic impact from collection vehicles servicing routes.</li> <li>· Minimal adverse impacts.</li> </ul>	No significant impacts.
<b>4. Operating experience</b>	Program design and results have varied significantly.	<ul style="list-style-type: none"> <li>· Several hundred programs nationwide.</li> <li>· Significant variation in program size and design.</li> </ul>
<b>5. Conformity with local markets</b>	Compatible with existing Sonoma County regional markets.	Local paper markets available through materials processors and brokers.
<b>6. Facility program requirements</b>	Independent recyclers many need to expand processing capacity.	<ul style="list-style-type: none"> <li>· Paper recovery programs can be easily integrated into existing facilities or programs without large alterations.</li> <li>· Relies on voluntary staffing and promotion in offices when established.</li> </ul>
<b>7. Capital costs</b>	Independent recyclers many incur capital costs. However, it is not possible to estimate the possible improvements and costs.	Approximately \$1 per desk to provide containers.
<b>8. Cost effectiveness</b>	<ul style="list-style-type: none"> <li>· Material sales usually cover collection and processing costs.</li> <li>· If waste diversion credits are applied, program increase profitability and effectiveness.</li> <li>· Cost per diverted ton may exceed \$30.</li> </ul>	Usually offered to large-volume generators as free service by paper brokers.
<b>9. Operating costs</b>	Alternative has a small-to-moderate potential for reducing waste management operating costs.	Alternative has a small-to-moderate potential for reducing waste management operating costs.
<b>10. Conformity with state hierarchy</b>	The alternative is considered recycling.	The alternative is considered recycling.
<b>11. Ease of implementation</b>	Implementation is ongoing and will require some staff time for technical assistance and promotion.	Implementation time is less than one year. Little or no county/city staff time required to implement.
<b>12. Private sector participation</b>	The implementation of collection services will be provided solely by the private sector.	The implementation of collection services will be provided solely by the private sector
<b>13. Changes in waste type, generation, or use</b>	The alternative could create a positive shift from one waste type to another; i.e., it would cause a shift in the generation or use of a more desirable material (e.g., recyclable or marketable).	The alternative could create a positive shift from one waste type to another; i.e., it could cause a shift in the generation or use to a more desirable material (e.g., recyclable or marketable).
<b>14. Adaptability to changing social conditions</b>	The alternative provides small-to- moderate opportunities for increasing awareness/waste reducing behavior.	The alternative provides small-to- moderate opportunities for increasing awareness/waste reducing behavior.

<b>Table 4-13: Recycling Alternatives Analysis</b>		
<b>CRITERIA</b>	<b>Commercial Source Separation Recycling</b>	<b>Office Paper Recovery</b>
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.	Consistent with local conditions.
<b>16. Institutional Barriers to Implementation</b>	Market prices, avoided disposal costs, scavenging, and vandalism can be major factors affecting implementation.	None.
<b>17. Public Versus Private Ownership/Operation</b>	Program design, implementation, operations, and marketing are typically private-sector functions. The main exception is when commercial recycling collection is a condition for granting a franchise agreement for waste collection in a jurisdiction.	<ul style="list-style-type: none"> <li>· Government programs may use existing staff or contracted building maintenance workers to manage collection and marketing or contract with an outside recycling firm.</li> <li>· Business programs occur without public sector involvement.</li> <li>· Governments provide educational or technical support to the business community.</li> <li>· Public/private partnerships are compatible and common.</li> </ul>
<b>18. Availability of end uses for recovered materials</b>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Single-colored glass cullet more desirable for new glass containers</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc.</li> </ul> <p>New products continue to grow.</p> <ul style="list-style-type: none"> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>	<p>New products of up to 100% post-consumer paper continue to increase.</p>

<b>Table 4-13: Recycling Alternatives Analysis</b>		
<b>CRITERIA</b>	<b>Material Reuse/Recovery Operations at Transfer Stations and Landfills</b>	<b>Floor-Sort Recovery Operations</b>
<b>1. Waste diversion potential</b>	<ul style="list-style-type: none"> <li>· Usually targets reusable and/or resalable materials from commercial and residential self-haulers.</li> <li>· Can target a significant portion of self-haul waste stream.</li> </ul>	<ul style="list-style-type: none"> <li>· 5 to 15% of uncompacted loads can be recovered depending on targeted material types. Recovery rate can be higher with extensive program design.</li> </ul>
<b>2. Ease of tracking diversion</b>	Multi-jurisdictional tracking program can provide accurate assessments of tonnage allocation for each jurisdiction.	Moderate cost and/or time required to determine nature and amounts. Requires a sophisticated multi-jurisdictional tracking system.
<b>3. Environmental hazards</b>	No significant impacts assuming proper safety measures.	The option has environmental impacts or hazards that are known and controllable; some health and safety precautions for workers are required.
<b>4. Operating experience</b>	Variations of this program are used at facilities around the country.	Variations of this program are use at facilities around the country.
<b>5. Conformity with local markets</b>	<ul style="list-style-type: none"> <li>· Compatible with existing Sonoma County regional materials markets for the recyclable fraction collected through operations.</li> <li>· Local markets for reuse of materials are well established.</li> </ul>	<ul style="list-style-type: none"> <li>· Compatible with existing Sonoma County regional materials markets.</li> <li>· Materials recovered from mixed waste may encounter some difficulty achieving market specifications.</li> </ul>
<b>6. Facility program requirements</b>	<ul style="list-style-type: none"> <li>· The alternative can be easily integrated into existing operations with some alterations.</li> <li>· Expansion of transfer stations will provide adequate recovery capacity.</li> </ul>	Retrofitting/expansion of transfer stations will provide adequate processing capacity.
<b>7. Capital costs</b>	<ul style="list-style-type: none"> <li>· Capital cost is typically less than \$100,000.</li> <li>· Some capital requirements: sorting conveyors, baler containers, vehicles for materials transport, and incidentals.</li> </ul>	<ul style="list-style-type: none"> <li>· Capital cost is typically less than \$600,000.</li> <li>· Some capital requirements: sorting conveyors containers, vehicles for materials transport, and incidentals.</li> </ul>
<b>8. Cost effectiveness</b>	Cost ranges from \$20 to \$80 per diverted ton.	Cost ranges from \$25 to \$100 per diverted ton.
<b>9. Operating costs</b>	Alternative has a moderate potential for reducing waste management operating costs.	Alternative has a moderate potential for reducing waste management operating costs.
<b>10. Conformity with state hierarchy</b>	The alternative is considered recycling.	The alternative is considered recycling.
<b>11. Ease of implementation</b>	Implementation time is less than one year. Some county/city staff time required for implementation.	Implementation time can range from one to two years. Some county/city staff time required for implementation.
<b>12. Private sector participation</b>	Typically, there is a large opportunity for private-sector participation.	Typically, there is a large opportunity for private-sector participation.
<b>13. Changes in waste type, generation, or use</b>	The alternative could create a positive shift from one waste type to another; i.e., it could cause a shift in the generation or use to a more desirable material (e.g., recyclable or marketable).	The alternative would create little or no shift in waste type generation.
<b>14. Adaptability to changing social conditions</b>	The alternative provides small-to- moderate opportunities for increasing awareness/waste reducing behavior.	The alternative provides little opportunity for increasing awareness/waste reducing behavior.

<b>Table 4-13: Recycling Alternatives Analysis</b>		
<b>CRITERIA</b>	<b>Material Reuse/Recovery Operations at Transfer Stations and Landfills</b>	<b>Floor-Sort Recovery Operations</b>
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.	Consistent with local conditions.
<b>16. Institutional Barriers to Implementation</b>	None.	May require flow control policies to ensure that waste flows are directed to the facility.
<b>17. Public Versus Private Ownership/Operation</b>	Can be performed by public or private operators.	<ul style="list-style-type: none"> <li>· Usually owned and operated by franchised waste haulers who operate transfer stations.</li> <li>· Publically owned transfer or landfill operations materials recovery operations tend to be integrated into existing operations.</li> </ul>
<b>18. Availability of end uses for recovered materials</b>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Single-colored glass cullet more desirable for new glass containers</li> <li>· Mixed-colored glass cullet used for glassphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans and ferrous metals bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Nonferrous metals used by foundries, smelters, fabricators, etc.</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> <li>· Reusable furniture, household goods, construction materials sold to customers</li> </ul>	<ul style="list-style-type: none"> <li>· Ferrous metals bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Nonferrous metals used by foundries, smelters, fabricators, etc.</li> <li>· Tires reused as retreads, used in civil engineering and agricultural projects, and processed into crumb rubber.</li> <li>· Yard debris used in local yard debris and bio-solids composting operations. Products sold to local agriculture, retail and direct to residents</li> <li>· Wood waste processed into mulch or fuel for local markets.</li> </ul>

