VANDENBERG AIR FORCE BASE

SOURCE REDUCTION AND RECYCLING ELEMENT

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Prepared by:

Public Works Department
Solid Waste Management Division
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EXECUTIVE SUMMARY
1: EXECUTIVE SUMMARY

1.1 VANDENBERG AIR FORCE BASE PROFILE

Vandenberg AFB is located in the western part of the County of Santa Barbara. Vandenberg AFB is similar to a city, with its own fire department, police department, industries, theater, restaurants, housing, library, medical clinic, and chapel. The majority of these activities occur within the ten square mile cantonment area of the base. The remaining facilities are generally dispersed along the 35 miles of coastline at various launch facilities. Some of the major characteristics of Vandenberg AFB include:

* 153.5 square miles of total land area
* 35 linear miles of shoreline
* 3,178 buildings, with over 2,000 of these being houses
* 16,476 persons comprise the average daily population, including workers, dependents, and visitors

Vandenberg AFB is unique not only in its military mission but also in the value of its environmental resources. Vandenberg’s large size and geographic location supports an abundant and diverse assembly of resources, including 35 miles of undeveloped coastline, over 600 known archaeologic sites, 166 miles of streams, 5,000 acres of wetlands, 9,000 acres of dune habitat along with many other unique habitats, a rich wildlife community, and many species of endangered plants and animals.
1.1.2 Mission

Vandenberg AFB is the only site in the free world from which intercontinental ballistic missiles and polar-orbiting space satellites are launched. The host unit is the Western Space and Missile System. The Strategic Missile Center is the major tenant unit and conducts missile combat crew training and operational testing and evaluation. There are also a number of contractor operations on base.

1.1.2 History and Population

Originally, the Vandenberg site was Camp Cooke, an Army tank and artillery training area activated in 1941. The Air Force acquired the north half of Camp Cooke in 1957, naming it Vandenberg AFB in 1958. The south half of the base was acquired at various times between 1958 and 1960, with the purchase of Sudden Ranch in 1960 to complete the current land holdings. Today, Vandenberg AFB is the second largest Air Force Base in the continental United States.

Vandenberg's population profile (Table 1) includes over 22,000 military and civilians. Vandenberg's housing stock includes 2,078 accompanied housing units, which includes 1,804 single family houses, 84 duplexes, 25 fourplexes, and one sixplex. In addition there is a mobile home park of 172 permanent sites and 60 dormitory buildings capable of housing 1,918 individuals.

<table>
<thead>
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<th>Table 1.1: Vandenberg AFB population profile.</th>
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<tr>
<td><strong>Population Breakdown</strong></td>
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<tr>
<td>Military permanent party</td>
</tr>
<tr>
<td>Military trainees</td>
</tr>
<tr>
<td>Civilian workers (including AAFES, Civil Service, contracts, etc.)</td>
</tr>
<tr>
<td>Total workforce</td>
</tr>
<tr>
<td>Military dependents</td>
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<tr>
<td>Total base population</td>
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1.2 COUNTY OF SANTA BARBARA PROFILE

The Santa Barbara County-Cities Area Planning Council Forecast '89 made the following observations and projections:

* The County's population will increase by 73,300 persons between 1980 and 2000 (Table 2). The majority of this population increase will occur in the North County cities of Santa Maria and Lompoc and the surrounding unincorporated areas. As shown by the recently published census figures for 1990, most of this population increase occurred during the 1980-1990 decade.

* The South Coast population, as a portion of the County total, will decrease from 57 percent of the total in 1980 to 49 percent in 2000.

* The largest contributor to the County's population growth will be immigration due to job opportunities at Vandenberg AFB and in the oil industry, among others.

* Environmental constraints limit the total amount of growth that can be accommodated without creating serious problems. This is especially true of the water supply and agricultural land. There is also continued concern for all other environmental and cultural resources.

<table>
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<tr>
<th>Market Area</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
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<tbody>
<tr>
<td>New Cuyama</td>
<td>1,200</td>
<td>1,300</td>
<td>1,300</td>
</tr>
<tr>
<td>Lompoc</td>
<td>44,800</td>
<td>53,600</td>
<td>60,800</td>
</tr>
<tr>
<td>Santa Ynez</td>
<td>14,300</td>
<td>18,700</td>
<td>23,800</td>
</tr>
<tr>
<td>Santa Maria</td>
<td>67,800</td>
<td>93,867</td>
<td>120,934</td>
</tr>
<tr>
<td>South Coast</td>
<td>170,900</td>
<td>183,400</td>
<td>197,400</td>
</tr>
<tr>
<td>County Totals</td>
<td>299,000</td>
<td>350,867</td>
<td>404,234</td>
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1.3 THE COUNTYWIDE INTEGRATED WASTE MANAGEMENT PLAN

The Countywide Integrated Waste Management Plan is a document which will guide solid waste management within the County of
Santa Barbara for the next ten years. Each jurisdiction within the County, including the Unincorporated County, the City of Santa Barbara, the City of Carpinteria, the City of Lompoc, the City of Santa Maria, the City of Solvang, the City of Guadalupe, and Vandenberg Air Force Base are mandated by the California Waste Management Act of 1989 (AB 939) to reduce their waste stream 25 percent by 1995 and 50 percent by 2000. To accomplish this, each jurisdiction will adopt its own Source Reduction and Recycling Element (SSRE), and Household Hazardous Waste Element (HHWE). A countywide Siting Element will address the siting of facilities necessary to complete the goals set forward in these jurisdictional elements.

Each SRRE will contain several components addressing issues including source reduction, recycling, composting, special wastes, education and public information, facility capacity, funding, and integration. The HHWE is a countywide document which addresses household hazardous waste generated in each jurisdiction within the County of Santa Barbara.

The attached preliminary draft includes the main components of the Vandenberg Air Force Base SRRE, including:

* Waste Generation Study
* Source Reduction
* Recycling
* Composting
* Special Wastes
* Education and Public Information, and
* Facility Capacity.

The remaining components, including funding and integration, rely upon the information contained in the above list of components, and will, necessarily, be completed after public review and agency review of this preliminary draft. The final draft of the Vandenberg Air Force Base SRRE will contain all components required by AB 939.

In addition to developing the programs identified above, the County's SRRE also describes who is responsible for implementation and the manner in which the programs will be evaluated and monitored. Short-term (1991 to 1995) and mid-term (1996 to 2000) goals and objectives have been identified. Each of the components of the SRRE is briefly described below.
1.3.1 Waste Generation Study

This component of the SRRE provides a summary and analysis of the waste generation survey completed to determine the constituent materials which compose solid waste generated on Vandenberg AF. The Waste Generation Analysis Component also identifies the constituent materials by volume, percentage in weight of volumetric equivalent, material type, and sources of generation. The potential waste diversion quantities and an identification of waste that cannot be diverted are also identified in the component.

1.3.2 Source Reduction

This component of the SRRE identifies specific objectives that are achievable and, when possible measurable and time-specific. The objective of this component is to minimize the quantity of solid waste generated by targeting specific waste types based on such criteria as the potential to extend the useful life of materials, products or packaging; the potential recyclability of the material, etc. The targeted materials include:

* paper
* yard/green waste
* plastics
* metals

Several alternatives have been identified by Vandenberg AF which are aimed at source reduction, including:

* rate structure modifications
* economic incentives
* technical assistance
* regulatory programs

1.3.3 Recycling

The Recycling Component of the SRRE identifies several programs that include:

* separation of recyclable materials from the waste stream through the following methods:
  -- drop-off recycling centers
  -- buyback recycling centers
  -- manual material recovery operations
-- mechanized material recovery operations
-- salvage at solid waste facilities

* zoning and building code modifications to encourage recycling
* changes in rate structures to encourage recycling
* methods to increase markets for recycled materials
* methods of handling recovered materials which preserve the integrity of the recovered materials so that the materials remain useful.

1.3.4 Composting

The Composting Component of the SRRE identifies both short- and medium-term market development objectives. Composting program alternatives include those alternatives whose products result from the controlled biological decomposition of organic wastes. Composting alternatives do not include waste composting at the site of generation (i.e., home composting) this alternatives is considered a source reduction method. Finally, the Composting Component describes the end markets or end users for the short-term (1991 to 1995). Measures that will be taken if uneconomical markets occur beyond the County’s control are also identified in the component.

1.3.5 Special Waste

The Special Waste Component of the SRRE requires discussion of the following special wastes handled and/or disposed of at County operated solid waste facilities:

* incinerator ash
* asbestos
* non-hazardous sewage sludge
* non-hazardous industrial sludge
* automobile shredder waste
* automobile bodies
* other special wastes

In addition, discussions on materials which require any type of special handling are included. AB 939 lists several material types which may or may not require special handling. Those material types which require special handling for disposal have specific goals and objectives identified in the component and a
discussion of the current disposal method. Goals and objectives have not been identified for those material types which do not require special handling. A brief discussion of these materials is included, however, since the materials are present as general refuse in the Vandenberg AFB wastestream.

It has been determined that the current management practices for special wastes handled on Vandenberg AFB meet all regulatory requirements for the safe handling and disposal. Therefore, as allowed by AB 939 regulations, no alternative methods of disposal are recommended by this component.

1.3.6 Education and Public Information

The Education and Public Information Component of the SRRE identifies specific goals and objectives for the short-term and medium-term planning periods. Data pertaining to waste categories, waste types, waste generators, and citizen attitudes toward recycling and source reduction are incorporated into source reduction and recycling Public Education and Information programs. In addition, the following information is included in this component:

* plans for expanding and modifying existing public education and information programs;
* public and private program implementation costs, revenues, and revenue sources; and
* methods by which the programs will be monitored and evaluated.

1.3.7 Disposal Facility Capacity

This component of the SRRE describes the existing Vandenberg AFB Sanitary Landfill.

In addition, the component identifies projected needs in order to serve Vandenberg AFB. These landfill need projections are predicted for 15 years. The impact of the implementation of source reduction, recycling, and composting programs are also incorporated into the 15-year landfill need projections.

1.3.8 Funding

The Funding Component of the SRRE presents the estimated costs for component programs to be implemented in the short-term
planning period (1991 to 1995). These costs include program planning and development, implementation of programs, and revenues.

1.3.9 Integration

The Integration Component describes the County's solid waste management practices which will fulfill the legislative goals (the mandates 25 and 50 percent diversion rates) of promoting integrated solid waste management in accordance with the AB 939 waste management hierarchy, including source reduction, recycling, composting, and environmentally safe land disposal of solid wastes.
ELEMENT GOALS AND OBJECTIVES
2: ELEMENT GOALS AND OBJECTIVES

This discussion establishes the Source Reduction and Recycling Element goals and objectives for Vandenberg Air Force Base. Specific objectives for each individual program area are included within the components of the Source Reduction and Recycling Element. The following are the overall element goals and objectives.

GOAL 1: MAXIMIZE DIVERSION FROM ALL PROGRAMS SET FORTH IN THE SOURCE REDUCTION AND RECYCLING ELEMENT

To meet the source reduction and recycling diversion requirements of Section 40051 of the Public Resources Code.

To meet this goal, the following objectives have been selected:

* to source reduce, recycle, and compost 25 percent of the solid waste generated on Vandenberg Air Force Base by January 1, 1995; and

* to source reduce, recycle, and compost .50 percent of the solid waste generated on Vandenberg Air Force Base by January 1, 2000.

Table 2.1 demonstrates the attainment of these objectives by the percent diverted through each program.

GOAL 2: MAXIMIZE PUBLIC AWARENESS IN ALL DIVERSION PROGRAMS

To achieve maximum public awareness in source reduction, recycling, and composting by residential, commercial, and industrial waste generators.

To meet this goal, the following objectives have been selected:

* to participate in the countywide education and public information campaign prepared by the County of Santa Barbara by providing funds for production and by
<table>
<thead>
<tr>
<th>Component/Program Total Waste Generation (tons)</th>
<th>1995 Percent Diverted</th>
<th>2000 Percent Diverted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source Reduction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing source reduction programs</td>
<td>2.4</td>
<td>2.6</td>
</tr>
<tr>
<td>Backyard composting</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>All other alternatives</td>
<td>0.9</td>
<td>1.7</td>
</tr>
<tr>
<td>Government procurement policies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source reduction education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awards campaign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feasibility study for variable can rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recoverable items drop-off center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feasibility study on business license fees</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Recycling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential curbside collection</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Commercial collection**</td>
<td>15.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Mulching</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Intermediate processing</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Mixed waste processing</td>
<td>*</td>
<td>15</td>
</tr>
<tr>
<td><strong>Composting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curbside yard waste collection</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Market development</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td><strong>Total Diversion</strong></td>
<td>42.0</td>
<td>59.0</td>
</tr>
</tbody>
</table>

* Diversion not quantifiable for these programs.
** Includes rock, concrete and asphalt.
*** Participation is dependant on Vandenberg AFB's feasibility determination.
Summed numbers may not total as displayed due to rounding.
incorporating the media elements into other promotional activities conducted on Vandenberg Air Force Base;

* by January 1, 1995, 50 percent and by January 1, 2000, 75 percent of Vandenberg Air Force Base residents will be aware of the need for recycling, source reduction, and composting as important methods of diverting materials from landfills and lessening the environmental impact of waste generation;

* by January 1, 1995, 50 percent of Vandenberg Air Force Base residents will be aware of at least one more opportunity to recycle, and by January 1, 2000, 50 percent of County residents will be aware of at least two more opportunities to recycle; and

* by January 1, 1995 25 percent of Vandenberg Air Force Base residents will be aware of at least one method of source reduction and one method of composting, and by January 1, 2000, 50 percent of Vandenberg Air Force Base residents will be aware of two or more methods of source reduction and one method of composting.

**GOAL 3: MAXIMIZE EDUCATIONAL OPPORTUNITIES**

To increase educational opportunities to encourage public awareness, involvement and pride in all source reduction, recycling, and composting programs through increased educational efforts.

To meet this goal, the following objectives were selected:

* to participate in the countywide umbrella education and public information campaign which will encourage residents, businesses, local government, and schools to work together to source reduce, recycle, and compost by 1995; and

* assist in coordinating the school education and outreach program for the Lompoc School District schools located on Vandenberg Air Force Base.

**GOAL 4: MAXIMIZE INTEGRATION OF ALL PROGRAMS**

To achieve maximum integration of source reduction, recycling, and composting programs.
To meet this goal, the following objective has been selected:

* to establish source reduction, recycling, and composting programs and services for use by all solid waste generators, including residential and commercial, on Vandenberg Air Force Base by 2000.

GOAL 5: MARKET DEVELOPMENT

To assist in the development of local, regional, and statewide markets for materials collected and processed through implementation of the programs adopted in the Source Reduction and Recycling Element.

To meet this goal, the following objectives have been selected:

* to promote the development of local and regional markets for materials recovered through Vandenberg AFB's recycling program by 2000;

* to promote the development of local and regional markets for materials produced through the composting programs that Vandenberg AFB will be participating in; and

* to facilitate the use of locally produced compost and mulch products by governmental agencies in public parks, civic centers and other facilities.
SOLID WASTE GENERATION ANALYSIS
3: SOLID WASTE GENERATION ANALYSIS

Based on the information generated for the County of Santa Barbara Waste Generation Study, the Solid Waste Generation Analysis (WGA) for Vandenberg Air Force Base has been prepared. The WGA includes lists of the materials currently disposed, materials currently diverted from disposal, materials which could potentially be diverted from disposal, and materials which are disposed of which cannot be diverted from disposal by selected solid waste diversion programs.

3.1 MATERIALS CURRENTLY DISPOSED AND CURRENTLY DIVERTED FROM DISPOSAL

Table 3.1 shows the materials currently disposed and currently diverted from disposal for Vandenberg Air Force Base. See the County of Santa Barbara Waste Generation Study for a complete characterization of the solid waste disposal and diversion streams.

3.2 MATERIALS CURRENTLY DISPOSED WITH DIVERSION POTENTIAL

The following waste types identified in the County of Santa Barbara Waste Generation Study could potentially be diverted through source reduction, recycling, and composting programs identified in this Source Reduction and Recycling Element. The following list does not mean that 100 percent of these materials are recoverable under the programs selected for implementation. Factors such as contamination, physical condition, and market availability may limit the quantity of certain materials that can be practically recovered. The following materials can potentially be diverted through new or existing solid waste diversion programs:

- Paper
- Cardboard
- Newspaper
- High Grade Paper
### Table 3.1: Materials which are currently disposed and currently diverted from disposal in tons per year for Vandenberg Air Force Base.

<table>
<thead>
<tr>
<th>Solid Waste Category</th>
<th>Quantity Disposed (tons per year)</th>
<th>Quantity Diverted (tons per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>5,897</td>
<td>678</td>
</tr>
<tr>
<td>Plastic</td>
<td>1,020</td>
<td>--</td>
</tr>
<tr>
<td>Glass</td>
<td>396</td>
<td>185</td>
</tr>
<tr>
<td>Metals</td>
<td>692</td>
<td>3,087</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>5,397</td>
<td>--</td>
</tr>
<tr>
<td>Organics</td>
<td>1,969</td>
<td>--</td>
</tr>
<tr>
<td>Other</td>
<td>584</td>
<td>--</td>
</tr>
<tr>
<td>Special Wastes</td>
<td>19</td>
<td>766</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,974</strong></td>
<td><strong>4,716</strong></td>
</tr>
</tbody>
</table>

**Plastic**
- HDPE
- PET
- Film Plastic
- Other Plastics

**Glass**
- Refillable Containers
- CA Redemption Glass
- Other Recyclable Glass

**Metals**
- Aluminum Cans
- Ferrous and Tin Cans
- Non-Ferrous and Aluminum Scrap
- White Goods

**Yard Waste**

**Organics**
- Food Waste
- Tires and Rubber
- Wood Waste
Textiles and Leather
Biodegradables

Other
Household Hazardous Waste

These waste types can be diverted through existing programs such as thrift store collection and other source reduction activities, curbside collection, drop-off centers, commercial source separated collection, mulching, and periodic household hazardous waste collection events. In addition, these materials can potentially be diverted by programs selected in this plan including: backyard composting, expanded source separated collection, mixed waste processing, composting, and a permanent household hazardous waste collection facility.

3.3 MATERIALS WHICH CANNOT BE DIVERTED FROM DISPOSAL

The following materials cannot be readily diverted from disposal through the programs selected for implementation in this plan:

Other Paper
Other Plastic
Non-Recyclable Glass

In addition to these materials, some of the waste types which may be targeted, such as food waste, textiles, and mixed paper, may only be diverted in limited quantities through activities such as drop-off centers, backyard composting, and collection for re-use. Although it is not recommended for implementation at this time, a mixed waste composting system could divert other paper, mixed paper, food waste, and some textiles, as well as other miscellaneous organic materials from disposal. This alternative will be considered for implementation in the medium-term planning period (1995-2000) or a subsequent plan update if it is necessary to achieve the plan goals and objectives.