<b>Table 4-13: Recycling Alternatives Analysis</b>	
<b>CRITERIA</b>	<b>Line-Bale Recovery System</b>
<b>1. Waste diversion potential</b>	<ul style="list-style-type: none"> <li>· 15 % to 40% of the commercial waste stream, but typically less than 20% of the total waste stream.</li> <li>· Depends on targeted materials, waste composition, and market availability.</li> </ul>
<b>2. Ease of tracking diversion</b>	<ul style="list-style-type: none"> <li>· Moderate cost and/or time required to determine diversion nature and amounts.</li> <li>· Requires a sophisticated multi-jurisdictional tracking system.</li> </ul>
<b>3. Environmental impacts</b>	The option has environmental impacts or hazards that are known and controllable; some health and safety precautions for workers are required.
<b>4. Operating experience</b>	<ul style="list-style-type: none"> <li>· Less than 30 commercial operations in U.S.</li> <li>· Many new operations in planning/design stages.</li> <li>· Operating experience is increasing.</li> </ul>
<b>5. Conformity with local markets</b>	<ul style="list-style-type: none"> <li>· Compatible with existing Sonoma County regional materials markets.</li> <li>· Materials recovered from mixed waste may encounter some difficulty achieving market specifications.</li> </ul>
<b>6. Facility/program requirements</b>	<ul style="list-style-type: none"> <li>· The alternative will require the development of major new facilities in the community or region.</li> <li>· Alternative could require significant changes in current local waste collection and disposal practices.</li> <li>· Regional authority required to oversee and manage facility development and operations.</li> <li>· Waste supply agreements are typically required.</li> </ul>
<b>7. Capital costs</b>	Capital costs for a new site and facility range from \$5,000,000 to \$30,000,000.
<b>8. Cost effectiveness</b>	The cost is between \$10 and \$100 per diverted ton.
<b>9. Operating costs</b>	Alternative has a relatively moderate potential for reducing waste management operating costs by maximizing the avoided cost-of-disposal.
<b>10. Conformity with state hierarchy</b>	The alternative is considered recycling.
<b>11. Ease of implementation</b>	<ul style="list-style-type: none"> <li>· Implementation time is greater than three years.</li> <li>· Would require significant city/ county staff time to implement.</li> </ul>
<b>12. Private sector participation</b>	Typically there is a large opportunity for private-sector participation.
<b>13. Change in waste type participation, or use</b>	Alternative would create little or no change.
<b>14. Adaptability to changing social conditions</b>	The alternative provides little opportunities for increasing awareness/waste reducing behavior.
<b>15. Consistency with Local Conditions</b>	Consistent with local conditions.
<b>16. Institutional Barriers to Implementation</b>	May require flow control policies to ensure that waste flows are directed to the facility.
<b>17. Public Versus Private Ownership/Operation</b>	<ul style="list-style-type: none"> <li>· Usually owned and operated by franchised waste haulers who operate transfer stations.</li> <li>· Publically owned transfer or landfill operations materials recovery operations tend to be integrated into existing operations.</li> </ul>

Table 4-13: Recycling Alternatives Analysis	
CRITERIA	Line-Bale Recovery System
<b>18. Availability of end uses for recovered materials</b>	<ul style="list-style-type: none"> <li>· Aluminum can sheet suppliers purchase all UBCs</li> <li>· Single-colored glass cullet more desirable for new glass containers</li> <li>· Mixed-colored glass cullet used in asphalt, fiberglass and acoustic tiles</li> <li>· Recovered steel/tin cans and ferrous metals bought by detinning plants, steel mills and iron and steel foundries</li> <li>· Nonferrous metals used by foundries, smelters, fabricators, etc.</li> <li>· Recovered plastics used to make carpets, clothing, office, supplies, etc. New products continue to grow.</li> <li>· New products of up to 100% post-consumer paper continue to increase.</li> </ul>

**Drop-Off Centers**

Drop-off centers receive materials donated by the public and are typically the least expensive to establish. They can accept one material (newspaper being the most common) or a full range of recyclable materials depending on the availability of local markets. Unattended drop-off centers that are located in rural areas suffer from litter and illegal waste disposal problems. Drop-off centers should be located in public parks, fire stations, County disposal sites, transfer stations and other facilities with controlled access and on-site security to reduce these problems.

Other collection options that may be appropriate to rural areas include roadside collection at ends of long driveways where clusters of mailboxes are likely to be located; neighborhood collection bins; and workplace recycling that serves the general public.

**Mobile Drop-Off Centers**

This alternative is similar to the drop-off alternative because it accepts recyclables directly from the public. However, it uses a vehicle and/or trailer for materials storage required during operations. Mobile drop-offs can be used in areas where land use patterns and population density rates are insufficient to warrant a full-time drop-off center. The mobile drop-off concept allows maximum use of equipment and personnel and extends recycling opportunities to remote areas that would not usually have access to recycling services.

Mobile drop-off services that do not pay scrap and refund value for beverage containers may provide affordable recycling services to select rural areas. These programs could also collect cardboard, newspapers, glass and other materials.

**Buyback Centers**

Buyback centers, including 20/20 Certified Redemption Centers, purchase recyclables directly from the public and from commercial businesses. The buyback system provides an economic incentive to the public and can recover significant portions of the waste stream that may not otherwise be recycled. Buyback centers often target aluminum cans because of their higher sales value and resulting profit margin. Depending on current market values, newspaper, glass, cardboard, plastics, aluminum/tin/bimetal cans, scrap metal, and high-grade waste paper are other materials often purchased at buyback centers. Many buyback centers also provide drop-off services and are an appropriate diversion option in rural areas.

Buyback centers must be staffed at regular hours. Weighing, processing, marketing, management, and bookkeeping operations require full-time employees, the number proportional to the tonnage of recyclables. Buyback centers are more labor and equipment intensive than drop-off programs, and high volume centers may require magnetic separators and flattener/blowers for cans as well as glass crushers, balers for paper and cardboard, forklifts, computer pay-out systems, and trucking capabilities.



## **Mobile Buyback Operation**

This alternative is similar to the buyback alternative because it also purchases recyclables directly from the public. However, it uses a vehicle and/or trailer for all customer transactions and materials storage required during operations. Mobile buybacks can be used in areas where land use patterns and population density rates are insufficient to warrant a full-time buyback. The mobile buyback concept allows maximum use of equipment and personnel and extends recycling opportunities to remote areas that would not usually have access to recycling services.

## **Curbside Recycling Programs**

Curbside recycling involves the scheduled collection of recyclables residents place at their curbs. Curbside collection provides the maximum convenience to residents and, compared to drop-off and buyback centers, consistently recovers the highest tonnage of recyclables from the residential waste stream.

Several operating features affect the waste diversion potential of curbside recycling, and few programs are entirely alike. Factors such as the number and type of materials collected, the frequency of collection, the amount of commingling of material types allowed, and the degree of publicity and public education can affect program performance. Although it increases program costs, the practice of providing storage containers to households is common, because it encourages participation.

Collection routes are typically serviced by a one-person crew in a vehicle equipped with compartments to hold separated materials. An array of balers, magnetic separators, can densifiers, and conveyor sorting lines are used at processing facilities for the curbside materials. Curbside recycling involves extensive program management, material collection, material processing, and promotion. Capital costs usually include vehicles, household containers, a storage site, and processing equipment. Operating costs are dominated by high labor and transportation outlays as well as amortization of debt and promotion costs. Sale of materials generates revenues, but the major economic benefit is often the avoided cost of landfill disposal.

## **Single-Stream Curbside Recycling Programs**

This alternative is similar to the curbside recycling alternative. However, all recyclable materials are collected in a single curbside container by an automated or semi-automated collection truck. Material processing is required and typically involves both manual and mechanical sorting methods. An array of balers, magnetic separators, can densifiers, and conveyor sorting lines are used at processing facilities. Single-stream curbside recycling programs typically demonstrate a 20 to 40 percent increase in recyclable materials collected compared to other curbside recycling programs.

## **Multi-unit Residential Recycling Programs**

Collecting recyclables from multi-unit residential buildings is similar to curbside recycling collection in that it provides a convenient means for households to recycle. However, there are significant operating differences between curbside collection and collection from multi-unit buildings.

Placing recyclables at curbside is not practical for most residents of apartment buildings, condominium complexes, or other high-density dwellings. Because of storage constraints for recyclables in apartments, most storage takes place in centralized locations, such as the waste disposal areas. The storage containers for the recyclables are typically used by several households, must be accessible to both the residents and the collection vehicle, and may require an automated collection vehicle to empty the containers.

Although multi-unit programs are often considered distinct from curbside recycling programs, levels of coordination can exist between curbside and multi-unit recycling programs, including processing, marketing, and shared use of equipment. Multi-unit buildings in unincorporated areas serviced by curbside collection could implement this service.

Except for the City of Rohnert Park where the hauler is required to provide recycling services to multi-unit

residents free of charge, most multi-unit buildings are provided commercial services, and are, therefore, charged for recycling services.

### **Commercial Source Separation Programs**

Many types of commercial establishments offer opportunities for source separation recycling because of the high concentrations of readily recyclable materials found in their waste. Historically, the presence of commercial recycling programs has been highly dependent on market prices and on private entrepreneurial efforts. However, in the last several years, local governments have been working with private industry to implement full-scale commercial source separation recycling programs.

Commercial Collection: The material most often targeted for commercial collection is corrugated paper, one of the largest components of the commercial waste stream that can be readily recycled. Many generators of corrugated containers have ongoing recovery programs, and their containers are not included in landfill waste composition figures. Nevertheless, there often remains a significant amount of unrecovered corrugated paper in the commercial waste stream, depending on the concentration of commercial and manufacturing businesses in the community.

The collection of glass containers, especially from bars and restaurants, is also becoming a major focus of commercial recycling efforts. Other materials collected are metals, plastics, pallets, scrap wood, pallet shrink wrap, textiles, and oils, usually by scrap dealers who have made arrangements with large waste generators. The main potential for increased recovery will be with the smaller generators, such as convenience markets or small retail outlets. Typically, in rural areas most waste generators are classified as small-quantity generators.

Office Paper Recovery: The recovery of high-grade papers, such as white ledger paper and computer printouts, represents an important recycling opportunity. Office paper recycling at the desk started primarily in the public sector, spurred by federal programs in the late 1970s. Since then several large businesses and paper manufacturers, in addition to many smaller operators, have entered the office paper recycling field.

In addition to the public sector, office paper recycling programs are becoming more prevalent in the educational, utility, banking, and insurance sectors. At-the-desk recovery programs are less frequently provided to small offices because of lower office paper volumes. Multi-tenant office building programs are also less common because of the relative difficulty in coordinating unrelated tenants.

### **Material Reuse/Recovery Operations**

Material reuse/recovery operations are a hybrid of traditional drop-off centers and landfill salvage operations, and are prompted by the increasing need for waste reduction and material reuse activities. Reuse/recovery operations are usually located at transfer stations and landfill facilities, and usually target the uncompacted self-haul fraction of the residential and commercial waste streams. In areas where landfill space is at a premium, waste management agencies often require that all recoverable materials be separated from waste prior to landfilling.

Material reuse/recovery programs are currently operated at the Central Disposal Site and the Healdsburg and Sonoma Transfer Stations. This service is available to all self-haul vehicles. The program operator sorts, stores, transfers and sells materials to available markets. Material reuse/recovery operations could be expanded at the existing facilities, and new facilities could be developed at sites not presently served by material reuse/recovery operations. Although uncompacted self-haul loads could be diverted to recovery area at the transfer stations and hand-sorted for recyclable and reusable materials, site constraints prohibit these types of activities.

#### **4.4.3.4 Mixed Waste Recovery Alternatives**

The following alternatives for mixed waste recovery are best implemented on a regional level in the watersheds of the Central Disposal Site, and the Guerneville, Healdsburg and Sonoma Transfer Stations.

### **Floor-Sort Activities (manual)**

The floor-sort recovery system involves several workers who manually pick through loads that have been emptied onto a designated working area. In many cases front-end loaders are used to assist with the recovery operation. Floor-sort recovery operations typically target uncompacted loads of material such as debris boxes and self-hauled waste, and are often used in conjunction with a public disposal area. Although floor-sort operations most often target uncompacted loads, they can also be used to recover material from select commercial packer loads that contain a high percentage of recoverable materials.

Floor-sort recovery activities have been developed at the Guerneville, Healdsburg, and Sonoma Transfer Stations and target material such as yard debris, wood waste, scrap metal and tires. This system generally consists of a flat tipping area where targeted loads are dumped, with below-grade storage bins for the recovered material. Because floor-sort recovery activities target specific loads with significant quantities of recoverable materials, an effective system for identifying target loads entering the facility must be developed.

The degree to which material can be feasibly and economically recovered from a mixed waste load is directly related to both the quantity and the quality of materials in a specific load. Selective routing involves organizing the collection routing system so that accounts with significant amounts of high-quality (minimally contaminated) target materials are collected on distinct routes. Accounts known to contain significant quantities of contaminants, such as restaurants, food processors, and other businesses that contain wet or otherwise undesirable materials, are kept separate. Selective routing contributes to enhanced material recovery operations efficiency.

### **Line-Bale Recovery (mechanical)**

In a line-bale system, mixed waste is usually roughly sorted to remove large or undesirable materials and then placed on a conveyor belt. The conveyor moves the material to a picking area where workers pull off recyclables and place them in temporary storage bins for further processing, baling, or shipping to market. Additional conveyors may be incorporated to move recyclables to a bailer. Another approach is to remove contaminants and leave the primary component, usually mixed wastepaper, on the belt. This is most effective when the feed material is very rich in the primary component and contamination is not excessive.

In addition to hand-picking materials from the belt, mechanical sorting equipment such as magnetic or air vacuum equipment can also be used in line-bale operations. Line-bale systems typically process between 200 and 1,000 tons per day (TPD) and can be constructed in modules to allow for increases in the average tonnage processing requirements of a facility. Recovery efficiency depends greatly on the type of incoming solid waste, the target materials, and the type of operation. Line-bale recovery facilities can focus on a specific component, such as construction and demolition debris (see section 4.6, Special Waste Component), and can be included as up-front sorting prior to other solid waste operations such as a Resource Management Facility (see section 4.5, Composting Component).

Typically, a line-bale system works best in locations where sufficient tonnage volume is available. This increases the cost-effectiveness of process operations because the primary revenue for operators is tipping fees, not revenue generated from the sale of recovered materials. Flow control agreements are usually required to ensure that the line-bale facility can meet project finance requirements set by lenders. Usually jurisdictions agree in concept to participate in a regional agreement with other interested jurisdictions to develop and implement a conceptual master plan for this type of system. Typically a lead agency, such as the SCWMA, assumes responsibility for the development, design, construction, and operation of a regional processing system.

#### **4.4.3.5 Local Government Programs to Procure Recycled Products**

Many local government purchasing departments now have comprehensive procurement policies for recycled goods. State law allows local governments to establish preferences for purchase of durable, recyclable, recycled-content and reusable products, and to define the amount of that preference. National studies have shown that in practice, even when 5 to 10 percent price preferences are offered, actual prices paid for recycled paper are lower.

The bidding process can be modified to reduce costs for suppliers of preferred material by offering longer contracts and smaller bid groupings that are specific to subgrades of a particular material, such as paper. Suppliers of recycled materials may then compete more easily on a cost basis with suppliers of virgin materials. Preferences for durability or ease of repair could be applied to vehicles and to office and other machinery to increase the useful life of these purchases.

The SCWMA adopted its Green Purchasing Policy in 2001 and is conducting a review of current procurement practices of its member jurisdictions to ensure that recycled and reusable products are being purchased where available.

Procurement policies encouraging the use of goods made with post-consumer materials do not achieve any diversion credits for the implementing jurisdiction. It is important, however, that the SCWMA have a strong recycled material procurement commitment to demonstrate and promote the use of recycled products and to encourage markets for recovered materials.

#### **4.4.4 SELECTED RECYCLING PROGRAMS**

After an analysis of the characteristics of the solid waste stream, the level of existing waste diversion activities, and the methods of removing and processing recoverable materials, a list of potential recycling programs was developed. The program selection process incorporated the criteria for evaluating recycling alternatives (Table 4-11), the evaluation of recycling alternatives (Table 4-13) and best professional judgement. The phased implementation of these recycling alternatives will be a part of the SCWMA's overall program to reach the waste diversion goals.

Some recycling programs, such as curbside recycling, are best operated by an individual jurisdiction. Other programs may be most effectively operated through the SCWMA due to the expense of developing and operating individual systems for each jurisdiction. Many programs are specific to solid waste disposal facilities and will require agreements with contractors to detail responsibilities, authorities, and funding.

In 2000, the SCWMA reported a 40 percent diversion rate to the CIWMB. The selected recycling programs, listed by watershed in Table 4.14, will build on the existing foundation to reach its goals.

In addition to the selected programs, the SCWMA has determined that it is necessary to expand the existing policy for voluntary recycling to a mandatory recycling policy. The proposed revision would require that all residential, commercial, industrial, and institutional waste generators have access to recycling services so that recyclables will be separated at the source to keep them out of the solid waste stream. This may include municipal regulations prohibiting recyclables from being mixed with MSW. Emphasis is placed on recycling any material that can be easily and economically recovered such as yard debris, wood waste, newspaper, cardboard, magazines, office paper, glass containers, tin cans, aluminum cans and scrap metals. A penalty and education program could also be included to emphasize the prohibition of placing recyclables in disposed waste.

##### **4.4.4.1 Selected Source Separation Recycling Programs**

Source separation offers the potential for recovery of the highest quality material, which is directly reflected in the price and availability of markets. It is a priority for the SCWMA to promote opportunities to maximize efficient and effective source separation recycling programs.

##### **Residential Source Separation Programs**

The selection of residential source separation recycling programs focuses on the modification and expansion of the existing drop-off, buyback, and the single-family/single-stream curbside recycling programs, development of multi-unit recycling programs, and in some instances mixed waste recovery programs.

### **Curbside Recycling**

Single-family residential curbside collection is a selected ongoing activity because of its residential waste diversion potential. All single-family residents who subscribe to trash service have curbside recycling services, and curbside recycling service is available for a fee to non-subscribers. Single-stream recycling services are already established in the unincorporated county, Cotati, Healdsburg, Rohnert Park, Santa Rosa, Sebastopol, Sonoma, and Windsor. The City of Cloverdale is currently negotiating with its hauler for single-stream recycling. The City of Petaluma is considering single-stream recycling as part of the bidding processing for its franchise agreements.

### **Drop-Off/Buy-Back Recycling Centers**

Drop-off and buyback centers are consistent with the SCWMA's goals and are particularly strong in addressing the selection criteria of long operating experience; low environmental impacts; low capital cost; good conformity with local markets; rapid implementation; good potential for private sector participation; and high adaptability to social change. The SCWMA will continue to promote and encourage private sector drop-off and buyback centers, and the County will continue to provide drop-off services at its solid waste facilities, reduced rates for source separated wood waste, and the annual Christmas tree recycling program. These programs are consistent with the SCWMA's goal of providing access to recycling programs for all waste generators.

### **Multi-unit Recycling**

Multi-unit residential collection has been selected for the same reasons cited for single-family curbside recycling. This program is consistent with the SCWMA's goal of providing recycling service to the maximum number of residents. As with curbside recycling this selected program is particularly strong in meeting the criteria of good operating experience, conformity with local markets, good opportunity for private sector participation and high adaptability to social changes.

### **Commercial Source Separation Programs**

The selection of commercial source separation programs focuses heavily on the enhancement of existing programs including commercial and industrial collection of recyclables, cardboard, and office paper recycling, and private sector office paper recycling programs.

According to the 1995/95 Waste Stream Characterization Study, the commercial portion of the waste stream is 50 percent of the total waste generated. The high percentage of this waste type and the availability of commercially valuable materials requires the expansion and development of programs, including construction and demolition debris (see section 4.6, Special Waste). However, unlike the residential source separation programs, full expansion of existing programs and implementation of proposed new programs will likely leave a significant portion of the commercial sector without convenient and comprehensive recycling opportunities.

### **Commercial Collection Programs**

Collection of recyclables from the commercial and industrial sectors, is a selected activity because it is consistent with priorities to increase commercial recycling alternatives, operating experience, minimization of environmental impacts, conformity with local markets, good opportunities for private sector participation and high adaptability to social changes.