Other plastic consists of materials such as plastic packaging and durable plastic products. These materials have little or no market value and currently cannot be collected or processed in a cost-effective manner. As plastics recycling methods and technologies advance, there may be more hope for recovering these materials. Although source reduction education programs specifically targeting these materials are recommended in this plan, it is expected that these materials will continue to be generated in significant quantities. It should also be noted that although some film plastics and HDPE containers can be
recovered through mixed waste processing it may be too difficult to market these materials to justify recovery.

Non-recyclable glass includes light bulbs, mirrors, pyrex, glassware, auto glass, and other similar materials. These materials are not generally considered recyclable and are not specifically targeted by any programs considered in this plan. In the medium-term update Vandenberg AFB may consider the feasibility of technologies such as glassphalt, which would enable the base to use otherwise unmarketable glass in the production of road materials.
SOURCE REDUCTION COMPONENT
4: SOURCE REDUCTION COMPONENT

Introduction

This source reduction component establishes objectives for the Vandenberg Air Force Base (AFB) source reduction program, describes existing activities, evaluates source reduction alternatives, recommends implementation of selected alternatives, and establishes a ten-year program implementation responsibility, estimates program costs, lists potential revenue sources and proposes a monitoring and evaluation system.

Component Summary

The following list summarizes source reduction alternatives to be implemented at Vandenberg AFB.

In the short-term planning period (1991 to 1995), Vandenberg AFB will:

1. Promote **backyard composting** to increase on-site management of food and yard waste.

2. Consider the adoption of a **procurement policy** to encourage increase purchase of products with source reduction attributes.

3. Provide **source reduction education** at Vandenberg AFB to facilities and households, as part of the campaign discussed in detail in the education and public information component.

4. Establish an **awards campaign** to recognize significant reduction achievements at Vandenberg AFB.

5. Provide **technical assistance** to government and private commercial/industrial facilities on the Base, helping them establish reduction and recycling programs.
6. Establish a pilot drop-off area for recoverable (reusable/repairable) items a to-be-determined location on base.

In the medium-term planning period (1996 to 2000), the source reduction program will consist of the following:

* Ongoing implementation and evaluation of the alternatives implemented in the short term.

* Readjustment of diversion goals for source reduction.

* Continually improving monitoring and quantifying methods.

**Background**

Source reduction is a key component of the Source Reduction and Recycling Element (SRRE), not only because it is given top priority in the Integrated Waste Management Hierarchy adopted in AB 939, but also because preventing waste makes better sense than having to manage it. Source reduction results from changes in the manufacturing process of goods, consumer buying habits, and activities by individual consumers, industry, and the public and private sectors that result in a net reduction in the generation of waste.

Source reduction measures aim to minimize the amount of waste being generated in the first place, as opposed to the traditional management approach of designing systems to handle waste after it has been generated. Since waste is reduced at the point of generation, in addition to saving landfill space, source reduction can save energy and raw materials, and avoid collection and disposal costs. Thus, source reduction is a call to make better use of our natural resources and minimize inefficiencies.

Although source reduction is given legislative priority and preferable to managing wastes, this component may be the hardest to implement for several reasons. The impact of source reduction measures is more difficult to quantify than that of other programs, such as recycling, and there are few source reduction programs already in place on base. In fact, there is limited practical experience with source reduction measures even on a nationwide basis. In addition, since the products and packaging consumers purchase are tied into a nationwide marketplace, local governments will have to coordinate with state and federal level efforts in order for significant changes to occur and for the local population to have more options available to them.
There are several basic approaches to source reduction evaluated in this component: rate structure modifications, economic incentives, education and technical assistance activities, and regulatory programs.

Rate structure modifications and economic incentives involve fees that reward source reduction and discourage waste production. Rate structure modifications applicable to Vandenberg AFB include volume-based rates (residents are charged for waste collection based on the amount of waste set out for collection) and the establishment of a drop-off area at a landfill where recoverable items can be deposited. Economic incentives include measures such as reduced business license fees for businesses servicing the Base that participate in source reduction activities, or deposits on selected goods or materials.

Educational and technical assistance activities involve efforts to inform individuals, government agencies and the commercial sector of the need to reduce waste generation and to provide assistance that will help them identify areas for change and guide them in implementing changes.

Regulatory programs involve more forceful measures such as proposals to ban products or packaging, or requirements that government agencies include source reduction considerations in their procurement process.

4.1 EXISTING CONDITIONS

4.1.1 Methodology

The principle method for determining the source reduction activities at Vandenberg and throughout the County of Santa Barbara was a combination mail and phone survey conducted by R.W. Beck and Associates. The survey subjects were selected from local telephone listings, California Integrated Waste Management Board information and word of mouth. Source reduction activities primarily took place at:

* antique shops
* compost and yard waste program sites
* food banks
* salvage/thrift operations, and
* used book and records stores.
Survey respondents were asked to provide the following information:

* total amount of material collected;
* origin of each material type (by jurisdiction);
* percentage generated by residential, commercial and industrial sector;
* the buyer and seller of the material (in order to prevent double counting).

In addition, County, City and Federal offices, as well as randomly selected residents, businesses and industries, were surveyed and asked whether they practiced any of the following:

**Residential**
1. Bulk purchasing
2. Use of cloth diapers
3. Backyard composting
4. Appliance and furniture repair
5. Donating clothing, food, toys, and used goods to charity.

**Commercial/Industrial**
1. Double sided copying
2. Packaging reuse
3. Use of reusable kitchen ware and utensils
4. Equipment repair
5. Electronic mail.

**4.1.2 Findings**

The survey identified 2.2% source reductio diversion (472 residential tons) at Vandenberg AFB. Furniture reuse accounted for 2% (414 tons) reduction and clothing reuse for 0.2% (34 tons). The remaining 21 tons represented reuse of kitchenware, books, records and toys. There are currently no plans to decrease in scope, phase out or close any of the identified source reduction activities in the short or medium-term planning period. (For summary tables, see the Waste Generation Study, Table 3-6, p. 3-26 and Table 3-AQ, p. 3-47.)
4.2 SOURCE REDUCTION COMPONENT OBJECTIVES

This source reduction component has specific goals and objectives. The program goals are general changes that Vandenberg AFB hopes will occur as a result of the source reduction measures implemented. The component objectives, on the other hand, are more time specific and quantifiable changes that the source reduction program should bring about.

4.2.1 Source Reduction Program Focus

Since many different actions lead to source reduction and various groups may be involved, it is easiest to express the purpose of the Source Reduction Program in terms of two main target groups and the changes that the program will aim to bring about. These changes, listed below, include the source reduction objectives required in the regulations, as well as additional ones.

Targeted Group: Product/packaging designers and manufacturers

Desired Changes:

* use of less materials in the production process (i.e., thinner bags);

* production of fewer nonrecyclable products or packages;

* production of alternatives that are reusable, refillable, repairable, or have longer useful lifespans in place of disposable goods production;

* reduced packaging production;

* increase efficient use of materials in production operations, processes, and equipment;

* increased consideration of product lifespan/durability, reusability, and recyclability in product and packaging design criteria;

* production of fewer toxic products and/or goods made with toxic constituents.
Target Group: Consumers/generators (individuals, government agencies, commercial sector)

Desired Changes:
* less use of non-recyclable products and/or packaging;
* use of alternatives that are reusable, refillable, repairable, or have longer useful lifespans, in place of disposable goods;
* less use of packaging;
* less generation of yard waste;
* increased participation in backyard composting activities;
* increased consideration of product lifespan/durability, reusability, and recyclability as purchasing criteria;
* less use of toxic products and/or goods made with toxic constituents.

4.3 SOURCE REDUCTION PROGRAM OBJECTIVES

The objectives of the Source Reduction Program serve as a measuring stick against which to determine if the alternatives implemented have achieved the expected landfill diversion. The sum impact of the source reduction alternatives implemented will allow Vandenberg AFB to reach the following alternatives.

The short-term objectives (1991 to 1995) are:

* By 1995, to reduce waste generation by a total of three percent through all source reduction activities implemented. The source reduction activities implemented will aim to bring about the desired changes presented on the previous page (i.e., use of fewer materials by manufacturers, decreased use of disposables by consumers).

* By 1993, to have developed an instituted the most efficient and effective methods of quantifying source reduction activities on Base.

* From the conception of the Source Reduction Program, to work in coordination with the County of Santa Barbara and
the incorporated cities, to the extent feasible, on program design, implementation and monitoring.

* From the conception of the Source Reduction Program to monitor and support state and federal source reduction efforts.

The medium-term objectives (1996 to 2000) are:

* By the year 2000, to reduce waste generation by a total of five percent through all source reduction activities implemented. The source reduction activities implemented will aim to bring about the desired changes presented on the previous page (i.e., use of fewer materials by manufacturers, decreased use of disposables by consumers).

* By 1996, to have evaluated the success of the Source Reduction Program during the short-term period, and redirect efforts accordingly.

* To continue refining the methods of quantifying source reduction activities.

* To continue to work in coordination with the County of Santa Barbara and the incorporated cities, to the extent feasible, on program design, implementation and monitoring.

* To continue to monitor and support state and federal source reduction efforts.

4.4 TARGETED MATERIALS

The AB 939 Regulations require each jurisdiction to identify specific waste types to be diverted through the source reduction program. Priority materials were identified based on the Solid Waste Generation Study and the following reasons:

* contribute significantly to the volume of the wastestream;

* contribute significantly to the weight of the wastestream;

* have high potential for reuse or extending their useful lifespans;
* are fairly easy to reduce;
* are significant contributors to solid waste hazards;
* are made of non-renewable resources;
* have limited recyclability; and/or
* can be replaced with comparable, readily available alternatives.

Table 4.1 lists the chosen priority waste types, the criteria and/or rationale for choosing the waste type, and the possible methods of reducing the percentage of the waste in the solid waste stream.

4.5 EVALUATION OF ALTERNATIVES

The alternatives evaluated in this component have been divided into four categories: rate structure modifications, economic incentives, educational and technical assistance, and regulatory programs. The following section presents a brief description of each alternative to be evaluated, followed evaluation of the alternatives based on a set of six criteria and four evaluative discussions. The evaluation is then presented in summary matrices. Alternatives such as product/packaging bans, deposits, refunds and advanced disposal fees have not been evaluated because they are difficult to adopt and administer at the local level and are best done at the state or federal level. Vandenberg Air Force Base could, however, monitor and support such efforts at the state and federal levels. These efforts could include:

* support and involvement with a marketing task force on a regional, state, and/or federal level; and

* assigning a staff person to monitor state and federal legislation which affects source reduction.

4.5.1 Evaluative Criteria

This section defines the six criteria and four evaluative discussions that will be used to evaluate the source reduction alternatives being considered by the County. The regulations
<table>
<thead>
<tr>
<th>Priority waste</th>
<th>Criteria/Rationale</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>High grade paper</td>
<td>Large percentage of the waste stream. High potential for reduction and effective</td>
<td>* Two-sided copying</td>
</tr>
<tr>
<td></td>
<td>alternatives available.</td>
<td>* Electronic mail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Procurement of recycled/able paper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Use of scrap paper</td>
</tr>
<tr>
<td>Mixed paper</td>
<td>Large percentage of the waste stream. Limited recyclability.</td>
<td>* Reduce junk mail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Minimize packaging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Use of scrap paper</td>
</tr>
<tr>
<td>Yard waste</td>
<td>Large percentage of residential waste stream. Presents hazard in landfills in</td>
<td>* On-site composting and mulching</td>
</tr>
<tr>
<td></td>
<td>contributing to methane gas production. Ease of reduction</td>
<td>* Xeriscape practices</td>
</tr>
<tr>
<td>Food waste</td>
<td>Can contaminate other recyclables, such as paper, reducing the potential to recover</td>
<td>* On-site composting</td>
</tr>
<tr>
<td></td>
<td>them down stream.</td>
<td>* Food share</td>
</tr>
<tr>
<td>Plastics</td>
<td>Limited recyclability due to collection costs and markets are not yet firm.</td>
<td>* Use of more reusables</td>
</tr>
<tr>
<td>Household hazardous waste</td>
<td>Present potential hazards to the general public, waste haulers, and the environment.</td>
<td>* Purchase less toxic alternatives</td>
</tr>
<tr>
<td></td>
<td>Many have alternatives.</td>
<td></td>
</tr>
<tr>
<td>Textiles</td>
<td>Limited recovery possible once combined with mixed waste. High potential for reuse</td>
<td>* Thrift store reuse</td>
</tr>
<tr>
<td></td>
<td>through thrift stores.</td>
<td></td>
</tr>
<tr>
<td>White goods</td>
<td>High potential for repair and reuse.</td>
<td>* Thrift store reuse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* More repairs/rentals</td>
</tr>
</tbody>
</table>
pursuant to AB 939 require that six criteria be used to evaluate source reduction alternatives are:

* **reduction effectiveness:** the effectiveness of the alternative in reducing either solid waste volume, weight, percentage in weight or its volumetric equivalent.

* **potential hazards:** the alternative's potential for environmental or human health/safety impacts.

* **ability to accommodate changing economic, technological, and social conditions:** the alternative's ability to hold up against and accommodate changes in economic, technological and social conditions, such as having a flexible technology that can adapt to changing market needs.

* **consequences on wastestream:** how implementation of the alternative will impact the wastestream, including the types of waste that would be reduced in the wastestream, as well as the alternatives' potential to result in negative consequences, such as shifting solid waste generation from one type of solid waste to another.

* **time frame for implementation:** the time required to implement the alternative.

* **facility needs:** the need for new facilities or facility expansion to implement the alternative. For example, an alternative that could make use of existing equipment and systems would have fewer facility needs.

In addition to the above six criteria, the AB 939 regulations require discussions on the following four issues:

* **consistency with local policies, plans, and ordinances:** the consistency of the alternative with local policies, plans, and ordinances.

* **institutional barriers to implementation:** the existence of institutional barriers, such as permitting requirements, to the alternative. This criterion would include consideration of public acceptance, private sector acceptance, impact on jobs, and compatibility with the existing waste management infrastructure.
* costs in the short- and medium-term: the cost of implementing the alternative.

* end-uses/market availability: the availability of end-uses or markets for the materials/products produced.

4.5.2 Considered Source Reduction Alternatives

This section describes the possible source reduction alternatives including rate structure modifications, economic incentives, educational and technical assistance, and regulatory programs.

Rate Structure Modifications

**Pilot Drop-off Area for Recoverable Items**

In this alternative a pilot drop-off area for reusable or repairable items to be deposited would be established at the Vandenberg AFB Landfill. Arrangements could be made to have local charitable organization pick-up the items for resale at thrift stores or for repair/remanufacture. If a tip fee is established at the landfill, the fee for these items could be reduced to encourage salvage of these items at these sites.

Economic Incentives

**Loans, Loan Guarantees and Grants**

In this alternative, Vandenberg AFB would make loans and grants available to encourage source reduction related services, such as thrift stores, used book stores, remanufacturing facilities, and rental and repair stores. Grant money could be made available to organizations or businesses proposing programs that would advance source reduction, such as development of educational materials, a waste exchange network, or implementation of model projects, such as retooling a manufacturing process or setting up an office reduction program.

Educational and Technical Assistance

**Backyard Composting**

In order to increase backyard composting of yard wastes, food wastes, and other organic materials, Vandenberg AFB would establish a program to target base housing with information and technical assistance. Backyard composting bins could be
provided along with materials promoting xeriscape practices which reduce yard waste generated through design of landscapes featuring limited foliage and slow growing vegetation.

Technical Assistance to Governmental and Non-Governmental Facilities on Base

In this alternative, Vandenberg would establish a program to assist government and non-governmental facilities with waste evaluations and implementation of source reduction programs. Waste evaluations identify areas where changes can be made to everyday practices to take advantage of source reduction and recycling opportunities. Procurement policies can be instituted that favor purchasing of items with source reduction attributes (double-sided copiers, non-toxic cleaners, remanufactured or recyclable items, etc.). Non-procurement measures include changes in everyday operations, such as offices switching to use of electronic mail systems and double-sided copy machines, or manufacturing industries retooling their operations to minimize use of raw materials. Facilities with the highest potential for source reduction could be targeted. A Waste Exchange Program could also be established so that materials no longer useful to one operation can be used by another.

Source Reduction Education

In this alternative, Vandenberg would consider use of a wide range of methods to get source reduction information out to the Base population. Methods may include flyers, newspaper coverage, school curricula, and radio and television spots. Specific audiences would have to be clearly identified (individual consumers, businesses) and the proper messages developed. Information on source reduction might be effectively combined with recycling information.

Awards Program

In this alternative, Vandenberg would provide awards for source reduction achievements and contributions. A wide range of players, from individuals to businesses on Base, could be eligible. Recognition could be given to those providing source reduction services (thrift stores, etc.), as well as those that have incorporated source reduction practices elsewhere, such as offices that have established reduction programs. Decisions would have to be made as to who would be eligible, how the program would be publicized, what the application and selection process would be, and what form the recognition would take.
Regulatory Programs

Procurement Policy

In this alternative, Vandenberg would consider adoption of a policy favoring procurement of items with source reduction attributes (e.g., two-sided copiers, non-toxic cleaners, etc.).

Required Government Reduction Plans and Reports

In this alternative, Vandenberg would require government facilities to conduct waste evaluations and develop reduction plans. Monitoring and reporting mechanisms would help ensure implementation and compliance. Successful programs could serve as models for the commercial sector.

Required Commercial/Industrial Sector Reduction Plans and Reports

In this alternative, Vandenberg AFB would require private and commercial operations to conduct waste evaluations and develop reduction plans. Monitoring and reporting mechanisms would help ensure implementation and compliance.

4.5.3 Evaluative Criteria and Discussions

Effectiveness

The impact of the source reduction measures under consideration may be difficult to estimate since there is minimal documented experience with most of these activities. In addition, methods for quantification are still in the experimental stages and it may be difficult to quantify the impact, relate it to the source reduction alternative implemented, or distinguish it from the impact of recycling activities.

Drop-off for Recoverable Items:

Establishing a separate area for recoverable items has proven effective in other areas. Arranging for a local charitable organization to take the items and/or reducing the tip fee for such items will increase chances for success.
Loans, Loan Guarantees and Grants: Effectiveness will vary since funds can be made available for a range of things, from purchase of a two-sided copy machines to establishment of a waste exchange program or development of education materials. Actual diversion results from this alternative would be difficult to quantify.

Backyard Composting: Effectiveness will depend on the participation rate resulting from the number of homes or facilities involved, the level of promotion done and the influence of financial incentives. Approximately 0.5 to 1.5 percent diversion is possible.

Technical Assistance to Facilities: Effectiveness may vary depending on whether the base commander decides to mandate such assistance; on the number and types of facilities assisted; whether financial incentives are used; the number that choose to implement changes, as well as the type of changes made (procurement, non-procurement, etc.).

Source Reduction Education: Effectiveness will vary depending on how ambitious a program is launched and the impact is likely to be most noted in the medium term. Actual diversion resulting from this alternative will be difficult to quantify.

Awards Program: Effectiveness will depend on how the program is designed, who is eligible, how well it is advertised and how much response it receives. Actual diversion resulting from this alternative will be difficult to quantify.

Procurement Policy: Effectiveness could be significant since government procures a large
<table>
<thead>
<tr>
<th>Source Reduction Component</th>
<th>Vandenberg Air Force Base</th>
<th>Source Reduction and Recycling Element</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required Government Plans:</strong></td>
<td>amount of products and services. May also bring about positive changes in manufacturers and suppliers.</td>
<td></td>
</tr>
<tr>
<td><strong>Required Commercial and Industrial Plans:</strong></td>
<td>Effectiveness could be significant since procurement and non-procurement changes could impact a wide range of waste generation practices. May also bring about positive changes in manufacturers and suppliers.</td>
<td></td>
</tr>
<tr>
<td><strong>Hazards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drop-off for Recoverable Items:</strong></td>
<td>Hazards may be associated with site if drop-off area is insufficiently monitored and maintained. Potential vector, odor, and fire hazards.</td>
<td></td>
</tr>
<tr>
<td><strong>Loans, Loan Guarantees and Grants:</strong></td>
<td>None identified.</td>
<td></td>
</tr>
<tr>
<td><strong>Backyard Composting:</strong></td>
<td>Hazards might include odors, fire attraction of flies and rodents if backyard composting done improperly.</td>
<td></td>
</tr>
<tr>
<td><strong>Technical Assistance to Facilities:</strong></td>
<td>None identified.</td>
<td></td>
</tr>
<tr>
<td><strong>Source Reduction Education:</strong></td>
<td>None identified.</td>
<td></td>
</tr>
<tr>
<td><strong>Awards Program:</strong></td>
<td>None identified.</td>
<td></td>
</tr>
<tr>
<td><strong>Procurement Policy:</strong></td>
<td>None identified.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td></td>
</tr>
</tbody>
</table>
Required Government Plans: None identified.

Required Commercial and Industrial Plans: None identified.

Ability to Accommodate Change

Drop-off for Recoverable Items: Can be designed to fit existing economic, technological and social situation and can be modified to meet changes in any of these areas.

Backyard Composting: This program involves mostly education and minimal capital investment. It is flexible and can be adapted to fit economic, technological and social changes.

Technical Assistance to Facilities: This alternative involves mostly providing information and potentially some staff time for site visits. It is flexible and can be adapted to fit economic, technological and social changes.

Source Reduction Education: This alternative involves mostly development and distribution of information and educational materials. Messages and methods of distribution can be adapted to fit economic, technological and social changes.

Awards Program: Can be designed to fit existing economic, technological and social situation and can be modified to meet changes in any of these areas.

Procurement Policy: Can be designed to fit existing economic, technological and social situation and can be modified to meet changes in any of these areas.

Required Government Plans: Can be designed to fit existing economic, technological and social
situation and can be modified to meet changes in any of these areas.

Required Commercial and Industrial Plans:
Can be designed to fit existing economic, technological and social situation and can be modified to meet changes in any of these areas.

Consequences on Wastestream

Drop-off for Recoverable Items:
Reduced disposal of recoverable items, such as mattresses, furniture, white goods, and appliances.

Loans, Loan Guarantees and Grants:
Will vary depending upon the type of source reduction activity and/or business assisted. May be instances where support of one business or activity might shift waste generation from one type to another.

Backyard Composting:
Likely to result in a decrease in food wastes, yard wastes, and other organic materials from the residential stream. May bring similar reduction in commercial stream if commercial and government facilities are targeted by the program.

Technical Assistance to Facilities:
Will vary depending on the types of businesses assisted, how many implement programs, and exactly what source reduction actions are taken.

Awards Program:
Will vary depending on what entities become interested in receiving recognition, and what types of source reduction programs are implemented.
Procurement Policy: Could have a significant impact in source reducing key materials purchased by the public sector.

Required Government Plans: Could have a significant impact in reducing materials generated by the public sector, such as office paper.

Required Commercial and Industrial Plans: Impact could be significant in reducing main materials generated by the commercial sector.

Time Frame for Implementation

Drop-off for Recoverable Items: Can be implemented in the short or medium term once site(s) have been evaluated and staff has been assigned to handle administrative needs.

Loans, Loan Guarantees and Grants: Could be implemented in short or medium term once funds are made available, administrative details have been handled, and staff needs have been addressed.

Reduced Business License Fees: Could be implemented in short or medium term once administrative details have been handled, and staff needs have been addressed.

Backyard Composting: Can be implemented in the short or medium term once funding has been obtained, staff needs have been addressed, and educational materials have been developed.

Technical Assistance to Facilities: Could be implemented in the short or medium term, once funding has been obtained, staff needs have been addressed, information materials
have been prepared, and facilities have been targeted.

Source Reduction Education:
Could be implemented in the short or medium term, once funding has been secured, staff needs have been addressed, educational and informational materials have been designed and produced, and dissemination method has been determined.

Awards Program:
Could be developed in the short or medium term, once funding has been obtained, staff needs have been addressed, the eligibility and selection process has been developed, and the form of recognition has been defined.

Procurement Policy:
Could be implemented in the short or medium term, once staff has been assigned to draft an ordinance, staff needs have been addressed and administrative details have been handled.

Required Government Plans:
Could be implemented in the short or medium term, once funding has been obtained and staff needs have been addressed.

Required Commercial and Industrial Plans:
Could be implemented in the short or medium term, once funding has been obtained and staff needs have been addressed.

Need For Facilities

Drop-off for Recoverable Items:
May require development of special tipping areas at existing transfer stations or landfills for recoverable items.

Loans, Loan Guarantees and Grants:
No new facility needs.
<table>
<thead>
<tr>
<th>Source Reduction Component</th>
<th>Vandenberg Air Force Base</th>
<th>Source Reduction and Recycling Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backyard Composting:</td>
<td>May require storage area if bins are to be purchased for distribution to residents.</td>
<td></td>
</tr>
<tr>
<td>Technical Assistance to Facilities:</td>
<td>No new facility needs.</td>
<td></td>
</tr>
<tr>
<td>Source Reduction Education:</td>
<td>No new facility needs.</td>
<td></td>
</tr>
<tr>
<td>Awards Program:</td>
<td>No new facility needs.</td>
<td></td>
</tr>
<tr>
<td>Procurement Policy:</td>
<td>No new facility needs.</td>
<td></td>
</tr>
<tr>
<td>Required County Plans:</td>
<td>No new facility needs.</td>
<td></td>
</tr>
<tr>
<td>Required Commercial and Industrial Plans:</td>
<td>No new facility needs.</td>
<td></td>
</tr>
</tbody>
</table>

Consistency with Local Plans, Policies and Ordinances

All of the source reduction alternatives under consideration appear to be consistent with current plans, policies and ordinances, although some of the regulatory alternatives, such as requiring reduction and recycling plans, may encounter some resistance.

Institutional Barriers

Institutional barriers facing source reduction alternatives vary and are identified below:

Establishing a drop-off area for recoverable items at Vandenberg AFB Landfill may face some space, staff, and administrative constraints. Also, with respect to reducing fees for select items, there is currently no tip fee.

Adoption of a procurement policy may face limitations in that procurement at Vandenberg AFB is completely centralized, with a large supply contract for the entire Base, which is renewed every five years.

Requiring reduction and recycling plans of government or commercial/industrial facilities would require staff time to administer, monitor and enforce the program, and there might be resistance from the commercial/industrial sector.

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Providing loans, loan guarantees and grants may face some barriers because of the need to have funds available and the administrative costs that would be involved.

Reducing or waiving business license fees may be constrained if the cost of administration is significant or the loss of revenue to the County is too high.

Backyard composting could potentially face barriers if sites are poorly managed; program success will depend greatly on how reliably individuals manage their sites.

Technical assistance to county or commercial/industrial facilities will face the challenge of getting facilities to change their current procurement and operating practices.

Implementation Costs

In general, the main costs associated with the source reduction alternatives under consideration are staff time needed to get implementation underway and to carry out ongoing administration. Given the possible range of staff time and administration costs which would potentially be allocated to the implementation of these alternatives, it would be unrealistic and highly artificial to assign operating costs for this level of analysis. Costs for the selected programs have been estimated, where feasible, in section 4.7.3 of this component.

Establishment of a drop-off area for recoverable items would require staff time to evaluate sites for space and administrative constraints, obtain new facility permits, contact local charitable organizations, update facility permits at sites currently permitted, maintain the area, handle illegal dumping, and monitor the results. Facility improvements may be needed to establish a separate drop-off area.

The costs associated with loans, loan guarantees and grants would depend on the level of funds to be made available and source of funds. In addition, there would be costs associated with staff time to administer, monitor and enforce the program.

Backyard composting would involve costs for staff time and expenses associated with developing and distributing informational materials, handling questions or complaints (i.e., addressing fly and odor concerns), and monitoring the program. Additional costs will be incurred if bins are to be provided free
or at low cost (they must be bought, stored and distributed) and if any one-on-one or group training sessions will be planned.

Providing technical assistance to facilities would involve costs for staff time and expenses associated with drafting, producing and distributing informational materials, holding informational meetings, and monitoring diversion. There would be additional costs if staff helped conduct waste assessments or helped set-up a waste-exchange program.

Source reduction education would involve costs for staff time and expenses associated with drafting, producing and distributing materials, buying add space, and providing outreach.

The awards program would involve costs for staff time and expenses related to development of the program, soliciting and selecting recipients, production of the actual awards, and any publicity used to congratulate award recipients.

A procurement policy would require staff time and have costs associated with evaluating feasibility, revising current policy, handling administrative details, and preparing reports to monitor progress. Additional funds would be needed if higher prices were to be paid for preferred products.

Required government plans and required commercial/industrial plans would involve staff time and costs associated with developing and producing informational materials used to direct waste assessments, assisting with assessments, responding to ongoing questions and informational needs, reviewing reports and monitoring and enforcing compliance.

Market Availability

The market availability criterion is not applicable to the source reduction alternatives under consideration. Some source reduction alternatives, such as a procurement policy, could increase procurement of items with recycled content and the amount of recyclable items that might be diverted. It is virtually impossible, however, to assess the impact this would have on the amount of recyclables to be marketed. Some source reduction alternatives may imply the need for outlets that will absorb reusable or repairable items (such as thrift stores or repair stores). This, however, does not lend itself to the type of analysis required to address marketing of recyclable materials.
4.5.4 Summary Matrix of Evaluation of Alternatives

The matrices on the following pages provide a summary of the comparative evaluation of source reduction alternatives (Tables 4.1, 4.2 and 4.3).

4.6 SELECTION OF SOURCE REDUCTION ALTERNATIVES

Based upon existing conditions, data from the Waste Generation Study, and the evaluation of alternatives in the previous section, the source reduction alternatives listed below were selected for implementation.

The following list summarizes source reduction alternatives to be implemented at Vandenberg AFB.

In the short-term planning period, the Vandenberg AFB will:

1. Promote **backyard composting** to increase on-site management of food and yard waste.

2. Consider the adoption of a **procurement policy to** encourage increased purchase of products with source reduction attributes.

3. Provide **source reduction education** at Vandenberg AFB to facilities and households, as part of the campaign discussed in detail in the education and public information component.

4. Establish an **awards campaign** to recognize significant reduction achievements at Vandenberg AFB.

5. Provide **technical assistance** to government and private commercial/industrial facilities on the Base, helping them establish reduction and recycling programs.

6. Establish a **pilot drop-off area for recoverable (reusable/repairable) items** at a to-be-determined location on Base.

In the medium-term planning period, the source reduction program will consist of the following:

* Ongoing implementation and evaluation of the alternatives implemented in the short-term.
<table>
<thead>
<tr>
<th>Action</th>
<th>Potential Hazards</th>
<th>Adaptability</th>
<th>Consequences on Waste Stream</th>
<th>Time Frame for Implementation</th>
<th>Facility Need</th>
<th>Consistency with Local Policy</th>
<th>Institutional Barriers</th>
<th>Implementation Costs</th>
<th>Market Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site maintenance could be a problem.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
<td>Can reduce disposal of targeted items: furniture, white goods.</td>
<td>Can be implemented when site is evaluated and administration is set up.</td>
<td>May need special drop-off area.</td>
<td>Consistent with local plans and policies.</td>
<td>None identified.</td>
<td>Costs associated with administration and facility improvements.</td>
<td>Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Site maintenance could be a problem.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
<td>Effect will vary on type of activity or business targeted.</td>
<td>Can be implemented once funds are made available &amp; administration is in place.</td>
<td>No new facilities are needed.</td>
<td>Consistent with local plans and policies.</td>
<td>None identified.</td>
<td>Costs will depend on level of funds available for program.</td>
<td>Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Site maintenance could be a problem.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
<td>Effect will vary on type of activity or business targeted.</td>
<td>Can be implemented when administrative staff is available.</td>
<td>No new facilities are needed.</td>
<td>Consistent with local plans and policies.</td>
<td>None identified.</td>
<td>Costs include loss of license revenue and additional administration.</td>
<td>Not applicable.</td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>Potential Hazards</td>
<td>Adaptability</td>
<td>Consequences on Waste Stream</td>
<td>Time Frame for Implementation</td>
<td>Facility Need</td>
<td>Consistency with Local Policy</td>
<td>Institutional Barriers</td>
<td>Implementation Costs</td>
<td>Market Availability</td>
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</tr>
<tr>
<td>Odor</td>
<td>Odors and attraction of pests are potential hazards.</td>
<td>Program requires little capital investment and is very flexible.</td>
<td>Will decrease food wastes, yard wastes and other organics from residential waste stream.</td>
<td>Can be adopted in short or medium term once funding and staff needs are met.</td>
<td>May need storage facility.</td>
<td>Consistent with standard operating procedures.</td>
<td>Involvement of local health officials if sites are poorly managed.</td>
<td>Costs include staff time to develop, promote &amp; administer the program &amp; providing bins to participants.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Fly</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
<td>Will vary depending on number and types of assisted facilities.</td>
<td>Can be adopted in short or medium term once funding and staff needs are met and informational materials are prepared.</td>
<td>No new facilities are needed.</td>
<td>Consistent with standard operating procedures.</td>
<td>Current institutional practices may be barriers.</td>
<td>Costs involve staff time to develop &amp; produce materials and conduct evaluations.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Rodent</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
<td>Will vary depending on what entities become interested and what programs they develop.</td>
<td>Can be adopted in short or medium term once funding and staff needs are met and informational materials are prepared.</td>
<td>No new facilities are needed.</td>
<td>Consistent with standard operating procedures.</td>
<td>None identified.</td>
<td>Costs involve staff time to develop &amp; produce materials and promote program.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Insect</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
<td>Will vary depending on what entities become interested and what programs they develop.</td>
<td>Can be adopted in short or medium term once funding and staff needs are met and eligibility and selection process is determined.</td>
<td>No new facilities are needed.</td>
<td>Consistent with standard operating procedures.</td>
<td>Administrative costs may be prohibitive.</td>
<td>Costs include staff time to develop approach and select recipients.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>
### EVALUATION OF SOURCE REDUCTION ALTERNATIVES

<table>
<thead>
<tr>
<th>Source Reduction Alternatives</th>
<th>Evaluative Criteria</th>
<th>Evaluative Discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Potential Hazards</td>
<td>Adaptability</td>
</tr>
<tr>
<td>Large Projects</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
</tr>
<tr>
<td>May Active Projects</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
</tr>
<tr>
<td>May Active Projects</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
</tr>
<tr>
<td>May be considered no projects</td>
<td>None identified.</td>
<td>Can be modified to fit changes in economic, social and technological situation.</td>
</tr>
</tbody>
</table>
* Readjustment of diversion goals for source reduction.
* Continually improving monitoring and quantifying methods.

4.6.1 Program Description and Rationale for Selection

The following section describes in more detail the alternatives selected for implementation, provides a rationale for why they were selected, and an estimate of the solid waste diversion anticipated from their implementation. Alternatives not selected for implementation were: loans, loan guarantees, and grants and required government or commercial sector reduction plans. The former was not selected because the potential for diversion is minimal and the administrative needs are significant. Requiring reduction plans from government or commercial and/or industrial facilities was not selected because significant resistance would be likely and the administrative needs significant. Instead, Vandenberg will first provide technical assistance to encourage voluntary actions, leaving open the possibility to require plans if voluntary involvement proves minimal.

Pilot Drop-off Area for Recoverable Items

Vandenberg will evaluate the feasibility of establishing a separate drop-off area for recoverable items such as mattresses, furniture, white goods and appliances. Possible locations for such a drop-off center might be the base thrift store or the Airman’s Attic. The actual location will be determined as part of the feasibility evaluation. This alternative has been selected because it provides an opportunity, and possibly a financial incentive, to recover items that can be reused or remanufactured and good records can be kept allowing diversion to be quantified.

Backyard Composting

Promotion of backyard composting at Vandenberg has been selected for many reasons. Yard wastes represent 41.3 percent of Vandenberg’s residential tonnages and food waste accounts for 7 percent. The most cost-effective and low-impact way to minimize landfiling of these materials is on-site reduction and composting. There are no collection, processing or facility costs involved, potential hazards are minor, the promotion can be started-up quickly, and it serves to involve household residents and educate them about the wastes they generate. This alternative is also consistent with standard operating procedures and faces no significant institutional barriers. Although increased
backyard composting will not eliminate the need for centralized collection and composting of yard wastes, to the extent that yard wastes can be managed on-site, collection and processing costs can be reduced. Backyard composting may also be one of the few source reduction activities that can be quantified by Vandenberg and credited toward achieving the mandated diversion rates.

Vandenberg could establish its backyard composting program making use of work currently underway by the County of Santa Barbara. In July 1990, the County Solid Waste Management Division began to provide funding for an intern at the Community Environmental Council (CEC) to assess the feasibility of a full-scale backyard composting program on the South Coast. The pilot program would then serve as a model for planning a program in the North County. The pilot project developed involved four South Coast communities, two neighborhoods in the City of Santa Barbara and two in the unincorporated area. Some free newspaper publicity was used initially to make residents aware of the program, followed in mid-January 1991 by a targeted direct-mail campaign to 4,745 single-family residences. The direct-mail campaign included a brochure describing the pilot and that bins were available at no cost or participants could get information on building their own bins. The brochure also served as a sign-up form, and although a response rate of 5 percent was anticipated, the actual rate exceeded 12 percent.