Commercial collection programs to be promoted and expanded include the existing special events recycling; cardboard, bar and restaurant glass; and mixed waste paper recycling programs, as well as new programs targeting plastic pallet shrink wrap and construction and demolition debris (see section 4.6, Special Wastes). Recycling opportunities for special events and commercial businesses which generate large quantities of target materials are currently provided by local haulers. The major gap in the commercial collection system involves businesses which generate small quantities of materials and smaller special events, such as weddings held at wineries. The economics of source separation and collection from small operators are less favorable and as such most small businesses do not have convenient recycling opportunities. A major focus of commercial recycling

**Table 4-14: Selected Recycling Programs**

<b>Table 4-14: Selected Recycling Programs</b>	
<b>1. ANNAPOLIS LANDFILL WASTESHED</b>	
<p><b><u>Source Separation Programs</u></b></p> <p><b>Drop-off</b>                      · Continued operations of existing drop-off recycling</p> <p><b>Single-family/Single-stream curbside collection</b>                      · Expanded program does not require facility development                      · Program requires small degree of implementation activities                      · Emphasis on increased participation and reducing contamination</p>	<p><b>Commercial Collection</b>                      · New program development required in short term                      · Program requires small degree of implementation activities                      · Focus on new programs for small businesses</p> <p><b><u>Mixed Waste Recovery Programs</u></b></p> <p><b>Floor-sort activities</b>                      · Focus on commercial/industrial waste streams                      · Continued operations of existing floor-sort activities</p>
<b>2. CENTRAL LANDFILL WASTESHED</b>	
<p><b><u>Source Separation Programs</u></b></p> <p><b>Drop-off</b>                      · Expanded program needs some retrofitting of existing facilities and new drop-off site development</p> <p><b>Single-family/Single-stream curbside collection</b>                      · Expanded program does not require facility development                      · Program requires small degree of implementation activities                      · Emphasis on increased participation and reducing contamination</p> <p><b>Multi-unit collection</b>                      · Expanded program to require some development in the short term                      · Program requires small degree of implementation activities</p>	<p><b>Commercial collection</b>                      · Expand existing programs in short term                      · Program requires moderate degree of implementation activities                      · Focus on new programs for small businesses</p> <p><b>Office paper recovery</b>                      · Expand program in short term                      · Relatively easy to implement with proper coordination</p> <p><b>Material reuse/recovery operation</b>                      · Focus on self-haul loads                      · Program development will require moderate level of implementation oversight in the short term</p> <p><b><u>Mixed Waste Recovery Programs</u></b></p> <p><b>Floor-sort activities</b>                      · Focus on commercial/industrial waste streams                      · Implement floor-sort activities similar to those at transfer stations once operational improvements are complete.</p>
<b>3. GUERNEVILLE TRANSFER STATION WASTESHED</b>	
<p><b><u>Source Separation Programs</u></b></p> <p><b>Drop-off</b>                      · Continued operations of existing drop-off recycling</p> <p><b>Single-family/Single-stream curbside collection</b>                      · Expanded program does not require facility development                      · Program requires moderate degree of implementation activities</p> <p><b>Multi-unit collection</b>                      · Expanded program to require development in the short term in appropriate areas                      · Program requires small degree of implementation activities</p>	<p><b>Commercial collection</b>                      · New programs in short term                      · Program requires moderate degree of implementation activities                      · Focus on new programs for small businesses</p> <p><b><u>Mixed Waste Recovery Programs</u></b></p> <p><b>Floor-sort activities</b>                      · Focus on commercial/industrial waste streams                      · Continued operations of existing floor-sort activities</p>

<b>4. HEALDSBURG TRANSFER STATION WASTESHED</b>	
<p><b><u>Source Separation Programs</u></b></p> <p><b>Drop-off</b></p> <ul style="list-style-type: none"> <li>· Continued operations of existing drop-off recycling</li> </ul> <p><b>Single-family/Single-stream curbside collection</b></p> <ul style="list-style-type: none"> <li>· Expanded program does not require facility development</li> <li>· Program requires small degree of implementation activities</li> <li>· Emphasis on increased participation and reducing contamination</li> </ul> <p><b>Multi-unit collection</b></p> <ul style="list-style-type: none"> <li>· Expanded program requires development in the short term</li> <li>· Program requires small degree of implementation activities</li> </ul>	<p><b>Commercial collection</b></p> <ul style="list-style-type: none"> <li>· Expand programs in short term</li> <li>· Program requires moderate degree of implementation activities</li> <li>· Focus on new programs for small businesses</li> </ul> <p><b>Office paper recovery</b></p> <ul style="list-style-type: none"> <li>· Expand programs in short term</li> <li>· Relatively easy to implement with proper coordination</li> </ul> <p><b>Material reuse/recovery operation</b></p> <ul style="list-style-type: none"> <li>· Focus on self-haul loads</li> <li>· Continued operations of existing activities.</li> </ul> <p><b><u>Mixed Waste Recovery Programs</u></b></p> <p><b>Floor-sort activities</b></p> <ul style="list-style-type: none"> <li>· Focus on commercial/industrial waste streams</li> <li>· Continued operations of existing activities</li> </ul>
<b>5. OCCIDENTAL TRANSFER STATION WASTESHED</b>	
<p><b><u>Source Separation Programs</u></b></p> <p><b>Drop-off</b></p> <ul style="list-style-type: none"> <li>· Continued operations of existing drop-off recycling</li> </ul> <p><b>Single-family/Single-stream curbside collection</b></p> <ul style="list-style-type: none"> <li>· Expanded program to appropriate areas does not require facility development</li> <li>· Program requires small degree of implementation activities</li> <li>· Emphasis on increased participation and reducing contamination</li> </ul> <p><b>Multi-unit collection</b></p> <ul style="list-style-type: none"> <li>· Expanded program requires some development in the short term</li> <li>· Program requires some implementation activities</li> </ul>	<p><b>Commercial collection</b></p> <ul style="list-style-type: none"> <li>· Expanded programs in short term</li> <li>· Program requires moderate degree of implementation activities</li> <li>· Focus on new programs for small businesses</li> </ul> <p><b>Office paper recovery</b></p> <ul style="list-style-type: none"> <li>· New program requires program development in short term</li> <li>· Relatively easy to implement with proper coordination</li> <li>· Program to be sealed to available accounts</li> </ul> <p><b><u>Mixed Waste Recovery Programs</u></b></p> <p><b>Floor-sort facility</b></p> <ul style="list-style-type: none"> <li>· Focus on commercial/industrial waste streams</li> <li>· Continued operations of existing activities</li> </ul>
<b>6. SONOMA TRANSFER STATION WASTESHED</b>	
<p><b><u>Source Separation Programs</u></b></p> <p><b>Drop-off</b></p> <ul style="list-style-type: none"> <li>· Continued operations of existing drop-off recycling</li> </ul> <p><b>Single-family/Single-stream curbside collection</b></p> <ul style="list-style-type: none"> <li>· Expanded program to appropriate areas does not require facility development</li> <li>· Program requires small degree of implementation activities</li> <li>· Emphasis on increased participation and reducing contamination</li> </ul> <p><b>Multi-unit collection</b></p> <ul style="list-style-type: none"> <li>· Expanded program requires some development in the short term</li> <li>· Program requires small degree of implementation activities</li> </ul>	<p><b>Commercial collection</b></p> <ul style="list-style-type: none"> <li>· Focus on new programs for small businesses</li> <li>· Expand programs in short term</li> <li>· Program requires moderate degree of implementation activities</li> </ul> <p><b>Office paper recovery</b></p> <ul style="list-style-type: none"> <li>· Expand programs in short term</li> <li>· Relatively easy to implement with proper coordination</li> </ul> <p><b>Material reuse/recovery operation</b></p> <ul style="list-style-type: none"> <li>· Focus on self-haul loads</li> <li>· Continued operations of existing activities.</li> </ul> <p><b><u>Mixed Waste Recovery Programs</u></b></p> <p><b>Floor-sort facility</b></p> <ul style="list-style-type: none"> <li>· Focus on commercial/industrial waste streams</li> <li>· Continued operations of existing activities</li> </ul>

<b>7. ALL WASTESHEDS</b>	
<p><b><u>Recycled Products Procurement</u></b></p> <ul style="list-style-type: none"> <li>· Requires formalized policy adoption</li> <li>· Implementation requires small changes in procurement method</li> </ul>	<p><b><u>Mandatory Recycling</u></b></p> <ul style="list-style-type: none"> <li>· Requires access to recycling services for all waste generators so that recyclables will be separated from MSW at the source</li> <li>· Municipal regulations prohibiting recyclables in MSW may be required</li> <li>· Penalty program may be needed</li> <li>· Education program will be needed</li> </ul>

programs will be further development of special event and small business recycling opportunities; a secondary focus will be on expanding the types of materials handled by the existing commercial programs.

The SCWMA's role in commercial recycling will be to motivate the private sector to recycle, and to provide technical assistance and program incentives to those businesses interested in implementing an ongoing program. Hauling and recycling companies will coordinate with commercial waste generators and the SCWMA to expand existing programs and develop new programs suitable to the specific conditions found in Sonoma County.

**Office Paper Recycling**

Office paper recovery is a selected alternative because of its educational value, operating experience, minimal environmental impacts, low capital cost, conformity with local markets, speed of implementation, facility/program requirements, private sector participation and high adaptability to social conditions. As with the commercial collection programs the majority of large generators are currently involved in a source separation program.

Increased recovery will likely result either through enhanced on-site storage and collection systems which provide for more positive economics, increased market value, or other means which will provide the opportunities for economical collection. The SCWMA, haulers, and other office paper recyclers plan to continue to promote office paper recycling to businesses in Sonoma County. Technical assistance in the form of waste audits assistance and information on developing office paper recovery programs will be made available through the SCWMA (see section 4.3, Source Reduction Component).

**Material Reuse/Recovery Operation**

Material reuse and recovery operations currently exist and will continue to operate at the Central Disposal Site and the Healdsburg and Sonoma transfer stations to provide source separated recycling services to residential, commercial, and industrial waste generators. New facilities are currently under construction at the Central Disposal Site to provide additional covered storage buildings for reuseable materials such as construction materials (wood, doors, windows, and other fixtures), household goods (furniture, books, clothing), garden equipment (mowers, tools), and a wide variety of other items. Other material recovery operations at the solid waste facilities target paper, glass, scrap metal, wood waste, appliances, and tires.

**4.4.4.2 Selected Mixed Waste Recovery Programs**

Since some materials are not feasibly recovered by source separation programs, the design of mixed waste recycling programs needs to be coordinated with existing and planned source separation activities. The SCWMA intends that the selected mixed waste recycling system be flexible enough to allow for maximizing source separation opportunities in the future. Details of technology, size, and location for mixed waste recycling facilities will be done through pilot projects and feasibility studies.

**Floor-Sort Activities**

Floor-sort activities are currently part of the operations occurring at Sonoma County transfer stations, because of



compatibility with existing collection and hauling patterns, operating experience, diversion potential and private sector participation, minimal environmental impacts, good conformity with local markets, and high adaptability to social conditions.

Floor-sort activities target uncompacted commercial/industrial loads and residential/commercial self-haul loads, and include materials such as scrap metal, wood waste, yard debris, tires, and appliances. Once the operational improvements are completed at the Central Disposal Site, floor-sort activities will be implemented as part of the daily operations.

#### 4.4.4.3 Role of Recycling in Meeting State Diversion Goals

Most of the selected recycling programs have been in operation for several years, resulting in a 2001 diversion rate of 40%. Implementation of the single-stream curbside collection is anticipated to increase diversion by 30 tpd and generate an additional 2.1% diversion. Expansion of multi-unit recycling is anticipated to increase diversion by 10 tpd and generate an additional 0.7% diversion. Although not evaluated, continued implementation of beverage container recycling programs in recreational areas is anticipated to generate an additional 0.1% diversion. Expansion of floor-sort activities at the Central Disposal Site is anticipated to increase diversion by 30 tpd and generate an additional 2.1% diversion.

#### 4.4.4.4 Operating, Handling, and Facility Requirements for Programs

Collection, processing, and storage requirements for the selected programs have been recently expanded by local haulers to process the increased flow of recyclables from single-stream curbside recycling, multi-unit recycling, and commercial services. Additional diversion capacity will be available at the Central Disposal Site once the operational improvements for the material reuse and recovery facility are completed. Existing recycling capacity is available at all solid waste facilities and at the sites of the twenty-six private recycling operators who offer various recycling services to residents and businesses. All County solid waste facilities have a fee structure that includes reduced rates to encourage source-separating yard debris and wood waste prior to disposal.

Long term planning includes the addition of other facilities that, if constructed, would provide for additional recycling diversion including:

- Resource management facility (RMF): This facility would include preliminary waste sorting for recyclable materials prior to the primary organic waste processing operation (see section 4.6, Composting).
- New transfer station: Located in the Santa Rosa area, this facility would operate in a manner like the other County transfer stations, including providing drop-off recycling opportunities and floor-sort activities.
- Conversion of the Central Disposal Site to a transfer station: Once the Central Disposal Site reaches capacity, the site will continue to operate as a transfer station, including drop-off recycling opportunities, material reuse and recovery operations, floor-sort activities, and HHW facility operations.

#### 4.4.5 MARKETS AND LOCAL END-USES FOR RECOVERED MATERIALS

Beyond the objective of meeting mandated diversion goals, a critical element of the SCWMA's recycling program is to return recovered materials to market. This section discusses contains a general description of current markets and local end-uses for recovered materials, recycled material markets and end-users, factors influencing recycled materials markets, federal and state legislation designed to stimulate materials market development, and resources available to local jurisdictions.

##### 4.4.5.1 Current Recycling Markets and End-Users

Effectively marketing materials collected through the recycling programs will provide some revenue to help offset costs and will ensure that collected materials are not returned to the waste stream. This section describes in general terms the major market categories for materials collected in the Sonoma County area, including paper, glass containers, aluminum cans, tin (steel) cans, plastic, ferrous metal and nonferrous metal. Table 4-15 summarizes the results of the local market conditions for these material categories.

## Paper

Paper is generally divided into two categories: low-grade papers containing shorter fibers or mixed fibers, and high grades of paper containing primarily longer fibers that are more readily recycled into a greater number of products. Low-grade paper is divided into old newsprint (ONP), old corrugated cardboard (OCC), and mixed paper. High-grade paper includes computer printout paper, white ledger, and color ledger. Both low-grade and high-grade paper are sold to local dealers or brokers or directly to domestic and export markets. End-users for paper include paper mills, energy plants, and manufacturers of various products such as roofing felt, gypsum board, and animal bedding. Increased consumer demand and acceptance of recycled paper products, increased supplies of waste paper, and the concurrent growth in manufacturing capacity and export demand have resulted in a significant growth in the waste paper market in the last few years.

Overall market conditions for waste paper vary with changes in the price of virgin pulp and also vary independently for each grade. Generally, higher grades undergo relatively less drastic fluctuations in price than lower grades. The market for old newsprint is also influenced by seasonal fluctuations in curbside, drop off and buyback recovery programs.

High-grade de-inking waste paper such as CPO and WL are a preferred secondary fiber substitute for pulp in the high-grade paper making process due to their desirable fiber lengths. As a result, these high-grade waste papers command significantly higher prices, usually five to tenfold more, than the lower grades. Uses of mixed grades of papers are also limited and hence have a lower value.

Alternative markets or end-users for low-grade papers include Hydro mulch manufacturers, livestock producers who use the shredded paper as bedding, and sewage treatment plants for use as bulking agent for sludge composting. These markets are seldom used as primary markets but serve a useful function when traditional markets are soft or to maintain a diversity of marketing options, especially on the local level.

**Old Newsprint (ONP):** Old newsprint has historically been more readily available in greater quantities than other recycled materials on a residential level and is usually the largest volume item recycled through drop-off and residential curbside programs. Old newsprint is usually sold to local dealers or directly to domestic mills and export markets. Old newsprint is used in the manufacture of a growing number of products including cellulose insulation, roofing felt, construction paper, boxboard, and paperboard.

The market for old newspaper, as with other secondary fibers, tends to be cyclic, although export demand can affect these cycles. For example, many paper and paperboard producers shut down for short periods in the summer to allow for vacations and equipment repairs. Secondary fiber demand may fall during this period. Demand for old newspapers by cellulose insulation manufacturers is also seasonal, with heavy demand in the fall and winter, and much lower need of waste paper in the spring and summer.

**Old Magazines:** The market for old magazines has recently experienced significant expansion because of the changes in the de-inking processes at paper recycling mills. The new process favors using old magazines, which are proving to be an economical source of the clay required for ink removal. Old magazines provide necessary fibers for newsprint production and contribute to the production of finished products of superior quality.

**Old Corrugated Containers (OCC):** Corrugated containers are used as shipping packaging for almost every consumer product sold. End-users include manufacturers of corrugated containers, roofing felt, and gypsum board.

**High-Grade Waste Paper:** Waste office papers such as white ledger, colored ledger, and computer printout are among the grades of paper manufactured from long fibers. As secondary fibers, such paper grades, even though they contain ink, command a higher price than the lower grades and are generally more stable than the lower grades.

Office paper and other printed grades are commonly used as a de-ink raw material in the manufacture of similar grades of paper. Tissue, toweling, and sanitary paper manufacturers are also large consumers. Demand for high-

grade waste paper is growing as tissue and writing paper producers add new machines that can better use secondary fiber and have increased capacity.

Some local dealers will provide convenient containers, transportation, and other incentives to businesses and government agencies that generate large quantities of these grades of paper. Although these higher grades are worth much more per ton than the lower grades, residential curbside collection is usually not practical because of the relatively small amount generated.

**Glass Containers**

Recovered glass containers are divided by color into five main categories: amber, green, flint (clear), two-color mixed, and three-color mixed. California glass manufacturers use cullet (broken scrap glass) primarily for producing new glass containers and currently use cullet for about 50 percent of their raw material requirements.

Under the California Beverage Container Recycling and Litter Reduction Act (AB 2020, Margolin 1986) and subsequent legislation, the California Department of Conservation established a redemption and payment program (California Redemption Value or CRV) to promote the recycling of glass, aluminum, and PET beverage containers of various carbonated and distilled beverages.

Scrap glass containers (cullet) are primarily sold to manufacturers of glass containers (beneficiation plants) who purchase both color-sorted and mixed-color cullet. While single-color cullet can be readily used in the production of the more desirable clear and single-color glass containers, especially amber and green, two-and three-color mixed glass has limited value to manufacturers. For this reason, three-color glass cullet is not accepted under the CRV program. Manufacturers of glassphalt, fiberglass, and acoustic tiles are alternative markets for mixed-color cullet; however, these are lower end users and consequently pay lower prices.

**Table 4-15: Market Conditions For Recyclable Materials from Sonoma County**

<b>Old Newspaper</b>	<b>Old Corrugated Cardboard</b>	<b>White Ledger</b>	<b>Colored Ledger</b>	<b>Computer paper</b>
North Coast Fibers Broker, Bay Area 90% export/ 10% domestic	North Coast Fibers Broker, Bay Area 90% export/ 10% domestic	North Coast Fibers Broker, Bay Area 90% export/ 10% domestic	North Coast Fibers Broker, Bay Area 90% export/ 10% domestic	N. Coast Fibers Broker, Bay Area 90% export/ 10% domestic
Marin Resource Recovery San Rafael, CA export	Marin Resource Recovery San Rafael, CA export	Marin Resource Recovery San Rafael, CA export	Marin Resource Recovery San Rafael, CA export	Marin Resource Recovery San Rafael, CA export
	Inland Container Weyerhaeuser, Bay Area 50-60% domestic	Weyerhaeuser, Bay Area 50-60% domestic	Weyerhaeuser, Bay Area 50-60% domestic	Weyerhaeuser, Bay Area 50-65% domestic
<b>Used Beverage Containers</b>	<b>Steel Cans</b>	<b>Glass (Color Sorted)</b>	<b>PET</b>	<b>Scrap Metals</b>
Weisco, broker to Kaiser - Idaho & Corona, CA	Proler, Lathrop, CA	Owens-Illinois, Bay Area	Weisco, Broker export & southern California	Schnitzer Steel, LMC, Lakeside Metals, Bay Area export - Korea
Custom Alloy, Oakland, CA		Crinc, Bay Area		
Cogito, Oakland, CA				

In general, the California glass cullet market has been extremely unstable, with frequent oversupply problems. Due to the growing number of recycling programs coming on-line in the state, this problem is expected to continue into the future without intervention by the state government. To address this problem, AB 2622 (Eastin 1990) has been enacted which requires minimum cullet use of 25 percent by 1993, 35 percent by 1996 and 65 percent by 2005 for glass containers sold in California.