In early March 1991, bins were delivered along with a resource guide providing instructions for use of bins and a list of yard waste reduction strategies (use of mulch, leaving grass on lawns, etc.). Also included was information on workshops to be held at local schools and a number to call to get answers to general questions. The pilot project currently includes 548 residences (approximately 225 in the unincorporated area and 323 in the City of Santa Barbara). About 30 of those in the pilot program chose to build their own bins and the remainder received free bins. Several dozen additional residences targeted by the direct-mail campaign have requested bins but there were no more available so they have received information on building their own. In addition, as a result of the newspaper coverage earlier in the pilot, over 200 residences that were outside of the direct-mail campaign have requested and received information on how to compost and build a bin, or where to purchase one.

County staff will analyze the surveys and expand the program based on the analysis to target all single-family units on the South Coast (City of Santa Barbara, City of Carpinteria, South County unincorporated area), the City of Solvang, and North
County unincorporated areas (Santa Ynez, Santa Maria and Lompoc Valleys). It is estimated that there will be a 10% participation rate. The County might consider expanding the program to target mobile homes and condominiums, since some have expressed interest, and also perhaps working with landscape companies which manage yard waste at large estates.

The program is not currently planned to involve Vandenberg AFB or homes in the cities of Guadalupe, Santa Maria, or Lompoc. The County, however, may decide to work with Vandenberg AFB and these cities and cover them under the County program. Funding could be provided to cover the costs for staff time, promotional and informational materials, and bins associated with their population. In this way, the same information will be used Countywide and neither Vandenberg AFB nor these cities will need to develop their own materials. Another option would be for Vandenberg AFB to run its own program but to still make use of the materials developed by the County program. Vandenberg AFB will evaluate whether or not to establish its own program or work in conjunction with the County program.

Technical Assistance

Providing technical assistance to government and private commercial/industrial facilities on Base will bring about voluntary development of reduction and recycling plans. This alternative has been selected because it can be designed to target the most significant waste generators and can bring about reduction of a wide range of waste types. Technical assistance can begin within the first year or so and could be used to develop a good network for monitoring increased reduction activities and quantifying diversion. This voluntary approach was selected over requiring that facilities develop reduction and recycling plans because mandating such plans might face significant resistance and involve higher costs due to monitoring and enforcement needs. Vandenberg AFB hopes that with increased education and the potential for businesses to reduce their trash bills, if fees are established at the landfill, requiring plans will not be necessary. However, if the voluntary approach does not elicit sufficient response and involvement, Vandenberg AFB will consider mandating development and implementation of plans.

Outreach to government and commercial/industrial facilities will be done in conjunction with the broad Countywide education and public information campaign, which will be spearheaded by County staff. Direct mail and newspaper ads will promote reduction and recycling and enlist interest. Brochures featuring reduction and
recycling methods will be developed for four sectors: office-oriented businesses; commercial operations; restaurants, hotels and bars; and industrial and construction operations.

Assistance will also be given through informational open houses for each targeted sector with experts available to answer questions and provide direction for those interested in setting up reduction and recycling programs. Interested parties will learn how to assess their current waste generation practices and make changes to reduce waste, such as increasing two-sided copying, use of scrap paper and electronic mail, and decreasing single-use items. A waste exchange system may be developed to facilitate reuse of materials. More detail on outreach to county and commercial/industrial operations is provided in the education and public information component.

Source Reduction Education

This alternative has been selected because source reduction levels will not increase unless waste generators understand the need for source reduction and know what they can do to reduce the waste they generate. By educating consumers and businesses, many different material types can be reduced. Providing information and education is consistent with current policies and faces no significant barriers.

Source reduction information will reach the general Base population, schools, consumers, and commercial and industrial operations through the education and public information campaign. The campaign will target these various audiences and disseminate information on source reduction, recycling and composting. Details on how this will be achieved can be found in the education and public information component of this SRRE.

Awards Program

An awards program has been selected as a way to increase awareness of source reduction activities at Vandenberg AFB, and to provide an incentive for individuals and businesses to become involved. Such an awards program will be publicized and members of the general Base population, schools, and government or private operations can apply by providing information on their source reduction activities. In this way, residents and businesses can be rewarded for their source reduction efforts, awareness of source reduction can be increased, and quantifiable data on source reduction activities can be gathered and counted toward the AB 939 goals. Further details on the awards program
can be found in the education and public information component of this SRRE.

Procurement Policy

Assessment and the existing Vandenberg AFN procurement policy to consider encouraging reduction has been selected because government facilities are large volume purchasers and as a result significant reduction of the waste they generate can be achieved. If a policy is effective, the Base will serve as a model and suppliers may be motivated to offer more products which reduce waste or have recycled content. This alternative could help significantly reduce materials generated in high volume by the public sector, such as paper and packaging, and there are no associated hazards or facility needs.

Vandenberg AFN will evaluate the current procurement system and assess the feasibility of incorporating a policy to encourage procurement of items with source reduction characteristics.

4.6.2 Estimate of Solid Waste Diversion

Estimating the diversion that will result from the various source reduction alternatives to be implemented by Vandenberg AFN will be challenging and in some cases impossible. Recycling and composting programs divert specific materials which are usually identified and quantified. In contrast, source reduction diversion programs, such as education, do not involve collection and processing of specific quantities of materials. Source reduction can occur at any stage of the life-cycle of a product or package, can be the result of actions taken by anyone from students to office workers, and almost every waste type currently being landfilled could be reduced in some manner or another.

Vandenberg AFN is not attempting to estimate diversion from the following alternatives: technical assistance, procurement policy, or the drop-off area for recoverables. Vandenberg AFN will reach its source reduction diversion goals through continuation of existing source reduction activities, implementation of new source reduction programs, and improved monitoring (Table 4.5). In the future, as monitoring methods become refined, it is anticipated that it will be possible to quantify diversion from these types of programs. In addition, Vandenberg AFN believes that source reduction activities are currently occurring that were not identified in the Waste Generation Study. In addition, technical assistance, education, and drop-off areas will increase community awareness of source reduction and increase both
<table>
<thead>
<tr>
<th>Source Reduction Component Programs</th>
<th>Estimated Diversion Percent 1990</th>
<th>Estimated Diversion Percent 1995</th>
<th>Estimated Diversion Percent 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Source Reduction</td>
<td>2.2%</td>
<td>2.4%</td>
<td>2.6%</td>
</tr>
<tr>
<td>New Source Reduction Programs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backyard Composting</td>
<td>0.0%</td>
<td>0.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>All Other Alternatives*</td>
<td>0.0%</td>
<td>0.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Currently Quantifiable Source Reduction</td>
<td>2.2%</td>
<td>3.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Total Source Reduction (Objectives)</td>
<td>4.0%</td>
<td>5.0%</td>
<td></td>
</tr>
</tbody>
</table>

* It is anticipated that the other selected source reduction alternatives (e.g., Technical Assistance, etc.) will combine to make up the difference between currently quantifiable source reduction and the source reduction objectives (4% by 1995, 5% by 2000) adopted by VAFB in this component. The monitoring and evaluation system established in this component will be refined over time and enable VAFB to quantify these new activities in the 1995 SRRE Revision.
## PROGRAM DIVERSION ESTIMATE FOR THE SHORT AND MEDIUM-TERM PLANNING PERIODS

**COMPONENT (o):** Vandenberg Air Force Base  
**PROGRAM (l):** EXISTING SOURCE REDUCTION  
**GENERATOR TYPE (l):** Aggregate

### DIVERSION QUANTITIES BY MATERIAL TYPE AND PERCENT OF TOTAL WASTESTREAM DIVERTED

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Generated (l):</td>
<td>21,160</td>
<td>21,250</td>
<td>21,340</td>
<td>21,430</td>
<td>21,520</td>
<td>21,610</td>
<td>21,700</td>
<td>21,790</td>
<td>21,880</td>
<td>21,970</td>
<td>22,070</td>
</tr>
<tr>
<td>Total Disposal (l):</td>
<td>15,972</td>
<td>16,259</td>
<td>16,552</td>
<td>16,850</td>
<td>17,153</td>
<td>17,462</td>
<td>17,778</td>
<td>18,096</td>
<td>18,422</td>
<td>18,754</td>
<td>19,091</td>
</tr>
</tbody>
</table>

#### Material Type

- **Used Clothing**
  - 34
  - 35
  - 35
  - 36
  - 37
  - 37
  - 38
  - 39
  - 39
  - 40
  - 41

- **Furniture**
  - 414
  - 421
  - 429
  - 437
  - 445
  - 453
  - 461
  - 469
  - 478
  - 486
  - 495

- **Appliances**
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0

- **Kitchen Ware**
  - 6
  - 6
  - 6
  - 6
  - 6
  - 7
  - 7
  - 7
  - 7
  - 7

- **Yard Waste**
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0
  - 0

- **Other (books, records, toys)**
  - 18
  - 18
  - 19
  - 19
  - 19
  - 20
  - 20
  - 20
  - 21
  - 21
  - 22

- **Total Quantity Diverted (tpy)**
  - 472
  - 480
  - 489
  - 498
  - 507
  - 516
  - 525
  - 535
  - 544
  - 554
  - 564

- **Total Diversion (%)**
  - 2.2%
  - 2.3%
  - 2.3%
  - 2.3%
  - 2.4%
  - 2.4%
  - 2.4%
  - 2.5%
  - 2.5%
  - 2.5%
  - 2.6%

### NOTES:

1. Estimated Waste Disposal Growth Rate: 1.8% based on Waste Generation Study.
2. "0" indicates that no amount was reported from the survey.
participation and reporting. Vandenberg AFB is not anticipating that it will ever be able to quantify diversion resulting from source reduction education or the awards program.\(^1\)

Quantifiable source reduction activities (mainly thrift stores and grass-cycling) are currently diverting 0.4 percent and diversion is expected to continue at approximately the same rate through the medium term (Table 4.6). Implementation of new source reduction alternatives and improved documentation is likely to show increased diversion through these activities. The continuation of current levels of source reduction diversion, as well as any increased in these levels, will ultimately be jointly documented through the technical assistance or the reduced business license fees alternative (for thrift store diversion) and the backyard composting alternatives (for grass-cycling). Improved documentation alone is likely to reveal a larger thrift store diversion than quantified in the Waste Generation Study.

In the required future revisions of Vandenberg AFB’s source reduction component, the issue of estimating source reduction diversion will be revisited.

Backyard Composting

Table 4.7 outlines the expected diversion rates of a backyard composting program in the unincorporated areas of the county. The table assumes that ten percent of the targeted single-family homes sign-up for the program and that seventy-five percent of those that start will continue to participate. The table also assumes that seventy-five percent of a households’ compostable waste (yard and food wastes) is reduced and that eighty-percent of the materials composted was not being composted prior to the program.

The estimated diversion rises from 58 to 2,346 ton per year as the program moves from pilot to full-scale, diverting a total of 0.7% of the total wastestream of the unincorporated areas.

4.6.3 Other Required Discussions

The selection of alternatives section is required to include a discussion of end-uses for diverted materials, proposed handling and disposal methods, and facility needs.

\(^1\) Vandenberg AFB expects that any reduction occurring from the awards program will be quantified through the technical assistance programs.
Materials diverted from the recoverable items drop-off facility will be collected by charitable organizations, repaired as necessary, and provided to needy individuals or resold through the organization’s retail thrift store. Food wastes and yard wastes composted in the backyard composting program will be used by participants after the composting process is complete. The compost product will be used around the home and garden as a soil amendment to enhance soil qualities and lower water usage.

There are minimal facility needs associated with three of the selected source reduction alternatives: variable can rates, reduced disposal fees, and backyard composting. Implementation of variable can rates may require facility space for storing and distributing cans, or a location from which to sell special bags or tags; existing facilities could probably be used for these purposes. A drop-off site for recoverable items may require development of special areas at transfer stations or landfill sites. Backyard composting may require storage of bins if they are to be purchased and distributed to participants.

4.7 PROGRAM IMPLEMENTATION

This section identifies those responsible for implementation of the source reduction alternatives, provides tasks and schedules associated with implementation of the alternatives, as well as program implementation costs and revenue sources.

4.7.1 Responsibility for Implementation

The development and implementation of selected source reduction alternatives will require a three-quarter to full-time staff coordinator (U.S. Air Force personnel). This position can also be involved in the development and implementation of recycling and composting activities selected by Vandenberg AFB in this SRRE.

This staff person will coordinate implementation of source reduction activities, work with Vandenberg AFB staff of departments that will be involved in developing and implementing source reduction programs, monitor and evaluate progress toward source reduction diversion goals, serve as liaison to source reduction staff of the County and incorporated cities, and track state and federal source reduction efforts and activities.
### PROGRAM DIVERSION ESTIMATE FOR THE SHORT AND MEDIUM-TERM PLANNING PERIODS

**COMPONENT:** Vandenberg Source Reduction Component  
**PROGRAM:** BACKYARD COMPOSTING  
**GENERATOR TYPE:** Residential

<table>
<thead>
<tr>
<th>Material Type:</th>
<th>From Single Family Homes (3)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wastestream</td>
<td>Rate (4)</td>
</tr>
<tr>
<td>Yard Waste</td>
<td>41.3%</td>
<td>10%</td>
</tr>
<tr>
<td>Food Waste</td>
<td>7.0%</td>
<td>10%</td>
</tr>
</tbody>
</table>

#### DIVERSION QUANTITIES BY MATERIAL TYPE AND PERCENT OF TOTAL WASTE STREAM DIVERTED

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Generated (1):</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
<td>21,161</td>
</tr>
<tr>
<td>Total Residential Disposal (1):</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
</tr>
<tr>
<td>Number of Targeted Homes (2):</td>
<td>0</td>
<td>0</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
<td>2,078</td>
</tr>
<tr>
<td>Number of Participating Homes:</td>
<td>0</td>
<td>0</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
<td>156</td>
</tr>
<tr>
<td>Material Type</td>
<td>Yard Waste</td>
<td>Food Waste</td>
<td>Total Quantity Diverted (tpy)</td>
<td>0</td>
<td>0</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>214</td>
<td>214</td>
<td>214</td>
<td>214</td>
<td>214</td>
<td>214</td>
<td>214</td>
<td>214</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Residential Waste Diversion (%)</td>
<td>0.0%</td>
<td>0.0%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Total Diversion (%)</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Estimated Waste Disposal Growth Rate: 0.0% ; based on Waste Generation Study.
2. Estimated number of single family homes 2,078 ; based on demographic research by California Department of Finance.
3. Assumes 100% of yard waste and 70% food waste is generated by single family homes.
4. Rate of targeted homes that begin program.
5. Rate of homes beginning program that continue through ten year period.
### 4.7.2 Implementation Tasks and Schedules

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January 1992</td>
<td>Vandenberg AFB evaluates potential drop-off sites for diversion of recoverable items.</td>
</tr>
<tr>
<td>2</td>
<td>March 1992</td>
<td>Contact is made with local charitable organizations where site assessment is positive. Administrative details are addressed.</td>
</tr>
<tr>
<td>3</td>
<td>June 1992</td>
<td>Drop-off pilot(s) begin. Ongoing monitoring and evaluation.</td>
</tr>
</tbody>
</table>
Table 4.9: Backyard Composting.

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>March 1991</td>
<td>County supported intern conducts workshops for pilot project participants; responds to information requests.</td>
</tr>
<tr>
<td>2</td>
<td>July 1991</td>
<td>Mail follow-up survey; prepare report.</td>
</tr>
<tr>
<td>3</td>
<td>October 1991</td>
<td>County staff reviews report and refines program expansion plans. Information is provided to Vandenberg AFB.</td>
</tr>
<tr>
<td>4</td>
<td>November 1991</td>
<td>Vandenberg AFB determines appropriate means of implementation (County or Base administered).</td>
</tr>
<tr>
<td>5</td>
<td>December 1991</td>
<td>Designated party conducts direct-mail campaign.</td>
</tr>
<tr>
<td>6</td>
<td>January 1992</td>
<td>Designated party purchases more bins and distributes to Vandenberg AFB participants.</td>
</tr>
<tr>
<td>7</td>
<td>March 1992</td>
<td>Designated part conducts workshops for participants.</td>
</tr>
<tr>
<td>8</td>
<td>June 1992</td>
<td>Designated party mails follow-up survey to participants, responds to information requests and estimates diversion from program. Ongoing monitoring and evaluation.</td>
</tr>
</tbody>
</table>

Technical Assistance

Technical assistance will be conducted by Vandenberg AFB in conjunction with County of Santa Barbara staff. Refer to the education and public information component of this SRRE.

Source Reduction Education

Source reduction education will be implemented by Vandenberg AFB in coordination with County staff as part of the countywide education and public information campaign. Refer to the education and public information component of this SRRE. Source reduction education will be achieved through the County campaign designed as a four-pronged approach including: general public
information, school education and outreach, business and institutional education, and consumer education.

Awards Program

The awards program will be implemented by Vandenberg AFB in coordination with County staff as part of the countywide education and public information campaign. Refer to the education and public information component of this SRRE.

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>September 1991</td>
<td>Vandenberg AFB evaluates current procurement policy and feasibility of a policy encouraging source reduction.</td>
</tr>
<tr>
<td>2</td>
<td>November 1991</td>
<td>Any proposed policy changes are established.</td>
</tr>
</tbody>
</table>

4.7.3 Program Implementation Costs

This section provides cost estimates of implementing the source reduction alternatives selected. These estimates are based on a broad range of assumptions and preliminary information and are for planning purposes only. Actual program implementation costs may vary. The implementation costs for the source reduction alternatives to be implemented by Vandenberg AFB are largely associated with staff time to develop, implement and monitor the program. Staff for the source reduction programs is estimated at $50,000 per year.

Pilot Drop-off Area for Recoverable Items

The costs for this alternative include staff time to evaluate sites for space and administrative constraints, contact local charitable organizations, maintain the area, and monitor the results (estimated at $5,875 per year). Facility improvements may be needed to establish a separate drop-off area.

4-38
Backyard Composting

The costs associated with the backyard composting program include costs for staff time and expenses associated with developing and distributing informational materials, handling questions or complaints, and monitoring the program. There are also costs associated with providing bins to participants and for holding informational workshops. Based on estimates made by the County from its pilot program, costs associated with targeting the housing on Vandenberg AFB would be approximately $100 for promotion and $6,000 for 200 bins at $30 each. Staff time is estimated at $26,500 per year.

Technical Assistance to Facilities

The technical assistance to government and private commercial/industrial facilities located on base will be conducted in coordination with the countywide education and public information campaign. Refer to the education and public information component of this SRRE for associated costs.

Source Reduction Education

Source reduction education on base will be conducted in coordination with the countywide education and public information campaign. Refer to the education and public information component of this SRRE for associated costs.

Awards Program

The awards program on base will be conducted in coordination with the countywide education and public information campaign. Refer to the education and public information component of this SRRE for associated costs.