### **Aluminum Cans**

The aluminum beverage can, also known as the Used Beverage Container (UBC), has one of the highest recovery rates in the municipal waste stream. Because of the relatively high value of scrap aluminum, inclusion of aluminum beverage cans in the CRV program, and the metal's dominance as a beverage container, thousands of independent collectors in California sell scrap cans to intermediate processors or directly to end-users' outlet stations.

The significant energy savings associated with the remanufacture of aluminum cans from recovered aluminum versus the mining and processing of bauxite ore for primary aluminum production has created a relatively strong, stable market for recovered aluminum cans. Price fluctuations in the UBC market usually reflect changes in foreign and domestic economic conditions, changes in the primary unalloyed aluminum ingot market, UBC competition between primary and secondary smelters, and seasonal variations in beverage container use that affect both UBC production and recovery rates. Reynolds, Alcoa, Kaiser, and Alcan are the major aluminum can sheet suppliers with market share in California.

Recovered aluminum cans are processed first by separating out any steel and tin cans. The aluminum cans are then usually baled or shredded prior to shipment. Few of the aluminum cans recovered in California are consumed here, since the majority of the metal is sent to secondary smelting operations in Colorado, Indiana, and Alabama. The majority of aluminum cans recovered in the United States are consumed by primary aluminum can sheet producers, such as Reynolds Metals, Kaiser Aluminum and Chemical, Alcoa and Alcan, although non-integrated secondary aluminum smelter operators have captured a larger market share in recent years. In addition, foreign end-users, particularly primary aluminum producers in Japan, are becoming more interested in these materials.

### **Steel (Tin)**

Tin cans (tin-plated steel cans used mostly as food containers) recovered in California are primarily used by detinner processors. A smaller amount is consumed by steel makers, since tin cans must compete with readily available grades of less expensive ferrous scrap, such as shredded auto bodies. In addition, using tin cans that have not been detinned in the steel production processes is metallurgically limited, because high levels of tin, lead, and aluminum contaminate these processes.

Curbside collection is the main avenue for post-consumer steel can (tin-plated steel cans used mostly as food containers) and bimetal can (tin-plated steel can with an aluminum top) recovery. Recovered steel and bimetal cans are purchased by detinning plants, steel mills, and iron and steel foundries.

The major buyer of recovered steel cans in California is Proler International, operator of five detinning plants in the United States. The firm's plant in Lathrop, California, uses a caustic solution to strip the valuable tin coating from recovered cans. The tin solution is then electrolytically removed and formed into ingots. Food and paper labels have interfered with the detinning process in the past, but recent advances in the processing technology have improved the tolerance of these contaminants.

To respond to environmental concerns and to encourage recovery of steel cans, the steel can industry established the Steel Can Recycling Institute (SCRI) in 1988. One of SCRI's stated goals is to attain a 66 percent recycling rate for steel cans.

### **Ferrous Metals**

The ferrous market has historically been relatively unstable with prices significantly influenced by seasonal

variations and changing economic conditions. End-users of ferrous metals are primarily scrap steel processors who purchase ferrous scrap in the form of old car bodies, auto parts, scrap iron and steel, white goods (large appliances), and steel (tin) cans. The processed ferrous metal is sold to domestic or foreign steel mills and foundries.

### **Nonferrous Metals**

Nonferrous scrap metal includes lead, copper, brass, zinc, magnesium, and aluminum (excluding aluminum cans). Markets for nonferrous metals often act independently of each other but, similarly to the ferrous metal market, are also affected by seasonal variations and changing economic conditions. Most of the nonferrous scrap metal is generated by the manufacturing industry, with a lesser amount generated as post-consumer waste such as automobiles, building materials, and cooking utensils. Nonferrous scrap metal is purchased by scrap metal processors who, in turn, sell the processed metal to foundries, secondary smelters, fabricators, and manufacturers.

### **Plastics**

There are six major categories of plastics: polyethylene terephthalate (PETE), high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyvinyl chloride (PVC), polystyrene (PS), polypropylene (PP), and others. PETE and HDPE containers are the leading recycled post-consumer plastics in the United States, although markets are also expanding for LDPE and other plastics.

The versatility of plastics has made them widely used in modern society. Plastics comprise up to 9 percent by weight and 20 percent of California's municipal waste stream. Although the economics of post-industrial plastics recycling is favorable, post-consumer plastics recycling is generally uneconomical due to high collection and processing costs, limited processing technologies, and the lack of stable end-use markets. Plastic trade associations and industry organizations continue to develop cost-effective recycling operations.

A summary of the current status of the two main post-consumer plastics is presented below.

**Polyethylene Terephthalate (PET):** PET is the fastest growing plastic used in household applications due to its clarity, toughness, and barrier properties. The predominant use of PET is to package soft drinks but it is also used for some liquor bottles and peanut butter jars. PET represents about 25 percent of the plastic bottle market.

To stimulate plastics recycling, PET beverage containers are included in the CRV program. In response, the plastics industry established the Plastics Recycling Corporation of California (PRCC) which acts a broker for all PET scrap collected for recycling in the state. While most of this PET scrap has previously been sold to Asian markets for use in making fiberfill for sleeping bags and clothing, domestic markets are now expanding with the increased supplies of PET and other recovered plastics.

**High-Density Polyethylene (HDPE):** HDPE represents over 50 percent of the plastic bottle market. It is characterized by its stiffness, low cost, ease of forming and resistance to breaking. HDPE is primarily used for milk containers; however, it is also used for water and juice beverage bottles, bleach and detergent bottles, motor oil bottles, margarine tubs, and some grocery sacks.

Post-consumer HDPE markets are less developed in California than PET. HDPE has a tendency to retain odors which make it undesirable for use in new products. Recycled plastics also may not be used in containers that come into direct contact with food or beverages unless FDA approved. If post-consumer HDPE is made into new food and beverage containers the inside must be coated with virgin plastic. Most of California's HDPE is sold to a few domestic manufacturers of injection molded products such as piping, garbage pails, and curbside recycling bins.

### **Reuse Markets**

There is an extensive network of organizations and individuals who reuse, repair and resell materials and articles "rescued" from the municipal waste stream. This non-traditional market for discarded materials is due, in part, to the availability of reusable materials and articles and lifestyle and philosophical orientation of many residents.

The existing reuse yards contribute diversion credits for the SCWMA. Many types of materials are reused. The primary materials and articles are listed below:

- Automobile equipment and parts (alternators, batteries, hubcaps, radiators, starters and all types of accessory items).
- Building and construction supplies (sinks, toilets, tubs, windows, doors and lumber); garden equipment (lawn mowers and rototillers).
- White goods (air conditioners, dishwashers, refrigerators and other appliances).
- Bottles (wine, soda) and packaging materials (styrofoam peanuts).

#### **4.4.5.2 Sonoma/Mendocino/Lake Counties Recycling Market Development Zone**

In 1994 Sonoma and Mendocino Counties filed an application with the CIWMB for designation as a Recycling Marketing Development Zone (RMDZ). In 1997, a redesignation was requested from the CIWMB to include Lake County, the current Zone Administrator. The RMDZ targets the following materials for feedstock: paper, glass, organics, construction and demolition debris, plastics, paint, and tires.

Sonoma County offers local incentives such as fast track permitting and reduced plan check filing fees. Consulting services are available through the Redwood Empire Small Business Development Center, the Service Corps of Retired Executives Association, and the Private Industry Council. Additional financial incentives include Sonoma County Industrial Development Bonds and Small Business Administration loan program. The Sonoma County Economic Development Board provides assistance services directed toward encouraging the startup, retention and expansion of Sonoma County businesses and jobs, particularly with small businesses; creation of new jobs and employment opportunities. The Sonoma County Business Environmental Alliance, working to promote the voluntary adoption of good environmental practices by local businesses and farms, periodically produces reports, newsletters, and other projects as a resource to businesses.

Mendocino County offers other incentives through the City of Willits such as the Development Center, the Ukiah Business Development Center, Community Block Grant loans, and Industrial Development Bonds. Other economic development tools include expedited permit processing, general plan and zoning amendments, business counseling and management assistance, and private loans through local banks.

In Lake County, the Lake County Business Outreach and Response Team, a local economic development corporation, is responsible for coordinating local incentives and maintains a very active network of local, State, and federal service providers. Community Development Services, a local economic development consulting firm, provides administrative support to the Lake County Business Outreach and Response Team.

#### **4.4.5.3 Options for Developing Markets and Local End-Users**

Markets vary widely in terms of the role of brokers and dealers in purchasing secondary materials from recycling programs. There are basically three types of potential buyers: processors or dealers, brokers, or the end-user manufacturer. A dealer purchases recyclable materials, processes them to end-user standards, and transports them to market. These processor firms include waste paper packers, paper stock dealers, scrap metal dealers, and intermediate processors that handle a wide variety of recyclables.

Some waste generators, such as grocery stores, businesses, and many scrap dealers, sell their materials to a broker who sells them to a manufacturer without processing the materials. Brokers provide advantages to consumers because they can assure a reliable supply of materials, usually at steadier prices. They also provide a service to smaller collectors who are unable to accumulate the large shipments often required by manufacturers.

End-user markets are usually manufacturers that buy the secondary materials for use as feedstock to replace or augment their use of raw materials. End-user buying practices vary due to unique requirements of individual manufacturers and changing market conditions. Some firms may buy directly from collectors or waste generators, or do so whenever market demand exceeds local supplies. Other firms set up subsidiary buyer or

dealer companies whose main purpose is to assure adequate supplies for the parent firm. Still other firms buy supplies only from dealers or brokers who are positioned to assure standard specifications and regular deliveries.

Another option for developing local markets and end users is the creation of a resource recovery park with room for many small businesses. Resource recovery parks allow residents to drop off materials that can be reused or recycled. Activities in a resource recovery park could include a drop-off or buyback recycling center; organic material drop-off and retail sale of compost products; repair, restoration, and retail sales of reusable items; and food banks. Businesses in a resource recovery park might include electronics repair, household appliance stores, reused furniture sales, vintage clothing and consignment shop, household item thrift shop, stove and porcelain refinisher, antique restoration firm, and/or artists that use discarded materials.

#### 4.4.5.4 Factors Influencing Recycled Materials Markets

Knowledge of the factors that influence material markets allows program designers to determine appropriate collection methods, the degree of processing required, and the availability of economically viable markets. These factors include domestic and international economic conditions, end-user specifications, quality of recovered materials (grade, consistency, and level of contamination), volume and density of diverted materials, purchase contracts, competition with virgin materials, transportation costs, and constraints of processing and manufacturing methods. These factors will be considered during the development of collection and recovery programs and monitored during implementation of these programs.

Market Specifications: Collected materials are processed to meet market specifications for size, weight, and contaminant levels. A wide variety of methods and equipment are available for handling and processing materials. The procedures and equipment chosen for processing depend largely on throughput volumes, detailed program design, and local market conditions.

Volume of Diverted Materials: Programs vary significantly in terms of volumes of materials collected. Most drop-off centers have very little processing capability, and rely heavily on local markets to supply containers and transportation for the bulk of the recycled materials. Numerous paper dealers, for example, will provide roll-off bins or overseas shipping containers if a program can collect enough newspaper to fill the container in a few days. The price paid for paper collected in this manner is often the same or lower than the dealer's door price, in order to cover the buyer's extra expense for equipment and transportation. Low-volume collection programs usually will have to deliver materials to market. This is because the buyer is unwilling to tie up equipment, such as roll-off containers, for long periods of time with little volume generated.

Programs that are large enough to collect a steady stream of materials, such as most buyback and curbside programs, can receive better prices, because they make better use of the buyer's equipment. A high-volume recycling program can provide the buyer with a steady supply of materials, and therefore earn a premium price as a preferred customer. Many paper dealers in the area would encourage the larger recycling programs to establish long-term purchase agreements in order to maintain a consistent supply of ONP or OCC. Most paper end-users, the mills that manufacture new paper products, do not provide transportation for either loose ONP or OCC, preferring instead to buy direct from paper dealers.

Material Density: The advantages of densifying can be considerable, especially when a recycling program can meet industry-established specification for ONP, OCC, aluminum, and tin-can bales with one high-density baler. Baled materials can give a recycling operator access to end-user markets (paper mills, aluminum smelters, detinning plants, etc.) that otherwise would be unavailable. The main reasons for baling are to reduce transportation costs by shipping high-density products to markets, to enhance storage capacity at the recycling facility, and to improve marketing options by accessing end-user as well as dealer/processor markets for the materials.

Contract Versus Open Market: There can be some benefits to recycling programs in securing a purchase contract with a scrap dealer. When demand is low and local markets are turning off supply through depressed door prices, a program with a long-term supply commitment to a dealer can rely on that market to absorb its

materials. Recycling program operators who "play the market" and change buyers according to the highest available spot price may find themselves with no available market at times when mill demand is low. Supplier loyalty is valued in the waste industry. The long-term contract can be designed to reflect current pricing based on industry-wide supply/demand fluctuations, thus securing a level of fair market price for their material regardless of changing prices over time. Sometimes the risk of losing short-term profits, when compared to the risk of losing a market, makes purchase contracts a worthwhile consideration in the long term.

Competition With Virgin Materials: Federal tax incentives such as depletion allowances for mineral and resource extraction have historically given suppliers of virgin materials an advantage in the marketplace due to the relative higher cost of recycled materials. Recently enacted California legislation described in Section 4.5.3 of this volume is designed to offset these inequalities and should stimulate recycled materials markets.

Export Markets: Export markets can significantly influence the local marketplace with their capacity to absorb large quantities of materials. The primary factors that favor export of materials include lower manufacturing costs and scarcity of natural resources. Proximity to foreign markets further encourages the export of recycled materials. On the West Coast for example, large quantities of waste paper and scrap metals are exported to markets located in the Pacific Rim countries.

However, export markets are influenced by changes in international economic and political circumstances, by fluctuations in the value of international currency in relation to the U.S. dollar, and by the overall health of the U.S. export market which affects shipping rates as products compete for a limited number of shipping containers.

Constraints of Processing and Manufacturing Methods: With the generally depressed recycled materials market, it was not economically feasible for manufactures to retool to accommodate the use of recycled materials. Consequently, there was minimal research and development being conducted to improve processing and manufacturing technologies. However, with an increasing supply of materials, consumer acceptance of recycled products, and the passage of recycled product content and procurement legislation, there is expanding development of processing and manufacturing technology for recycled materials.

Aspects of the SCWMA's program planning that will enhance the marketability of recovered materials will include the design of collection and processing systems to provide materials that meet the highest end-user specifications and quality standards, using dependable long-term contracts versus spot markets, cooperative marketing on a regional basis and developing an aggressive local market development strategy.

#### **4.4.5.5 Market Development Legislation**

This section describes a variety of existing and planned state and federal laws that focus on the support of general source reduction and market development strategies and an array of specific material market enhancement programs for recycled materials such as paper, compost, plastics, tires, and batteries. The Unincorporated County plans to continue monitoring recycling market development goals, policies, and activities on the federal and state level to identify opportunities for local application.

#### **Federal**

Resource Conservation and Recovery Act of 1976: RCRA requires the EPA to establish procurement guidelines requiring government agencies (local and federal) to buy products made of recycled materials. Call the procurement hotline at (703) 941-4452 for a copy of the guidelines and more information.

Community Reinvestment Act: LCRA requires banks to invest in community development projects through low interest loans. This could be used to help finance recycling businesses.



## State

Recycling Market Development Zone (RMDZ) Program: A partnership of local governments and the CIWMB, created to provide incentives to businesses that use secondary materials from the waste stream as feedstock for their manufacturing processes. There are currently 40 zones designated by the CIWMB. The RMDZ program combines recycling with economic development to fuel new businesses, expand existing ones, and create jobs. Recycling-based manufacturers located in RMDZs are eligible to apply for low-interest loans and other assistance provided by local zone administrators and by the CIWMB's Recycling Business Assistance Referral Team. In addition to loans, the CIWMB offers financial assistance, product marketing, and permitting assistance.

Assembly Bill 467 (Strom-Martin) (Resources Recovery Allocated Credit): Would require the CIWMB to implement a grant and loan program for small recycling businesses for bridge financing; create the Small Recycling Business Grant Account for expenditure by the CIWMB upon appropriation by the Legislature. The legislative intent is to fund the account with a \$1 million appropriation from the general fund.

SB 1127 (Karnette) (Rigid Plastic Packaging): Would require the CIWMB to conduct a study regarding use and disposal of polystyrene in California. Information available from this study could be used to develop markets and create collection programs.

### 4.4.6 IMPLEMENTING RECYCLING PROGRAMS

The chosen recycling diversion programs have a wide range of implementation and operations requirements. Successful programs will need the participation of both public-and private-sector entities. This section identifies the responsible agencies, implementation step, funding requirements, and a schedule for recycling program implementation.

#### 4.4.6.1 Entities Responsible for Recycling Program Implementation

This section lists each local entity responsible for implementing a recycling operation, including public agencies, private companies, for-profit and nonprofit recyclers, and volunteer organizations. Operations requirements for each entity have been designed to complement the recommended program options. Each step identifies the designated individual or group responsible for oversight of the implementation process.

#### Source Separation Recycling Programs

##### Drop-Off/Buy-Back Centers

- The SCWMA will encourage private-sector development of drop-off/buy-back centers.

##### Single-Family Curbside and Multi-unit Collection Programs

- Each jurisdiction is responsible for contract negotiations and program supervision for single-family and multi-unit curbside collection programs.
- Private-sector contractors provide operational services for collection, processing, and materials marketing.

##### Commercial Collection Programs

- The SCWMA provides technical assistance and education programs to encourage commercial recycling in the private sector. Development of new and/or expansion of existing commercial recycling activities may be implemented by licensed private waste haulers, recycling firms, materials brokers and dealers, or other private firms.
- Private-sector waste haulers currently provide waste management services and recycling operators will be

involved in expansion of commercial collections as more businesses implement programs.

### **Office Paper Recovery**

- The DTPW will develop and assist County departments to expand the office paper program for the county government offices.
- The SCWMA provides technical assistance to the private sector.
- Private-sector businesses will implement or expand office paper recovery programs based upon the effectiveness of the SCWMA's technical assistance program and the availability of paper dealers and recycling firms to service local businesses.

### **Material Reuse/Recovery Programs For All Wastesheds**

- The County will continue to operate material reuse/recovery facilities at the Central Disposal Site and the Healdsburg and Sonoma transfer stations.

### **Actions Planned to Deter Unauthorized Removal of Curbside Materials**

Local jurisdictions have the authority to enforce the State's anti-scavenging ordinance for curbside materials.

### **Mixed Waste Recovery Programs**

#### **Floor-Sort Activities**

- The DTPW will continue to operate floor sorting activities.
- The DTPW will implement floor-sort activities at the Central Disposal Site tipping building once the operational improvements are completed.
- Private sector may play a role in operations.

### **Local Government Program for the Procurement of Recycled Products**

- The SCWMA will provide assistance to each jurisdiction to implement Green Purchasing Policies.
- Each jurisdiction will educate their departments on the procurement of post-consumer recycled content products.

#### **4.4.6.2 Tasks Required to Implement Recycling Programs**

The SCWMA and its member jurisdictions have already implemented components of the described recycling program. The following tasks identify steps required to expand existing recycling activities and to implement the selected programs.

#### **Single-Family Residential Curbside Collection**

- Negotiate expanded service with appropriate hauler(s).
- Enhance the publicity/promotional program to increase household participation and the tonnages recycled.

#### **Multi-unit Residential Collection**

- Negotiate service with appropriate hauler(s) and expand operations to serve more multi-unit residences.