Procurement Policy

The costs for with this alternative include staff time and costs associated with assessing the current policy, revising it if necessary, handling administrative details, and preparing reports to monitor progress. Staff time is estimated at $5,875 per year. Additional funds would be needed if higher prices were to be paid for preferred products.
4.7.4 Revenue Sources

Solid waste management at Vandenberg AFB is funded by the Department of Defense. Revenues for the source reduction will also be provided through the general Department of Defense budget. See the funding component of this SRRE for a detailed description of the revenue sources and program funding.

4.8 MONITORING AND EVALUATION OF SOURCE REDUCTION PROGRAMS

This section discusses methods and criteria to be used in monitoring and evaluating the selected alternatives, identifies parties responsible for program monitoring and evaluation, and describes measures to be taken if monitoring reveals that the source reduction diversion objectives for the individual alternatives are not being met. Funding requirements and revenues for monitoring and evaluation are also provided.

4.8.1 Methodology and Criteria

Monitoring and evaluation of source reduction programs will be done in order to quantify landfill diversion through source reduction in weight or volume and the percent of the total waste generated; identify reduction of waste hazards; and monitor the effectiveness of implemented source reduction activities toward achieving Vandenberg AFB source reduction goals. An explanation is given below for how each source reduction program will be monitored in order to (where possible) quantify diversion. Direct program monitoring will be the primary method used. Quantification of waste diverted will be reported in volume or weight and in the percent of total waste generated.

Note: Article 6.2, Section 18733.6(b)(4) of the AB 939 regulations require that Vandenberg obtain prior written approval of this monitoring and evaluation methodology from the California Integrated Waste Management Board.

The source reduction program as a whole will be evaluated based on whether the diversion objectives for the program are met. Criteria for determining the effectiveness of each individual source reduction activity are provided below. Vandenberg AFB will prepare an annual report summarizing the status of the Vandenberg AFB source reduction program, document quantifiable diversion, compare each program with respect to the individual criteria, and evaluate whether the programs will assume compliance with the diversion mandates.
Pilot Drop-off Area for Recoverable Items

Vandenberg AFB will keep records of materials being diverted through the drop-off area. If a charitable organization takes much of the material, care will be taken not to double-count diversion since such organizations will probably be asked to provide Vandenberg AFB with information on their annual diversion. Criteria: Amount of material salvaged through the drop-off area.

Backyard Composting

Backyard composting will be monitored by Vandenberg AFB in conjunction with County of Santa Barbara staff. A system will be developed to estimate participation in the program. Phone calls, surveys and site visits can be used to determine the quantities of materials being composted. Consistent records will be kept to allow the Base to estimate and document diversion. Criteria: The number of households participating and the amount of material being composted.

Technical Assistance

Monitoring technical assistance is addressed in the education and public information component. Criteria: Number of facilities with reduction programs and amount of diversion through source reduction being documented.

Source Reduction Education

Monitoring for source reduction education is addressed in the education and public information component.

Awards Program

Monitoring for source reduction education is addressed in the education and public information component.

Procurement Policy

An annual report on the procurement policy will be prepared summarizing product specifications developed and the quantities of source reduction and recycled content products purchased. Criteria: The number of source reducing and recycled content products purchased as a result of the policy.
4.8.2 Monitoring Costs and Funding

The annual report summarizing the Source Reduction Program will be prepared by Vandenberg AFB staff. The costs are included in the salary of the source reduction coordinator who will be implementing and monitoring the activities. The costs of monitoring and evaluating the program will be funded through the Department of Defense budget for Vandenberg AFB. Refer to the funding component for further detail on revenue sources and funding.

4.8.3 Measures to be Taken in Case of Shortfall

If the annual report shows that the Source Reduction Program did not meet its diversion objectives, Vandenberg AFB will identify the activities that have proven less effective, how they can be modified to increase source reduction, how monitoring and diversion quantification can be improved, and whether the program objectives should be adjusted.
RECYCLING COMPONENT
Table 5-2 (I)
Vandenberg Air Force Base's Market Strategy for Targeted Materials
Within Each Recycling Program

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Cardboard Collection Program</td>
<td>Newspapers</td>
<td>4.5%</td>
<td>303</td>
<td>303</td>
<td>Santa Fe, Penona, CA</td>
</tr>
<tr>
<td></td>
<td>Newspapers</td>
<td>3.2%</td>
<td>246</td>
<td>246</td>
<td>Yoe Yang, Los Alamitos, CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Western Pulp &amp; Paper, Downey, CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Berg Mills, West Hollywood, CA</td>
</tr>
<tr>
<td></td>
<td>Glass</td>
<td>2.3%</td>
<td>169</td>
<td>169</td>
<td>CR&amp;R, Stanton, CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Owens-Illinois, Vernon, CA</td>
</tr>
<tr>
<td></td>
<td>Aluminum Cans</td>
<td>5.7%</td>
<td>231</td>
<td>231</td>
<td>CR&amp;R, Stanton, CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Alpert &amp; Alpert, IFS, Fresno, CA</td>
</tr>
<tr>
<td></td>
<td>Other Aluminum</td>
<td>2.1%</td>
<td>217</td>
<td>217</td>
<td>Oxnard Metals, Oxnard, CA</td>
</tr>
<tr>
<td></td>
<td>Tins/Cans</td>
<td>2.4%</td>
<td>264</td>
<td>264</td>
<td>Oxnard Metals, Oxnard, CA</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>Insants</td>
<td>6.0%</td>
<td>333</td>
<td>354</td>
<td>Lash Construction, Santa Barbara, CA</td>
</tr>
<tr>
<td>Source Separated Collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Granite Construction, Goleta, CA</td>
</tr>
<tr>
<td></td>
<td>Ferrous Metals</td>
<td>10.0%</td>
<td>1,905</td>
<td>1,944</td>
<td>Oxnard Metals, Oxnard, CA (Used Domestically</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>and Imported)</td>
</tr>
<tr>
<td></td>
<td>Non-Ferrous Metals</td>
<td>0.1%</td>
<td>179</td>
<td>224</td>
<td>CR&amp;R, Stanton, CA</td>
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<td></td>
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<td>Alpert &amp; Alpert, IFS, Fresno, CA</td>
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<tr>
<td></td>
<td>Other Aluminum</td>
<td>0.1%</td>
<td>77</td>
<td>130</td>
<td>Santa Barbara Free, Santa Barbara, CA</td>
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<td>Oxnard Metals, Oxnard, CA</td>
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<td>Yard/Wood Waste Mulching</td>
<td>Yard trimmings</td>
<td>32.8%</td>
<td>786</td>
<td>750</td>
<td>Vandenberg AFB Parks and Maintenance</td>
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<td></td>
<td>Departments, Residents, Commercial Landscapers.</td>
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<td>Wood Waste</td>
<td>1.1%</td>
<td>23</td>
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1. For residential collection and/or processing, this column is percent of residential waste stream. For commercial/industrial collection and/or processing, this column is percent of commercial/industrial waste stream. For mulching and incineration, this column is percent of aggregate waste stream.

2. The 1995 and 2000 diversion quantities are estimates obtained from each jurisdiction's SSREE.
5: RECYCLING COMPONENT

Introduction

The recycling component cites the objectives and goals, describes existing recycling activities, evaluates possible recycling alternatives, recommends a system of recycling, and establishes a ten-year implementation schedule for the selected alternatives for Vandenberg Air Force Base. Implementation responsibilities, program costs, potential funding sources, and a detailed monitoring and evaluation system are also described within this component.

Component Summary

The following list summarizes recycling alternatives to be implemented on Vandenberg AFB.

In the short-term planning period (1991 to 1995), Vandenberg AFB will:

1. Continue counting inerts (concrete and asphalt) recycling towards diversion mandates while monitoring regulatory and legislative actions related to these materials.

2. Continue the operation of the residential curbside program.


4. Continue operating the drop-off centers.

5. Implement a wood waste and yard waste mulching program.

7. Participate in local and regional recyclable materials market development activities by evaluating the application to be part of a designated market development zone, supporting content legislation, participating in the Southern California Markets Roundtable, and implementing recycled content procurement policies.

In the medium-term planning period (1996 to 2000), Vandenberg AFB will:

1. Continue the operation of inerts recycling, residential curbside, drop-off centers, commercial source-separated collection and mulching programs.

2. Continue monitoring inerts diversion activities and State policies relating to these materials.

3. Continue participation in local and regional recyclable materials market development activities.

Background

A wide range of recycling programs, including drop-off centers, a residential curbside program, office paper recovery, and scrap metal recovery are currently operating on Vandenberg AFB. In response to the increased public interest in recent years, Vandenberg AFB has made substantial operational changes to increase the diversion potential of recycling.

An attempt is being made to create an integrated recycling component that builds on the strengths of existing programs while adding new programs that will complement the existing recycling infrastructure. Three mixed waste processing and/or composting facilities are envisioned to serve the County of Santa Barbara, including the cities of Santa Barbara and Carpinteria, the cities of Lompoc and Solvang, and the cities of Santa Maria and Guadalupe. It is anticipated that Vandenberg AFB will participate in the Lompoc regional facility. An effort has been made to anticipate the availability of these facilities in the design of the collection programs for the purpose of achieving maximum cost effectiveness and ease of implementation.
5.1 COMPONENT OBJECTIVES

The short-term recycling objectives are:

* by 1995, divert 25% of the wastestream through recycling programs

The short-term recycling goals are:

* make maximum use of the existing collection and recycling infrastructure;
* pace collection to market capacity;
* match collection and processing to end use markets;
* participate in publicly owned and controlled facilities;
* develop tracking methods for quantification.

The medium-term recycling objectives are:

* by 2000, divert 41% of the wastestream through recycling programs

The recycling program market goals are:

* support efforts to increase markets for those materials which require the most market assistance;
* secure long range markets through contracts where appropriate;
* diversify markets to the maximum extent possible;
* pace collection to market capacity; and
* match collection and processing to end use markets.

5.2 EXISTING CONDITIONS

Recycling activities on Vandenberg AFB are managed and operated by the Morale, Wellness, and Readiness (MWR) office. The Resource, Recovery and Recycling Program (RRRP) handles residential, work center and scrap metal collections. The Defense Reutilization Marketing Office (DRMO) also recycles some
scrap metal. Inert solids and yard waste diversion are management by the Vandenberg AFB sanitary landfill. There are currently no plans to decrease in scope, phase out or discontinue any of the existing recycling activities.

5.2.1 Drop-off Centers

A drop-off center is a location where recyclable materials are received. Such a center receives donated materials only and does not pay cash for the accepted materials.

There are currently 17 drop-off sites located on Vandenberg AFB, including locations at the multi-family complexes and commercial businesses located on base. The three major drop-off locations are the community center, family housing, and the commissary. All materials are collected commingled in one container. The commingled materials are transported to the RRRP Center where separation and processing for market occurs.

Materials accepted at the drop-off sites include newspaper, cardboard, glass, aluminum, tin cans, PETE plastics, and HDPE plastics. In addition, the sanitary landfill has a separate drop-off location for cardboard, aluminum, and scrap metal. Due to limited capabilities, separate quantifiable data for the commodities collected at the drop-off locations is not available, although the figures are included in the total diversion figures reported in the Waste Generation Study for Vandenberg AFB.

5.2.2 Residential Curbside Collection

The Vandenberg AFB curbside collection program services the entire single-family residential community of 2,078 homes. Materials collected include newspaper, cardboard, glass, aluminum, tin metal cans, PETE plastics, and HDPE plastics. Participants separate their materials into paper bags. Step vans with barrels for aluminum and glass and boxes for the other commodities collect the materials from the curb. Materials are collected once a week and transported to the RRRP Center where they are processed and marketed.

5.2.3 Office Paper Collection

The office paper program collects computer paper, white ledger paper, colored ledger paper, and cardstock paper. The paper is source separated into mail carts which are serviced on an on-call basis. MWR currently services over 2,100 collection locations in over 600 work centers each week.

5-4
When special needs arise, the MWR office works directly with waste generators, such as contractors, organizations, and individuals, to provide twenty-four hour response for pickup.

In addition to collecting paper, aluminum cans, glass, newspaper, and cardboard are collected from these collection locations when the material is available for collection.

Commodities are sorted and baled at the RRRP Center. An estimated 10 to 15 tons of waste paper per day are processed for recycling. Due to limited capabilities, quantifiable data for the other commodities collected is not available. Therefore, these materials have not been included in the total diversion figure for Vandenberg AFB.

5.2.4 Salvage

Salvage is defined as the controlled removal of solid waste materials at a permitted solid waste facility for recycling. Salvaging is prohibited at the Vandenberg AFB sanitary landfill.

MWR maintains a scrap metal lot at 33rd and California Streets on Vandenberg AFB. The location allows for the collection of household metal, except automobile parts. The metal is cleaned of contaminants then turned into the Defense Reutilization Marketing Office (DRMO) for disposition.

5.2.5 Concrete Recycling

All clean asphalt debris and rubble is currently diverted from the landfill to a separate location on 35th Street near Wall Beach on Vandenberg AFB. All concrete and asphalt construction wastes that are diverted are weighed. Records are kept on file at the Vandenberg AFB sanitary landfill. An average of 3,000 tpy of asphalt and concrete are diverted. As of December 1990, approximately 500,000 tons of materials have been stockpiled.

Vandenberg AFB has purchased, and is currently installing, a rock crusher to reduce the stockpiled material to a usable product. This product will be utilized on unimproved and semi-improved roads on the base.

5.2.6 Local Market Development Activities

Economic Development Activities

At this time, Vandenberg AFB does not have a government
procurement program or any consumer incentives in place to encourage local market development activities.

Education Programs

A countywide education and public information campaign is being developed under the slogan "It's Habitat Forming." This campaign will be used to promote all existing programs and any new programs. The campaign will also promote education in schools and businesses throughout the County. It is recommended that Vandenberg AFB supplement its current base media with the appropriate materials developed by the County campaign. Current promotional activities and the "It's Habitat Forming" campaign are explained in detail in the education and public information component.

5.2.7 Diversion Estimates

The estimates of the quantity of wastes diverted by each of the recycling programs described as existing conditions is presented in Table 3-2 of the County of Santa Barbara Waste Generation Study. After publication of the waste generation study, additional information on the diversion of concrete and asphalt has become available. The estimated tonnage for this diversion has been documented with the recycling survey that R. W. Beck and Associates used to quantify the diversion from the various jurisdictions within the County of Santa Barbara. Therefore, Table 5.1 contains an updated waste diversion analysis table of those five facilities that affect the recycling component.

5.3 EVALUATION OF ALTERNATIVES

5.3.1 Evaluation Criteria

The regulations pursuant to AB 939 require that at a minimum six criteria be used to evaluate recycling alternatives. Those six criteria are and their definitions are:

* reduction effectiveness: the effectiveness of the alternative in reducing either solid waste volume, weight, percentage in weight or its volumetric equivalent.

* potential hazards: the alternative's potential for environmental or human health and/or safety impacts.
* ability to accommodate changing economic, technological, and social conditions: the alternative's ability to hold up against and accommodate changes in economic, technological and social conditions, such as having a flexible technology that can adapt to changing market needs.

* consequences on the wastestream: how implementation of the alternative will impact the wastestream, including the types of waste that would be reduced in the wastestream, as well as the alternative's potential to result in negative consequences, such as shifting the solid waste generation from one type of solid waste to another.

* ease of implementation: whether the alternative can be implemented in the short or medium term planning period. For example, if the alternative can be implemented in the short term, it is assumed that the alternative can be implemented with relatively few changes in the existing infrastructure and that the alternative conflicts with few, if any, institutional barriers.

* facility needs: the need for new facilities or facility expansion to implement the alternative. For example, an alternative that could make use of existing equipment and systems would have fewer facility needs.

In addition to the above six criteria, the AB 939 regulations require discussions on the following four issues:

* consistency with local policies, plans, and ordinances: the consistency of the alternative with local policies, plans, and ordinances.

* institutional barriers to implementation: the existence of institutional barriers, such as permitting requirements, to the alternative. This criterion would include consideration of public acceptance, private sector acceptance, impact on jobs, and compatibility with the existing waste management infrastructure.

* costs in short and medium-term: the costs of implementing the alternative

* end-uses/market availability: the availability of end-uses or markets for the materials/products produced.
5.3.2 Considered Recycling Program Alternatives

This section contains a detailed evaluation of recycling alternatives recommended by the AB 939 emergency regulations. For organizational purposes, the alternatives have been divided into two general categories: collection alternatives and processing alternatives. A brief description of each recycling alternative evaluated follows.

Collection Alternatives

* **residential curbside collection:** a system of collecting separated or commingled recyclables at the curb of single family dwellings with specialized containers for holding the recyclables and specialized collection equipment to segregate, transport, and unload these materials for processing.

* **multi-family residential collection:** a system of collecting separated or commingled recyclables at multi-family dwellings with specialized containers and collection equipment to segregate, transport, and unload these materials for processing.

* **mobile recycling centers:** a mobile transport container system for collecting recyclables that can be provided on a regularly scheduled basis at multiple locations. Mobile centers can be drop-off only or provide buyback opportunities.

* **drop-off recycling centers:** stationary containers for receiving recyclables on a voluntary basis. The containers may be specially designed for receiving specific recyclables or can be standard debris box type containers.

* **buyback recycling centers:** recycling facilities where the public receives payment for specific recyclable materials. The recycled materials received at buyback facilities can vary widely depending on market conditions, space constraints, and processing equipment. Buyback centers may also be Certified Redemption Centers.

* **source separated commercial recycling:** a recycling program in which corrugated cardboard, glass and high grade office paper as well as other recyclables are picked up separately from other wastes for recycling.
purposes. This collection is typically provided on a regularly scheduled basis.

Processing Alternatives

* **Intermediate processing:** facility(ies) that process both source separated and commingled materials collected in residential and commercial recycling programs. These facilities, known as IPCs (intermediate processing centers) typically use both manual and mechanical means for sorting materials and preparing them for market.

* **Mixed waste processing:** facilities that receive mixed solid waste for processing to remove the recyclable fraction of the wastestream. These facilities utilize both manual and mechanized means to segregate and process the incoming solid waste. Mixed waste facilities are often developed in conjunction with compost facilities because they can also remove organics and paper grades suitable for compost feedstock.

* **Salvage operations:** this alternative involves establishing a program for removing certain recyclable materials such as white goods and other metals, at a transfer station and/or landfill. In this alternative salvageable materials are removed manually or by heavy equipment such as tractors and placed in containers or transfer vehicles for transport to a recycling facility.

* **Mulching operations:** this alternative involves establishing a program where wood and bushy green waste is shredded and screened to produce a product suitable to a variety of landscape applications.

5.3.3 Evaluative Criteria and Discussions

The following section contains an analysis of each of the recycling collection and processing alternatives in terms of the evaluative criteria and discussions dictated by the AB 939 Emergency Regulations. These detailed evaluations are followed by Evaluation Matrices which summarize the qualitative and evaluative data (Tables 5.1, 5.2 and 5.3).

Effectiveness of Collection Alternatives

**Curbside Collection:** Highly dependent on participation rates. Curbside programs can divert three to
ten percent of the wastestream depending on the design of the program and participation rates. Existing program currently diverts 10.2 percent of the Vandenberg AFB wastestream.

**Multi-Family Collection:** Highly dependant on participation rates and demographics. Multi-family programs can divert one to three percent of the wastestream.

**Mobile Recycling:** These programs can divert one to two percent of the wastestream depending upon the location and operating hours and public awareness.

**Drop-off Recycling:** Typically less effective than curbside collection because this is a less convenient alternative. Drop-off programs may divert between one to three percent of the wastestream. Drop-off locations on Vandenberg AFB currently divert less than one percent of the wastestream.

**Buyback Recycling:** Buyback Centers can divert two to five percent of the solid wastestream depending on location, range of materials handled and purchase price of materials. This alternative is increasingly used to receive recyclable materials.

**Commercial Recycling:** Usually focuses on paper grades such as cardboard, glass and high grade paper. Effectiveness depends on quantity, commercial generators, materials generated and participation rates. May divert between 5 and 15 percent of the wastestream. Existing commercial programs divert 2.3 percent of the Vandenberg AFB wastestream.

**Effectiveness of Processing Alternatives**

**Intermediate Processing:** Intermediate processing is not a diversion alternative. This alternative
supports diversion alternatives by preparing recovered materials for marketing.

**Mixed Waste Processing:** Removes recyclable materials from a non-separated wastestream. This alternative does not rely on public participation to achieve high diversion rates because wastes are accepted, mixed and processed using manual and automated means. Diversion potential from this type of facility is in the range of 15 to 25 percent of the wastestream.

**Salvage Operations:** Salvage operations typically focus on a limited range of materials such as white goods and other bulky metal items. Therefore, only a small amount of diversion may be achieved, typically between 0.1 and 1 percent of the wastestream.

**Mulching Operations:** Mulching bushy yard and wood waste can achieve diversion rates of two to five percent.

**Hazards Associated with Collection Alternatives**

**Curbside Collection:** May increase truck traffic and associated air quality and noise impacts. Worker and pedestrian safety hazards may also be associated with curbside collection.

**Multi-Family Collection:** May increase truck traffic and associated air quality and noise impacts. Safety hazards may also be associated with increased pick-up.

**Mobile Recycling:** Potential for illegal disposal of non-recyclables and hazardous wastes at unsupervised sites. Potential of vectors, odor and fire hazards.

**Drop-off Recycling:** May increase traffic in the vicinity of the drop-off facility. Potential for illegal disposal of non-recyclables and
hazardous waste, vectors, odor and fire hazards.

**Buyback Recycling:** May increase traffic in the vicinity. Noise impacts are dependent upon location and equipment used for processing. Potential of vectors, odor and fire hazards.

**Commercial Recycling:** May increase truck traffic and associated air quality and noise impacts. Potential of vectors, odor and fire hazards.

**Hazards Associated with Processing Alternatives**

**Intermediate Processing:** Will increase noise levels in and around the facility. Air quality impacts could result from the operation of the processing equipment. Potential health and safety risks exist depending on equipment used and work conditions. Potential of vectors, odor and fire hazards.

**Mixed Waste Processing:** Hazards similar to those in an intermediate processing facility. May be additional potential health and safety risks for workers on picking lines and loading areas. Potential of vectors, odor and fire hazards.

**Salvage Operations:** Depending on how they are conducted, salvage operations can expose workers to the threat of personal injury from landfill and transfer equipment and trucks delivering materials. Injuries may also result from handling salvageable materials.

**Mulching Operations:** Mulching equipment may produce high noise levels and air quality impacts depending upon the equipment used. Potential of vectors, odor and fire hazards.
Ability of Collection Alternatives to Accommodate Change

**Curbside Collection:** May be expanded or reduced in scope to accommodate changing demographics or wastestream characteristics. Collection vehicles and waste types may be added or subtracted from the service.

**Multi-Family Collection:** Ability to accommodate social, technological and economic change is similar to curbside recycling.

**Mobile Recycling:** Can easily be expanded or reduced in scope to accommodate changing conditions.

**Drop-off Recycling:** Drop-off centers can be expanded or reduced in scope to accommodate changing social, technological and economic conditions. Drop-off centers can increase or decrease the types and quantities of materials accepted and can add or remove processing equipment.

**Buyback Recycling:** Similar to drop-off centers although more limited in terms of types of materials which can be accepted.

**Commercial Recycling:** Commercial source separated collection is typically carried out using existing collection equipment. These programs can be expanded or reduced in scope relatively easily.

Ability of Processing Alternatives to Accommodate Change

**Intermediate Processing:** Intermediate processing equipment can process a range of materials depending on separation techniques and storage and processing equipment. The facility can be designed to allow for expansion or modification.

**Mixed Waste Processing:** Mixed waste systems can be designed to allow for relatively easy expansion or modification. In addition, these systems can be adjusted to direct materials to
different end-markets on the basis of changing market conditions.

**Salvage Operations:** Salvage operations can be easily adjusted to reflect changing conditions. They typically use existing multi-purpose equipment and manual labor.

**Mulching Operations:** Mulching operations are flexible to the extent that the equipment is mobile. The same equipment can be used to produce feedstock for boiler fuel.

**Consequences on the Wastestream**

All of the alternatives considered in this analysis will have the effect of reducing the quantities of recyclable materials (cardboard, newspaper, high grade paper, PET plastic, HDPE plastic, recyclable glass, aluminum and tin) in the characterized wastestream as identified in the Waste Generation Study completed as part of this planning process. The only exception to this is intermediate processing, which supports diversion alternatives and will not directly affect the wastestream.

**Time-Frame for Implementation**

All of the collection alternatives considered in this analysis could be implemented in either the short or medium-term planning periods. Alternatives which require the development of facilities, such as mixed waste processing, may have an implementation time-frame which extends into the medium-term due to siting, permitting and environmental documentation requirements.

**Need for Facilities for Collection Alternatives**

**Curbside Collection:** Will require access to an intermediate processing facility for preparing materials for market.

**Multi-Family Collection:** Will require access to an intermediate processing facility for preparing materials for market.

**Mobile Recycling:** Mobile recycling will require additional sites and upgraded processing capabilities.
Drop-off Recycling: No new facilities are anticipated.

Buyback Recycling: No new facilities are needed but upgraded processing capabilities are required.

Commercial Recycling: No new facilities are needed but upgraded processing capabilities are required.

Need for Facilities for Processing Alternatives

Intermediate Processing: Intermediate processing will require a facility with processing equipment. The County currently has a intermediate processing facility at the transfer station. An intermediate processing center will be necessary to support any recycling programs implemented in the North County cities.

Mixed Waste Processing: Mixed waste processing would require the development of a new facility.

Salvage Operations: Salvage operations are prohibited at the Vandenberg AFB sanitary landfill. Therefore, there is no need for a special facility.

Mulching Operations: Mulching operations would require siting a location for the process and may require a structure.

Consistency With Local Plans, Policies and Ordinances

There are no plans, policies or ordinances that inhibit or discourage curbside collection of recyclable materials. Curbside collection is currently being implemented and is encouraged by the Vandenberg AFB.

The siting of additional drop-off locations is not specifically provided for in Vandenberg’s Comprehensive Plan. Expansion of existing drop-off activities not involving a land-use change or a modification of conditional use permits is consistent with local policies subject to a review and/or modifications of conditional use permits.

5-15
No local plans, policies or ordinances have been identified which inhibit commercial source separated collection, mobile recycling, or multi-family collection.

The development of both intermediate processing and mixed waste processing capability in the County of Santa Barbara would require a CEQA and determination and the fulfillment of other state and local permitting requirements.

Institutional Barriers

Potential institutional barriers include siting and permitting constraints depending upon the selected programs and zoning and other land use regulations which may prevent the development of recycling facilities. In addition, any recycling facility which generates more than 15 cubic yards of waste per day must comply with all permitted facility requirements.

Implementation Costs

Residential curbside in the County of Santa Barbara ranges from $0.93 in the Santa Maria Valley to $1.50 for the South Coast program. Costs for the Vandenberg AFB program were unobtainable at this time. These costs will, however, appear in subsequent revisions of this document. Other residential curbside recycling programs around the state are reporting costs of between $1.25 and $3.00 per household per month.

The costs for developing buyback and or supervised drop-off centers vary significantly depending on factors such as location, site, size, types of materials collected, hours of operation, and types of operating equipment. Data from previous studies indicates that the costs of these alternatives typically range between $20 to $30 per ton collected.

The costs of mobile recycling based on local operating history are approximately $40 to $60 per ton.

The costs of commercial recycling are difficult to generalize due the wide variety of program designs. Most commercial recovery programs focus on collection of corrugated cardboard, high-grade paper and glass. This type of "high grade" recycling collection typically pays for itself from revenues from the sale of recovered materials. Commercial programs which are broader based and collect materials such as mixed waste paper and other lower value waste types may cost between $40 and $80 per ton.
The costs associated with operating an intermediate processing facility which is capable of processing both fully source separated and commingled recyclables is approximately $15 to $40 per ton processed. The South Coast Intermediate Processing Facility had capital costs of $316,000. Any other such facilities constructed within the County are expected to have similar capital costs.

Mixed waste processing facilities have highly variable costs depending on factors such as type of technology, facility capabilities (such as composting), site costs, and scale of operation. However, national data indicates a cost range of between $30 to $60 per ton processed, with capital costs ranging from $40,000 to $60,000 per ton of capacity.

Salvage operations are prohibited at the Vandenberg AFB sanitary landfill. Therefore, there are no capital or operation and maintenance costs are associated with this alternative.

Mulching operations cost between $15 and $25 per ton processed. Capital costs depend upon the size and type of equipment used.

The Availability of Markets

Markets are long established for all of the commodities that would be collected in the selected programs which require a high level of source separation. The increases in recovery locally and regionally are likely to create supply/demand imbalances (i.e., gluts) for many different materials, particularly paper grades, glass and plastics, over both the short and medium-term planning periods. Materials that would be separated at a mixed waste processing facility would be more contaminated than source separated materials (particularly high grade paper, newsprint, and mixed paper), and therefore, may be more difficult to market.

Mulch is a commodity for which there has not been an established market in the County of Santa Barbara. Based on local pilot tests and water conservation needs, it is believed that a marketable mulch product can be developed which will have wide appeal among potential residential, municipal and commercial users.

Public versus Private Control

Before considering public versus private control of recycling facilities, it is important to understand the existing institutional arrangements for solid waste management. Solid
waste collection services have traditionally been provided by Federal Disposal Company contracted by Vandenberg AFB. Recycling collection services have traditionally been provided by the Morale, Wellness, and Readiness office.

Advantages associated with public control of recycling facilities include the ability to readily implement new and expanded facilities using existing publicly owned land. Public control also enables the public sector to maintain solid waste flow control which is extremely beneficial when planning an integrated recycling system that much achieve mandated diversion goals. Flow control is also essential to the economics of a publicly-controlled integrated diversion facility (IDF). Finally, public control improves the participating jurisdictions' ability to monitor solid waste diversion from recycling activities.

The existing institutional arrangement for solid waste management and recycling activities has been successful because it combines the strengths associated with the public, private and non-profit sectors in the delivery of services. As additional recycling facilities are added, it is anticipated that a balanced institutional arrangement will continue to take advantage of the efficiencies afforded by private and non-profit technical and managerial experience working cooperatively with public agencies.

5.3.4 Component Specific Required Discussions

In addition to the evaluation of specific diversion alternatives, the AB 939 regulations also require each jurisdiction to consider zoning and building code changes, rate structure changes, methods to increase markets, and methods to increase source separation of recyclables. Zoning and building code changes and rate structure changes do not apply to Vandenberg AFB. The other two policy option discussions follow.

Methods to Increase Markets

Market development is essential to the success of local diversion efforts from recycling. Without significant expansion of secondary markets for recycled paper, plastic and glass market saturation levels could be reached as recycling programs throughout the state and the nation come on line. Also, without local development of mulch markets, the substantial diversion potential that this recycling option affords may not be realized.

Currently, Vandenberg AFB does not have a government procurement policy in place for the purchase of products manufactured from
recycled materials. While there is currently a price incentive to local governments who seek products made with recycled content, it is expected that broad-scale procurement activities throughout the state by state and local government will create a more competitive buying environment for such products in the near future. Therefore, it is being recommended that Vandenberg AFB develop a governmental procurement policy to use when negotiating contracts with its materials suppliers.

In addition to procurement, Vandenberg AFB can support market development in several important ways. It can be supportive of legislative efforts to deepen markets for recyclables. Content legislation which requires the production of manufactured goods made with a percentage of recycled material is among the most direct ways of increasing markets for recyclables.

Vandenberg AFB can also monitor the California Integrated Waste Management Board’s (CIWMB) mandated recycling market development activities as required by Senate Bill 1322. This law requires the CIWMB to oversee the procurement policies of all state agencies to insure that they are in fact procuring products made with recycled content. Since state agencies such as Caltrans are potential buyers of locally produced mulch, the effective implementation of State procurement could have important bearing on market expansion.

SB 1322 includes a provision for Recycling Markets Development Zones where manufacturers who use recyclables for manufacturing could enjoy special facility siting and/or tax breaks. The County of Santa Barbara has determined that it will pursue this mechanism as a potential means of market development. Vandenberg AFB should determine if it wants to support the County in this pursuit and, if feasible, participate in this form of market development.

Methods which Encourage Source Separation of Materials

The MWR office has determined that materials can be collected in a variety ways while preserving the integrity of recovered materials so that they can be effectively marketed and used in secondary materials manufacturing. Vandenberg AFB believes that its proposed recycling activities balance the need for preserving the integrity of the recyclables with the goal of achieving the highest diversion rates at the least cost.
Market Development Summary

In summary the following are the most feasible means of achieving market development:

1. Support of content legislation at the state and federal levels.

2. Implement procurement programs that require recycled content in products purchased by Vandenberg AFB.

3. Educate the private sector and the public about the importance of buying recycled products as a means of encouraging market development.

5.4 PROGRAM SELECTION

This section identifies and describes the recycling activities selected for implementation on Vandenberg AFB, including existing diversion alternatives, expansions of existing alternatives, and new alternatives.

5.4.1 Priority Waste Types

The AB 939 regulations require each jurisdiction to identify specific waste types as priorities for waste diversion. The jurisdictions may select priority wastes based on criteria such as volume of the solid waste, weight of the solid waste, hazard of the solid waste, the non-renewability of the materials that compose the solid waste, or any other selection criteria.
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<th>Adaptable</th>
<th>Consequences on Wastestream</th>
<th>Time Frame for Implementation</th>
<th>Facility Need</th>
<th>Consistency with Local Policy</th>
<th>Institutional Barriers</th>
<th>Implementation Costs</th>
<th>Market Availability</th>
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<td>Plant on old facilities</td>
<td>May cause traffic impacts and increase worker/pedestrian hazards.</td>
<td>May be expanded or reduced for changes in demographics or waste characteristics.</td>
<td>Can decrease quantities of recyclable materials including cardboard, newspaper and other grades, glass, oil, aluminum, and plastic.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Will require collection infrastructure and processing facility.</td>
<td>Not inconsistent with existing plans and policies.</td>
<td>May require changes in franchise agreements.</td>
<td>Costs range from $0.95 – 3.00 per home per month.</td>
<td>Markets for material are available.</td>
</tr>
<tr>
<td>Plant on old facilities</td>
<td>May cause traffic impacts and increase worker/pedestrian hazards.</td>
<td>May be expanded or reduced for changes in demographics or waste characteristics.</td>
<td>Can decrease quantities of recyclable materials including cardboard, newspaper and other grades, glass, oil, aluminum, and plastic.</td>
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<td>Not inconsistent with existing plans and policies.</td>
<td>May require changes in franchise agreements.</td>
<td>Costs range from $40 – 60 per ton.</td>
<td>Markets for material are available.</td>
</tr>
<tr>
<td>Avert new facility</td>
<td>May cause traffic impacts and increase worker/pedestrian hazards.</td>
<td>May be expanded or reduced for changes in demographics or waste characteristics.</td>
<td>Can decrease quantities of recyclable materials including cardboard, newspaper and other grades, glass, oil, aluminum, and plastic.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Will require collection infrastructure and processing facility.</td>
<td>Not inconsistent with existing plans and policies.</td>
<td>May require changes in franchise agreements.</td>
<td>Costs range from $60 – 80 per ton.</td>
<td>Markets for material are available.</td>
</tr>
</tbody>
</table>
# EVALUATION OF RECYCLING ALTERNATIVES

<table>
<thead>
<tr>
<th>Potential Hazards</th>
<th>Adaptability</th>
<th>Consequences on Wastestream</th>
<th>Time Frame for Implementation</th>
<th>Facility Need</th>
<th>Consistency with Local Policy</th>
<th>Institutional Barriers</th>
<th>Implementation Costs</th>
<th>Market Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>May increase traffic near facility. Potential for illegal dumping.</td>
<td>May be expanded or reduced for changes in demographics or waste characteristics.</td>
<td>Can decrease quantities of recyclable material including cardboard, newspaper, glass, oil, plastic, aluminum, and various paper grades.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>No new facilities are needed.</td>
<td>Not inconsistent with existing plans and policies. May require changes in land use determinations.</td>
<td>Siting and zoning requirements and existing land uses</td>
<td>Costs range from $0 - $30 per ton.</td>
<td>Markets for material are available.</td>
</tr>
<tr>
<td>May increase traffic in vicinity of facility and increase noise impacts.</td>
<td>May be expanded or reduced for changes in demographics or waste characteristics.</td>
<td>Can decrease quantities of recyclable material including cardboard, newspaper, glass, oil, plastic, aluminum, and various paper grades.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>No new facilities are needed.</td>
<td>Not inconsistent with existing plans and policies. May require changes in land use determinations.</td>
<td>Siting and zoning requirements and existing land uses</td>
<td>Costs range from $0 - $30 per ton.</td>
<td>Markets for material are available.</td>
</tr>
<tr>
<td>May increase traffic impacts.</td>
<td>May be expanded or reduced for changes in demographics or waste characteristics.</td>
<td>Can decrease quantities of recyclable material including cardboard, newspaper, glass, oil, plastic, aluminum, and various paper grades.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>No new facilities are needed.</td>
<td>Not inconsistent with existing plans and policies. May require changes in land use determinations.</td>
<td>Siting and zoning requirements and existing land uses</td>
<td>Costs range from $0 - $30 per ton.</td>
<td>Markets for material are available.</td>
</tr>
</tbody>
</table>
### EVALUATION OF RECYCLING ALTERNATIVES

<table>
<thead>
<tr>
<th>Evaluative Criteria</th>
<th>Evaluative Discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials</strong></td>
<td></td>
</tr>
<tr>
<td>Potential noise, air quality and worker safety hazards exist.</td>
<td>Facilities can be designed to allow for expansion or modification. Supports other recycling alternatives. May be implemented in short or medium term planning period. Facility necessary to support North County activity. Would require CEQA determination. Siting and zoning requirements and existing land uses. Costs range from $15 – $40 per ton. Markets for material are available.</td>
</tr>
<tr>
<td>Potential noise, air quality and worker safety hazards exist.</td>
<td>Facilities can be designed to allow for expansion or modification. Can decrease quantities of recyclable material including cardboard, newspaper, glass, oil, plastic, aluminum, and various paper grades. May be implemented in medium term. Would require development of new facility. Would require CEQA determination. Siting and zoning requirements and existing land uses. Costs range from $30 – $60 per ton. Contamination may effect material marketability.</td>
</tr>
<tr>
<td>Potential worker safety hazards exist.</td>
<td>Can be easily adjusted to accommodate change. Can decrease quantities of recyclable material including cardboard, newspaper, glass, oil, plastic, aluminum, and various paper grades. May be implemented in medium term. No new facilities are needed. Not inconsistent with existing plans and policies. Present operational practices. Small additional costs. Markets for material are available.</td>
</tr>
<tr>
<td>Potential noise, air quality and worker safety hazards exist.</td>
<td>Flexible to the extent that equipment is mobile. Equipment can be used to produce boiler fuel. Can decrease quantities of yard and wood waste. May be implemented in short or medium-term planning period. Would require development of new facility. Not inconsistent with existing plans and policies. None identified. Costs range from $15 – $25 per ton. Markets need to be developed.</td>
</tr>
</tbody>
</table>

5-23
Table 5.4: Priority Waste Types Targeted For Diversion.