- Enhance the publicity/promotional program to increase household participation and the tonnages recycled.

### **Commercial Collections**

- Publicize the private-sector commercial collections in the Annual Recycling Guide.

### **Office Paper Recovery**

- Evaluate existing in-house programs.
- Deliver desk-side containers to additional facilities (e.g., libraries, fire stations, corporation yards).
- Conduct training sessions and ongoing employee motivational campaigns.
- Provide technical assistance program for the private sector.

### **Material Reuse/Recovery Operation**

- The DTPW will continue to operate the existing material reuse/recovery operations at the Healdsburg and Sonoma Transfer stations.
- The DTPW will complete the construction of the expanded material reuse/recovery operation at the Central Disposal Site.

### **Floor-Sort Activities**

- The DTPW will continue to operate existing floor-sort activities at the county-owned solid waste facilities.
- The DTPW will implement floor-sort activities at the new Central Disposal Site transfer building once construction is completed.

#### **4.4.6.3 Local Government Programs to Procure Recycled Products**

- The SCWMA and its member jurisdictions will continue to use the recycled-content procurement policies that are in place.
- The SCWMA will continue to implement its Green Purchasing Policy.
- The SCWMA will continue to work with its member jurisdictions to implement Green Purchasing Policies throughout Sonoma County.
- As part of implementing a green purchasing policy, each jurisdiction will consider adding a statement to all requests for bids indicating the jurisdiction's desire to buy recycled/reusable products given equivalent performance.

#### **4.4.6.4 Schedules and Funding Required to Implement Recycling Programs**

After individual programs were selected a detailed list of implementation tasks were developed to guide program activities. These implementation tasks are intended to serve as a checklist for program expansion and/or development.

The schedules were developed after receiving verbal and written information from the County's Local Task Force representatives. A wide variety of factors influenced the development of these tasks schedules including:

- Emphasis on maximizing source separation program diversion programs before developing mixed waste recovery programs.
- The willingness of the County to develop and operate programs.
- Time required to begin full-scale operations.

- Ability to raise capital and development funds.
- Developing an implementation schedule that coincides with budget tasks.

The recycling program implementation tasks and the schedule to phase in the program are presented in Table 4-17. The dates shown are commencement dates.

#### **4.4.7 MONITORING AND EVALUATION**

Monitoring and evaluation is critical to the planning process. The programs recommended in this recycling component will require annual review to ensure that the anticipated diversion goals are being achieved. Section 18733.6 of the AB 939 regulations outlines the requirements of the monitoring and evaluation section. The following discussion identifies the criteria to be used for evaluation, frequency of the monitoring, entities responsible for evaluation, and funding sources for the monitoring, and contingency measures to be implemented if programs do not fulfill the expectations.

Monitoring and evaluation also identifies the percentage of wastes the programs divert from disposal, evaluates the effectiveness of the programs, and describes contingency steps that can be taken to improve the program's diversion potential. Table 4-16 lists the parties responsible for monitoring and evaluating the recycling program.

##### **4.4.7.1 Data Needs**

In its preparation of the AB 939 Annual Report, the SCWMA requests that all recycling program operators who are collecting materials from those programs implemented by the SCWMA and its member jurisdictions to submit reports that identify the types and amounts of materials recycled.

##### **4.4.7.2 Monitoring Program**

The following are monitoring techniques used to review implemented recycling programs.

#### **Source Separation Programs**

##### **Drop-Off/Buyback Centers**

Program monitoring for drop-off/buyback centers will be performed using written records. Drop-off/buyback center operators and the Sonoma County DTPW will maintain records of tonnage diverted for all drop-off/buy-back centers.

##### **Residential Curbside Collection**

The program monitoring methods for single- and multi-unit residential curbside programs consist of using written records. The contracted service providers for curbside recycling will be required to submit quarterly collection reports to the SCWMA. An annual review of the curbside reports will be conducted to identify participation rates, tons recycled by material type, and program costs.

##### **Commercial Collections Programs**

The methods to be used for commercial collection program monitoring are:

- Written Records: Commercial haulers who operate commercial recycling programs within Sonoma County report annual tonnages to the SCWMA.
- Waste Characterization Study: A targeted waste sorting study may be conducted at Sonoma County solid waste facilities during the medium term to confirm diversion rates of targeted materials.

### **Office Paper Recovery**

The objective of the office paper recovery program is to expand the existing County program to all County offices and to encourage private-sector participation in the activity. Program monitoring will be performed using written records. The Sonoma County DTPW is responsible for all reports on office paper recovery. Reports documenting the status and achievements of the technical assistance program will also be reviewed and summarized every year.

### **Material Reuse/Recovery Program**

Detailed performance records are required monthly of the contracted program operator. The SCWMA will evaluate written records of facility operations annually as part of its AB 939 Annual Report.

### **Mixed Waste Recovery Programs**

#### **Floor-Sort Activities**

Detailed performance records are submitted to the SCWMA on a quarterly basis for materials diverted by each solid waste facility in Sonoma County. The DTPW requires monthly reports to document throughput and recovery levels.

### **Local Government Programs to Procure Recycled Products**

- The SCWMA will continue to work with member jurisdictions to implement Green Purchasing Policies.
- Each jurisdiction will monitor procurement policies to ensure that targeted procurement levels are being achieved.

#### **4.4.7.3 Evaluating Recycling Program Effectiveness**

Program effectiveness can be evaluated based on quantitative measures such as the program's ability to divert waste from disposal and qualitative measures such as the availability of the services to waste generators. A

specific set of criteria, based on the following questions, are used to measure program effectiveness that should help the SCWMA identify areas where improvements are required.

- Were the anticipated recycling objectives for each recycling program and targeted material type attained?
- Did the responsible entities execute the tasks required?
- Were programs implemented in a timely manner?
- Were all activities executed in an environmentally approved manner?
- Do the recycling program activities meet all local and state regulations?
- Were the markets that were identified in program design able to process the collected materials?
- Were the programs operated to maximize the use of the program by different waste sectors?

#### **4.4.7.4 Parties Responsible for Monitoring**

The SCWMA staff will monitor and evaluate regional recycling programs to ensure that such programs are reaching residents and businesses countywide (see Table 4-16). Material diversion monitoring reports will continue to be integrated into the AB 939 Annual Report.

**4.4.7.5 Funding Requirements**

Many of the monitoring and evaluation responsibilities are built into the individual program operation budgets. It is estimated that these monitoring and evaluation activities will require a minimum of five percent time of one SCWMA employee on an annual basis at a cost of approximately \$8,000 per year. The annual expense for the County DTPW is approximately \$220,000 to hire contractors to operate the material reuse/recovery operations at the Central Disposal Site and the Healdsburg and Sonoma transfer stations. Costs for the existing floor-sort activities occurring at the existing transfer stations are not separated from the operations budgets for the facilities. Funding for programs implemented through franchise agreements are included in the overall costs of providing solid waste services to the local jurisdictions.

**4.4.7.6 Contingency Measures for Improving Recycling Programs**

A list of contingency measures for improving recycling programs diversion rates follow. These measures will be implemented if the monitoring and evaluation program identifies the program deficiencies.

1. If the recycling diversion objectives are not attained, the SCWMA will consider implementing the following:
  - Survey the sectors involved to identify the reasons for the program's lack of success.
  - Increase incentives through legislation, regulation, or disposal rate modification.
  - Increase public education efforts in terms of frequency and/or target audience.
  - Revise objectives to reflect realistic conditions.
  
2. If required tasks are not executed by the responsible entities, the SCWMA will consider implementing the following:
  - Reevaluate staffing adequacy.
  - Revise job and task descriptions.
  - Improve interagency coordination.
  - Identify reasons for low public and private-sector participation.
  
3. If tasks are not implemented in a timely manner, the SCWMA will consider implementing the following:
  - Reevaluate staffing adequacy
  - Revise job and task descriptions
  - Improve interagency coordination.
  - Identify reasons for low public- and private-sector participation.

<b>Table 4-16: Parties Responsible for Monitoring and Evaluating Recycling Programs</b>				
<b>Program</b>	<b>Responsible Parties</b>			<b>Interval</b>
	<b>Data Collection</b>	<b>Evaluation</b>	<b>Reporting</b>	
<b>Drop-Off/Buyback Centers</b>	Program Operator	SCWMA	SCWMA	Annually
<b>Single-Family Curbside</b>	Program Operator	Each jurisdiction	SCWMA	Annually
<b>Multi-unit Collection</b>	Program Operator	Each jurisdiction	SCWMA	Annually
<b>Commercial Collection Programs</b>	Program Operator	Program Operator	SCWMA	Annually
<b>Office Paper Recovery</b>	Program Operator	Each jurisdiction	SCWMA	Annually
<b>Material Reuse/Recovery Operation</b>	Program Operator	DTPW	SCWMA	Quarterly
<b>Floor-Sort Recovery Facilities</b>	Program Operator	DTPW	SCWMA	Quarterly

4. If target sectors fail to participate adequately or as anticipated in recycling programs, the SCWMA will consider implementing the following:
  - Survey the sectors to identify reasons for lack of participation.
  - Increase incentives through legislation, regulation, or disposal rate modification.
  - Provide increased access to technical assistance.
  - Increase appropriate educational and promotional activities.
  
5. If markets or end-users prove inadequate, the SCWMA will consider implementing the following:
  - Perform market studies to determine problems with, or constraints to, marketing or using recovered products.
  - Investigate cost-effectiveness of end-use alternatives.
  - Explore alternative markets and end-uses.
  - Increase market outreach, education, promotion, and advertising.
  - Investigate marketing and coordinate with other jurisdictions to improve the quality of material for sale.
  
  - Funding to encourage market development operations or recovery programs in the county.
  
6. If some aspect of the recycling program does not meet local, state, or federal regulations, the SCWMA will consider implementing the following:
  - Identify the problem area.
  - Correct problems to meet local, state, and federal regulations as appropriate.
  - Provide reports and documentation to regulatory agencies to serve as evidence for a variance for a particular problem area.