<table>
<thead>
<tr>
<th>Priority Waste</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPER</td>
<td></td>
</tr>
<tr>
<td>Corrugated cardboard</td>
<td>Weight, volume</td>
</tr>
<tr>
<td>Newspaper</td>
<td>Weight, volume</td>
</tr>
<tr>
<td>High grade ledger paper</td>
<td>High marketability</td>
</tr>
<tr>
<td>Mixed paper</td>
<td>Weight, volume</td>
</tr>
<tr>
<td>GLASS</td>
<td></td>
</tr>
<tr>
<td>California redemption</td>
<td>Weight</td>
</tr>
<tr>
<td>Recyclable</td>
<td>Weight</td>
</tr>
<tr>
<td>METAL</td>
<td></td>
</tr>
<tr>
<td>Aluminum cans</td>
<td>Marketability, non-renewable</td>
</tr>
<tr>
<td>Tin cans</td>
<td>Weight, non-renewable</td>
</tr>
<tr>
<td>Scrap metal</td>
<td>Weight, non-renewable</td>
</tr>
<tr>
<td>YARD/WOOD WASTES</td>
<td>Weight, volume</td>
</tr>
</tbody>
</table>

5.4.2 Selected Programs

Based upon analysis of the Waste Generation Study and the evaluation of alternatives, the following recycling programs have been selected for implementation.

In the short-term planning period (1991 to 1995), Vandenberg AFB will:

1. Continue counting inert (concrete and asphalt) recycling towards diversion mandates while monitoring regulatory and legislative actions related to these materials.
2. Continue the operation of the residential curbside program.
4. Continue operating the drop-off centers.
5. Implement a wood waste and yard waste mulching program.
7. Participate in local and regional recyclable materials market development activities by evaluating the application to be part of a designated market development zone, supporting content legislation, participating in the Southern California Markets Roundtable, and implementing recycled content procurement policies.

In the medium-term planning period (1996 to 2000), Vandenberg AF will:

1. Continue the operation of inerts recycling, residential curbside, drop-off centers, commercial source-separated collection and mulching programs.

2. Continue monitoring inerts diversion activities and State policies relating to these materials.

3. Continue participation in local and regional recyclable materials market development activities.

The following section provides a rationale for the selection of recycling alternatives. This section provides a description of the alternative, an estimate of each alternative’s diversion potential, a description of the proposed alternatives handling methods, a description of any facilities required for implementation, and a discussion of market availability, planned market development activities and measures to be taken in the event of adverse market conditions.

Vandenberg AF has been supporting recycling programs for many years. The alternatives that have been selected build on these activities and provide a framework for the base to realize the AB 939 diversion goals. A number of alternatives were evaluated in the previous section. These were scored and ranked in order to provide a rationale and objective framework for program selection. The alternatives which were not selected include multi-family collection, mobile recycling and buyback or supervised drop-off centers. These alternatives were not selected because of their limited cost and/or diversion benefits. Also, the multi-family units on base are currently supported by various drop-off locations.

The emphasis for the program selection is based on maintenance of existing activities as well limited expansion of these programs in the short-term planning period to attain the 25% diversion goal. Based on the evaluation of alternatives, it is apparent
that the development of waste processing capability will be necessary to enable Vandenberg AFB to reach the 2000 goal of 50 percent diversion. Once a centralized processing capability has been developed in each respective watershed, Vandenberg AFB will be able to determine the best combination of collection methods for mixed and source separated solid waste.

Pilot tests will be developed as part of implementation of the processing facility for the City of Lompoc. It is recommended that Vandenberg AFB evaluate the results of these pilot tests to determine the best possible collection system configuration for the long term.

Continue and Expand Existing Activities

Many of the alternatives selected for implementation and discussed in this section are expansions of the existing recycling activities. This section discusses these program expansions and new programs in detail.

Concrete and Asphalt Recycling In addition to the new and expanded programs, it is assumed that a level of concrete and asphalt recycling will continue to divert materials from Vandenberg's wastestream. Heavy reliance on this material to meet diversion goals is potentially risky due to legislative uncertainty over diversion credit for these materials and uncertainty over the quantity of these materials in the wastestream over the next ten years. Due to these uncertainties, a conservative number of five percent of Vandenberg's total waste generation is used for inert diversion for planning purposes.

Curbside Collection Continuation This is an existing program which can potentially be expanded to include additional materials to increase the diversion rate of residential curbside recycling. Materials that could potentially be added to the program in the short term include mixed paper and magazines. In addition, curbside recycling serves as an important recycling education and public participation tool for Vandenberg AFB.

Commercial Source-Separated Collection Continuation This alternative has been selected because commercial generators generate approximately 12 percent of Vandenberg's wastestream. Drop-off sites are located near commercial businesses such as the community centers and the commissary. This program could be significantly expanded when processing capabilities are in place to receive materials which have been separated into "wet/dry" categories (see discussion of the integrated diversion facility).
If mixed waste capabilities prove effective, the alternative would use the existing collection system and separate the materials at a mixed waste facility.

**Integrated Diversion Facilities** Based on the evaluation of the alternatives in the previous section it has been determined that a facility with the ability to process mixed commercial and residential wastes will be necessary to enable Vandenberg AFB to attain the 50% diversion goals mandated by AB 939. It is recommended that Vandenberg AFB evaluate the feasibility of participating in the Lompoc Mixed Waste Processing Facility proposed in the City of Lompoc SRRB.

It is envisioned that the IDF would receive commercial and residential mixed solid waste for processing. In addition, the facility would accept source separated compostable materials such as yard waste, food wastes and sewage sludge¹ (see composting component) and will have the capability to accept source separated and commingled recyclables for processing.

**Mulching Operations** Yard and wood waste comprise approximately 26.3 percent of Vandenberg’s wastestream. Some of this material can be processed into a mulch product for use by Vandenberg personnel around federal buildings, by private businesses located on base, and around base housing for landscaping. For these reasons, mulching has been selected as an alternative.

**5.4.3 Anticipated Diversion from Selected Alternatives**

Estimated diversion rates for each commodity collected for each of the selected alternative recycling programs are included in Table 5.2.

**5.4.4 Proposed Methods for Handling and Disposal**

The following discusses the proposed methods for handling and disposal of the materials collected by the selected recycling alternatives.

**Concrete and Asphalt**

Construction debris materials are stockpiled on a site located on Washington Street, Vandenberg AFB. Materials received at this

¹ Sewage sludge can be accepted only at a facility that is permitted by both the Regional Water Quality Control Board and the County of Santa Barbara Environmental Health Services.
<table>
<thead>
<tr>
<th>Recycling Component Programs</th>
<th>1990 Estimated Diversion (%)</th>
<th>1995 Estimated Diversion (%)</th>
<th>2000 Estimated Diversion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Curbside</td>
<td>10.1</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Commercial Collection*</td>
<td>9.8</td>
<td>12.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Mulching</td>
<td>---</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Intermediate Processing</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mixed Waste Processing**</td>
<td>---</td>
<td>---</td>
<td>15.0</td>
</tr>
<tr>
<td>Total Composting Diversion</td>
<td>19.9%</td>
<td>23.0%</td>
<td>39.0%</td>
</tr>
</tbody>
</table>

* Includes rock, concrete, and asphalt.

** Participation is dependant on Vandenberg AFB's feasibility determination.
### Table 6.6

**Program Diversion Estimate for the Short and Medium-Term Planning Periods**

<table>
<thead>
<tr>
<th>Component:</th>
<th>Vandenberg AFB Recycling Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program:</td>
<td>Curbside Collection</td>
</tr>
<tr>
<td>Generator Type:</td>
<td>Residential</td>
</tr>
</tbody>
</table>

#### Composition Data and Estimates of Participation and Capture

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Percent of Residential Wastestream</th>
<th>Average Participation Rate</th>
<th>Estimated Capture Rate</th>
<th>Effective Recovery Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrugated Cardboard</td>
<td>4.5%</td>
<td>90%</td>
<td>65%</td>
<td>2.63%</td>
</tr>
<tr>
<td>Newsprint</td>
<td>3.2%</td>
<td>90%</td>
<td>75%</td>
<td>2.16%</td>
</tr>
<tr>
<td>Glass</td>
<td>2.3%</td>
<td>85%</td>
<td>75%</td>
<td>1.47%</td>
</tr>
<tr>
<td>Aluminum Cans</td>
<td>5.7%</td>
<td>90%</td>
<td>90%</td>
<td>4.62%</td>
</tr>
<tr>
<td>Other Aluminum</td>
<td>2.8%</td>
<td>75%</td>
<td>80%</td>
<td>1.89%</td>
</tr>
<tr>
<td>Tin Cans</td>
<td>2.8%</td>
<td>90%</td>
<td>90%</td>
<td>2.27%</td>
</tr>
</tbody>
</table>

#### Diversion Quantities by Material Type and Percent of Total Wastestream Diverted

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Generation:</td>
<td>21,160</td>
<td>21,250</td>
<td>21,340</td>
<td>21,430</td>
<td>21,520</td>
<td>21,610</td>
<td>21,700</td>
<td>21,790</td>
<td>21,880</td>
<td>21,970</td>
<td>22,070</td>
</tr>
<tr>
<td>Total Residential Disposal:</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
</tr>
</tbody>
</table>

**Material Type**

| Corrugated Cardboard | 384 | 303 | 303 | 303 | 303 | 303 | 303 | 303 | 303 | 303 | 303 |
| Newsprint            | 294 | 248 | 248 | 248 | 248 | 248 | 248 | 248 | 248 | 248 | 248 |
| Glass                | 161 | 169 | 169 | 169 | 169 | 169 | 169 | 169 | 169 | 169 | 169 |
| Aluminum Cans        | 664 | 531 | 531 | 531 | 551 | 531 | 531 | 531 | 531 | 531 | 531 |
| Other Aluminum       | 320 | 217 | 217 | 217 | 217 | 217 | 217 | 217 | 217 | 217 | 217 |
| Tin Cans             | 321 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 |
| Quantity Diverted (tons per year) | 2,144 | 1,729 | 1,729 | 1,729 | 1,729 | 1,729 | 1,729 | 1,729 | 1,729 | 1,729 | 1,729 |
| Total Diversion (%)  | 10.1% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% |

**Notes:**
1. Estimated wastestream growth rate: 0.0% based on the Solid Waste Generation Study (SWGS).
2. Existing diversion through buyback/drop-off identified in the SWGS (page 3-44, table 3-AN).
### Program Diversion Estimate for the Short and Medium-Term Planning Periods

<table>
<thead>
<tr>
<th>COMPONENT:</th>
<th>Vandenberg AFB Recycling Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM:</td>
<td>Commercial Collection</td>
</tr>
<tr>
<td>GENERATOR TYPE:</td>
<td>Commercial</td>
</tr>
</tbody>
</table>

#### Composition Data and Estimates of Participation and Capture

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Percent of Commercial Wastestream</th>
<th>Average Participation Rate</th>
<th>Estimated Capture Rate</th>
<th>Effective Recovery Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inerts</td>
<td>6.6%</td>
<td>75%</td>
<td>55%</td>
<td>2.72%</td>
</tr>
<tr>
<td>Ferrous Metals</td>
<td>10.0%</td>
<td>50%</td>
<td>50%</td>
<td>2.50%</td>
</tr>
<tr>
<td>Non-Ferrous Metals</td>
<td>0.1%</td>
<td>85%</td>
<td>75%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Other Aluminum</td>
<td>0.1%</td>
<td>85%</td>
<td>90%</td>
<td>0.08%</td>
</tr>
</tbody>
</table>

#### Diversion Quantities by Material Type and Percent of Total Wastestream Diverted

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Generation:</td>
<td>21,160</td>
<td>21,250</td>
<td>21,340</td>
<td>21,430</td>
<td>21,520</td>
<td>21,610</td>
<td>21,700</td>
<td>21,790</td>
<td>21,880</td>
<td>21,970</td>
<td>22,070</td>
</tr>
<tr>
<td>Total Commercial Disposal:</td>
<td>11,600</td>
<td>11,638</td>
<td>11,778</td>
<td>11,919</td>
<td>12,062</td>
<td>12,207</td>
<td>12,353</td>
<td>12,501</td>
<td>12,651</td>
<td>12,803</td>
<td>12,957</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Inerts</th>
<th>Ferrous Metals</th>
<th>Non-Ferrous Metals</th>
<th>Other Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>294</td>
<td>1,620</td>
<td>136</td>
<td>28</td>
</tr>
<tr>
<td>1991</td>
<td>318</td>
<td>1,911</td>
<td>144</td>
<td>36</td>
</tr>
<tr>
<td>1992</td>
<td>322</td>
<td>1,914</td>
<td>153</td>
<td>48</td>
</tr>
<tr>
<td>1993</td>
<td>328</td>
<td>1,918</td>
<td>162</td>
<td>56</td>
</tr>
<tr>
<td>1994</td>
<td>329</td>
<td>1,922</td>
<td>170</td>
<td>66</td>
</tr>
<tr>
<td>1995</td>
<td>333</td>
<td>1,925</td>
<td>179</td>
<td>77</td>
</tr>
<tr>
<td>1996</td>
<td>337</td>
<td>1,929</td>
<td>188</td>
<td>87</td>
</tr>
<tr>
<td>1997</td>
<td>341</td>
<td>1,933</td>
<td>197</td>
<td>98</td>
</tr>
<tr>
<td>1998</td>
<td>345</td>
<td>1,936</td>
<td>206</td>
<td>108</td>
</tr>
<tr>
<td>1999</td>
<td>350</td>
<td>1,940</td>
<td>215</td>
<td>119</td>
</tr>
<tr>
<td>2000</td>
<td>354</td>
<td>1,944</td>
<td>224</td>
<td>130</td>
</tr>
</tbody>
</table>

| Quantity Diverted (tons per year) | 2,076   | 2,409   | 2,435   | 2,461   | 2,487   | 2,514   | 2,541   | 2,568   | 2,596   | 2,624   | 2,652   |
| Total Diversion (%)            | 9.8%    | 11%      | 11%      | 12%      | 12%      | 12%      | 12%      | 12%      | 12%      | 12%      | 12%      |

**Notes:**
1. Estimated wastestream growth rate: 1.2%, based on the Solid Waste Generation Study (SWGS).
## Program Diversion Estimate for the Short and Medium-Term Planning Periods

### Table 5.6

**Component:** Vandenberg AFB Recycling Component  
**Program:** Yard Waste/Wood Waste Mulching  
**Generator Type:** Aggregate  

### Compositional Data and Estimates of Participation and Capture

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Percent of Aggregate Wastestream</th>
<th>Average Participation Rate</th>
<th>Estimated Capture Rate</th>
<th>Effective Recovery Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yard Waste</td>
<td>33.6%</td>
<td>25%</td>
<td>50%</td>
<td>4.23%</td>
</tr>
<tr>
<td>Wood Waste</td>
<td>1.1%</td>
<td>25%</td>
<td>50%</td>
<td>0.14%</td>
</tr>
</tbody>
</table>

### Diversion Quantities by Material Type and Percent of Total Wastestream Diverted

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Generation</td>
<td>21,160</td>
<td>21,250</td>
<td>21,340</td>
<td>21,430</td>
<td>21,520</td>
<td>21,610</td>
<td>21,700</td>
<td>21,790</td>
<td>21,880</td>
<td>21,970</td>
<td>22,070</td>
</tr>
<tr>
<td>Total Aggregate Disposal</td>
<td>15,972</td>
<td>16,164</td>
<td>16,356</td>
<td>16,554</td>
<td>16,753</td>
<td>16,954</td>
<td>17,157</td>
<td>17,363</td>
<td>17,571</td>
<td>17,782</td>
<td>17,986</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Quantity Diverted (tons per year)</th>
<th>Total Diversion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yard Waste</td>
<td>0 0 691 699 708 718 725 734 742 751 760</td>
<td>0.0% 0% 3% 3% 3% 3% 3% 4% 4% 4% 4%</td>
</tr>
<tr>
<td>Wood Waste</td>
<td>0 0 22 23 23 24 24 24 24 24 24</td>
<td>0.0% 0% 3% 3% 3% 3% 3% 4% 4% 4% 4%</td>
</tr>
</tbody>
</table>

| Notes:
| 1. Estimated wastestream growth rate: 1.2% based on the Solid Waste Generation Study (SWGS).
| 2. Wood waste diversion through this system is not expected to increase above the wastestream growth rate. |
facility will be crushed and screened for use as aggregate for unimproved and semi-improved roads on base. The material will continue to be stockpiled until the rock crusher is available.

Curbside Collection

Materials are set out in plastic bags by residents. Specialized collection trucks collect these materials on a weekly basis. The materials are brought to the RRRP Center for processing and marketing.

Commercial Source Separation

Participating commercial offices set out materials in separate drop-off containers for collection by the MWR office. These materials are brought to the RRRP Center for processing and marketing.

Mixed Waste Processing

Mixed loads of commercial and residential waste will be transported to a central facility. The loads will be dumped on a tipping floor where bulky items will be removed for recycling. The remaining waste will be pushed by a tractor onto a conveyor where it will be processed to separate out recyclables by both automated and manual means. Recyclable materials removed through mixed waste processing will be further processed and prepared for marketing. Compostable materials removed through this process will be directed to the adjacent compost area.

Mulching Operations

Clean loads of bushy yard and wood waste would be accepted at a drop-off location on base. Suitable material would be shredded and size to produce a marketable product. The material would be picked up at the drop-off site by base departments, businesses located on base, and base personnel for landscaping uses.

5.4.5 Facilities to Be Utilized

The following discusses the facilities that will be utilized for collection, processing, and handling the materials collected by the selected recycling alternatives.

Concrete and Asphalt

Concrete and asphalt recycling activities will be carried out at
the location on 35th Street near Wall Beach on Vandenberg APB. Continued operation should be encouraged.

Curbside Collection

The RRRP Center would continue to be utilized to process and market all materials collected from the residential curbside program.

Commercial Source Separation

Commercial source separated collection will require access to intermediate processing capabilities to prepare recovered materials for market. Currently, the office paper collection from commercial offices is brought to the RRRP Center for processing and marketing.

Mixed Waste Processing

Mixed waste processing of the Vandenberg APB wastestream to remove recyclables and produce compost will require access to a mixed waste processing facility referred to as an IDF in this plan. There is presently no such facility available to process mixed waste within the County of Santa Barbara. However, such a facility is recommended for each individual wasteshed within the individual city’s recycling components. When such a facility becomes available, it is recommended that Vandenberg APB study the feasibility of participating in the Lompoc mixed waste processing facility.

Mulching Operations

It is proposed that mulching occur on base. If mulching occurs at a site other than the landfill, development of a facility will be necessary.

5.4.6 Anticipated End-Users for Diverted Materials

The following series of tables list the commodities recovered by each selected alternative and the anticipated end uses for each of those commodities.
Table 5.9: Materials recovered and the anticipated end users for the concrete and asphalt recycling programs recommended in the recycling component.

<table>
<thead>
<tr>
<th>Materials Recovered</th>
<th>Anticipated End-Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete and asphalt</td>
<td>Lash Construction, Santa Barbara, CA</td>
</tr>
<tr>
<td></td>
<td>Granite Construction, Goleta, CA</td>
</tr>
</tbody>
</table>

Table 5.10: Materials recovered and the anticipated end users for the source separated and mixed waste recovery programs recommended in the recycling component.

<table>
<thead>
<tr>
<th>Materials Recovered</th>
<th>Anticipated End-Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrugated cardboard</td>
<td>Williamette, Oxnard, CA</td>
</tr>
<tr>
<td>High grade/mixed paper</td>
<td>Yao Lang, Los Alamitos, CA*</td>
</tr>
<tr>
<td></td>
<td>Western Pulp and Paper, Downey, CA*</td>
</tr>
<tr>
<td></td>
<td>Berg Mills, West Hollywood, CA*</td>
</tr>
<tr>
<td>Magazines</td>
<td>Smurfit, Los Angeles, CA†</td>
</tr>
<tr>
<td></td>
<td>CR&amp;R, Stanton, CA‡</td>
</tr>
<tr>
<td>Newsprint</td>
<td>Smurfit, Pomona, CA*</td>
</tr>
<tr>
<td>Telephone books</td>
<td>Smurfit, Pomona, CA</td>
</tr>
<tr>
<td>Glass</td>
<td>CR&amp;R, Stanton, CA‡</td>
</tr>
<tr>
<td></td>
<td>Owens-Illinois, Vernon, CA</td>
</tr>
<tr>
<td>PETE</td>
<td>Plastic Recycling, West Hollywood, CA‡</td>
</tr>
<tr>
<td>HDPE</td>
<td>Smurfit, Los Angeles, CA*</td>
</tr>
<tr>
<td></td>
<td>Partek, Vancouver, B.C.</td>
</tr>
<tr>
<td>Aluminum cans</td>
<td>CR&amp;R, Stanton, CA‡</td>
</tr>
<tr>
<td></td>
<td>Alpert &amp; Alpert, Los Angeles, CA‡</td>
</tr>
<tr>
<td></td>
<td>IPS, Fresno, CA‡</td>
</tr>
<tr>
<td>Ferrous metals</td>
<td>Oxnard Metals, Oxnard, CA‡</td>
</tr>
<tr>
<td>Scrap aluminum</td>
<td>Santa Barbara Iron, Santa Barbara, CA‡</td>
</tr>
<tr>
<td></td>
<td>Oxnard Metals, Oxnard, CA‡</td>
</tr>
</tbody>
</table>

* Exported
† Used domestically
‡ Used domestically and exported
Table 5.11: Materials recovered and the anticipated end users for the yard and wood waste mulching program recommended in the recycling component.

<table>
<thead>
<tr>
<th>Materials Recovered</th>
<th>Anticipated End-Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mulch products</td>
<td>Vandenberg AFB parks and maintenance departments, residents, commercial landscapers.</td>
</tr>
</tbody>
</table>

5.5 PROGRAM IMPLEMENTATION

This section identifies those responsible for implementation of the recycling alternatives, provides tasks and schedules associated with implementation of the alternatives, as well as program implementation costs and revenue sources.

5.5.1 Responsibility for Implementation

Final responsibility of implementation of the alternatives selected rests with the Installation Commander of Vandenberg AFB. Through directives the Commander will designate the appropriate responsibilities to the 4392 Civil Engineering Group and the Morale, Wellness, and Readiness Office. Those responsibilities will be designated according to the established duties of those offices.

5.5.2 Implementation Tasks and Schedule

Curbside Recycling

It is anticipated that curbside recycling will be maintained during both the short and medium-term planning periods. Since the program already services all available family housing, no additional homes can be added to the program. Additional materials may be added to the curbside program as markets, collection technology and processing capabilities warrant.

Commercial Source Separation

A series of pilot programs are planned to determine the best commercial collection and processing methods for expanded commercial recovery. These collection methods need to be specially designed to be consistent with planned processing facility development for Vandenberg AFB. Once the pilot programs are complete, it is recommended that Vandenberg AFB review the
results and apply them where feasible. Until that time, commercial recycling will continue at its current diversion rate of 13 percent.

Mixed Waste Processing

It is has been determined that development of solid waste processing facilities is necessary to enable the cities, their respective watersheds, and Vandenberg AFB to achieve the medium-term diversion mandates of AB 939. As discussed earlier, a mixed waste processing facility could be efficiently combined with a municipal scale composting facility to provide the solid waste processing capabilities necessary for meeting the 50 percent diversion goal set for the medium-term planning period (1995 to 2000).

It is recommended that Vandenberg AFB study the feasibility of participating in the City of Lompoc mixed waste processing facility. Such a feasibility study should examine diversion potential, transportation costs, and tipping fees. If possible, designated loads from Vandenberg should be redirected to the mixed waste processing facility to determine the percentage of marketable commodities remaining in the Vandenberg wastestream.

Mulching Operations

Mulching would be conducted on base using the recently purchased grinder. The service would be provided only to personnel authorized to use the base disposal system.

5.5.3 Recycling Component Costs

The following section contains cost estimates for implementation of the selected recycling programs in the unincorporated County. It should be understood that these costs are for general planning purposes only and that actual costs will be known only as programs are implemented.

Curbside Recycling

Costs associated with expanding the existing program to include additional materials will be determined as markets become available for these materials.

Drop-off Recycling

Costs associated with expanding the existing program to include
additional materials will be determined as markets become available for these materials.

Commercial Source Separation

Costs will be determined after completion of the pilot programs and after such time that Vandenberg AFB determines such expansions are feasible.

Mixed Waste Processing (IDF)

The proposed IDFs will include mixed waste processing capabilities. As indicated in the implementation program a detailed feasibility analysis and procurement process will be conducted for each IDF. This process will identify actual costs for the IDF and the appropriate means of financing. At this time, it is possible to provide a range of estimates compiled for such facilities from around the United States. Capital costs for an IDF capable of both mixed waste processing and mixed MSW/sludge composting are in the range of $40,000 to $60,000 per ton of capacity per day. Operations and maintenance could be expected to range between $30 and $50 per ton\(^2\). By the year 2000, the South Coast waste generation data suggests a facility design throughput of between 300 to 500 tpd based on two operating shifts. Using these figures capital facility costs would range between $12 to $20 million per year. Annual operations and maintenance costs are estimated at between $2.7 to $7.5 million per year.

Capital and operations and maintenance costs will be examined in greater detail as part of the study to be conducted by Vandenberg to determine the feasibility of participating in the Lompoc mixed waste processing center.

Mulching Operations

Mulching costs range from $15 to $25 per ton processed. Capital costs depend upon the size and type of equipment used. Vandenberg’s tonnage is estimated at 400 tons per year at a cost of $6,000 to $10,000 per year. These costs do not include potential revenues from the sale of the mulched product.

Revenue Sources

The revenue sources and arrangements for funding the proposed IDF and other selected recycling programs are discussed in detail in the funding component of this document.

5.5.4 Methods to Deter Unauthorized Removal of Recyclables

Santa Barbara County Code, Chapter 17, Garbage and Refuse (section 17-12) states that recyclable materials, once place on the curb, are the property of the County or the County’s authorized recyclable materials collector. In addition, the ordinance prohibits any person, other than those authorized, to sort through or remove recyclables. Residents are encouraged to report violations of the ordinance to their local enforcement agency.

The Installation Commander of Vandenberg AFB has the authority to issue a directive prohibiting the removal of recyclable materials from the existing programs, including drop-offs and residential curbside programs.

5.6 MONITORING AND EVALUATION OF PROGRAMS

5.6.1 Quantification and Monitoring Methods

The methods to quantify and monitor achievement of the objectives of the recycling component will include at least one of the following:

* perform an additional Waste Generation Study consistent with the study prepared under Section 18722 to determine the effectiveness of the program

* perform targeted solid waste characterization studies involving all or a representative sample of generator sites and recycling, composting, transformation, and landfill facilities to measure changes in volume, weight, and hazard of specific materials, with adjustments for shifts in solid waste generation caused by source reductions

* assess changes in the design, production, distribution, sale, and/or use of selected products and packages which affect solid waste generation
develop an alternative methodology to quantify and
monitor the program objectives for submittal to and
approval by the California Integrated Waste Management
Board prior to implementation (Article 6.2, Section
18733.6(a)(4), AB 939 regulations).

5.6.2 Method to Monitor Selected Recycling Programs

Recycling activities on Vandenberg AFB will be monitored and
evaluated using a annual reporting system. All organizations
providing recycling activities which can be counted towards AB
939 diversion requirements will be asked to submit specific
information pertaining to quantities and composition of materials
collected on a to-be-developed reporting system. This system
will record recyclables by type and tonnage. At the end of each
fiscal year a Recycling Program Monitoring and Evaluation Report
will be completed by the Morale, Wellness, and Readiness office
and the Solid Waste Minimization Committee of the Environmental
Protection Committee.

The Recycling Program Monitoring and Evaluation Reports will
contain the following:

1. a brief summary of the recycling programs being
implemented in the area affected by the report and the
schedules for any programs in planning and/or
development;

2. a brief discussion of progress towards the objectives
established for the recycling component; and

3. a short evaluation of the recycling programs in terms of
the evaluative criteria listed in this section (see
below).

4. If a shortfall in the attainment of the recycling
component objectives is identified, a special section of
the report will be compiled which summarizes the
shortfall(s) in terms of the list contained at the end
of this section.

5.6.3 Criteria for Program Evaluation

The regulations require six criteria for evaluating program
effectiveness. These criteria will be the basis for analyzing
the effectiveness of the selected programs. Those criteria are:

* the total quantity of materials, by weight and volume, diverted from disposal by each recycling program and the percent of the total waste generated the diversion represents;

* the level of contamination of materials collected through each program;

* the total cost of processing and the amount of residuals remaining for disposal after processing;

* the cost of transportation;

* marketing and marketability (quality) of recycled materials; and

* participation rates, especially for residential curbside and multi-family collection.

5.6.4 Responsible Parties

Final responsibility of implementation of the alternatives selected rests with the Installation Commander of Vandenberg AFB through the direction given to the Solid Waste Minimization Committee of the Environmental Protection Committee. Through directives the Commander will designate the appropriate responsibilities to the 4392 Civil Engineering Group and the Morale, Wellness, and Readiness Office. Those responsibilities, including monitoring and evaluation, will be designated according to the established duties of those offices.

5.6.5 Funding Requirements and Revenue Sources

All funding and revenues are obtained through the Department of Defense budget as approved by Congress. The insert programs operate on revenues received from the sale of the commodities collected by the programs.

A detailed description of funding and revenue sources is included in the funding component of this plan.

5.6.6 Program Shortfalls

If the annual monitoring and evaluation reports show a shortfall in attaining the diversion or marketing goals set forth in the
goals and objectives of the recycling component, a special report will be prepared by the Morale, Wellness, and Readiness office and the Solid Waste Minimization Committee of the Environmental Protection Committee identifying the following:

* areas where the recycling programs are deficient;
* potential measures to increase diversion of recycled materials;
* potential measures that will increase recycling program efficiency;
* possible strategies for securing additional markets for recycled materials.

The report will also identify potential measures to off-set any identified shortfalls in program objectives or attainment of diversion mandates. These measures may include, but are not limited to, increased promotion and public information dissemination, increased market development, and revision of component objectives.

This special report will be submitted to the Installation Commander for his consideration and direction. Any measures or directives issued by the Installation Commander will be implemented by the 4392 Civil Engineering Group and the Morale, Wellness, and Readiness Office in an attempt to address the identified shortfalls. The regulations require each jurisdiction to identify measures to be implemented if monitoring shows a shortfall of the recycling component objectives or of the diversion mandates specified in Public Resources Code, Section 41780.
COMPOSTING COMPONENT
6: COMPOSTING COMPONENT

Introduction

The composting component establishes objectives for Vandenberg Air Force Base (AFB), describes existing compost activities, evaluates composting collection and processing alternatives, recommends a composting system, and establishes a ten-year program implementation schedule. This component also identifies implementation responsibility, estimates program costs, lists potential revenue sources and proposes a monitoring and evaluation system. The structure of this component follows the model format required by the AB 939 regulations.

Component Summary

The following list summarizes the composting program selected for implementation at Vandenberg AFB.

In the short-term planning period (1991 to 1995), Vandenberg AFB will:

* Participate with other jurisdictions in the region in the development of a regional yard waste composting facility to serve Vandenberg AFB, the City of Lompoc and the surrounding County Unincorporated area.

* Establish a drop-off site at the Vandenberg AFB Landfill for yard waste, wood waste and agricultural waste to serve Vandenberg AFB and the Lompoc Federal Penitentiary.

* Establish a source separated yard waste collection program for households at Vandenberg AFB.

* Participate in the development a local compost product market development program emphasizing landscape and agricultural uses of the centralized facility compost product.
In the medium-term planning period (1996 to 2000), Vandenberg AFB will:

* Participate with other jurisdictions in the region in evaluating expansion of the composting system to include other organic materials diverted through source separation techniques or through processing of mixed waste. Materials which could potentially be composted include food waste, mixed paper and other miscellaneous organic materials.

Background

AB 939 defines composting as a method of waste treatment in which organic solids are biologically decomposed under controlled aerobic or anaerobic conditions. This process results in a stable, disinfected and decomposed material which can be sold or distributed as a soil amendment that can improve soil texture, air and water absorption capacity, and erosion control.

As a waste diversion method, composting provides an opportunity to substantially reduce the volume of yard waste and other organic materials that are currently landfilled. According to the Waste Generation Study, Vandenberg AFB has a significant amount of yard waste and other compostable materials in its wastestream. It is estimated that 30 percent of the Base's total wastestream is residentially generated yard waste. Wood waste may also be included in the compost process, although it may be more cost effective to produce mulch, animal bedding or fuel products with these materials. It should be noted that any materials diverted from disposal through mulching would be considered recycling under the AB 939 regulations.

Yard waste, food waste, wood waste and other compostable materials can be collected in a source separated fashion (curbside collection or drop-offs) or they can be removed from the wastestream at a mixed waste processing facility. Materials collected source separated are typically clean of contaminants (such as glass, plastic and metals); this reduces the cost of processing the materials and usually results in a more marketable compost product. Although yard waste drop-off sites may be the least expensive means of recovering clean yard waste, curbside yard waste collection is the most effective means of recovering clean yard waste from residential generators.

Composting is often conducted at or near the municipal landfill due to the cost and environmental benefits of short
transportation distances for compost feedstocks and residuals to be disposed. In addition, landfills and composting facilities are generally considered compatible land-uses, which minimizes local opposition to facility siting based on concerns such as dust, odors and vehicle traffic. Further, some local governments have been able to reduce costs by using landfill staff and equipment for some compost facility needs.

The EPA estimates that there are between 800 and 1000 yard waste composting facilities in the U.S. The most common method of yard waste composting uses windrows (long parallel piles 15-25 ft. wide and 10-12 ft. high) to cure the compostable materials. Pre-processing of the yard waste helps prepare the materials for maximum biological activity and decomposition. Pre-processing typically includes grinding and screening. Once formed, the windrows are periodically turned to provide oxygen to the aerobically decomposing piles; this is accomplished with either a front-end loader or a specialized windrow turner. Turning frequency depends on a number of factors including climate, types of feedstock materials, and windrow size. Water must also be applied to the composting materials to maintain the decomposition process and control dust.

Composting can also be accomplished in closed systems in which materials are composted in an enclosed silo, bin, or vessel which has either built-in turning machinery or moves materials through the system in a plug-flow manner. Closed systems provide greater ability to control the decomposition process (and thus, factors such as decomposition rates and odors). This type of composting facility also requires significantly less land than an open windrow system.

Wastewater sludge can be combined with yard wastes and other compostable organic materials to produce a high quality compost end-product. The addition of sewage sludge to a composting system has numerous potential benefits including: production of a high quality finished compost product, improved processing effectiveness for high carbon materials (brush, wood wastes, yard waste), elimination or significant reduction of supplemental water needs, and a reduction of disposal problems associated with wastewater sludge. A 1989 BioCycle survey of sludge composting facilities found that 119 sludge composting facilities are in operation in the U.S. and another 58 are either in advance planning stages or under construction. The current regulatory interpretation states that co-composted sludge and yard waste would not be creditable towards the AB 939 diversion mandates. However, the California Integrated Waste Management Board (CIWMB)
is expected to reconsider allowing these materials to count in the near future.

There are about 10 mixed organics composting systems operating in the U.S. in sizes ranging from 5 to 1000 tons per day (tpd). In mixed organics composting systems the organic fraction of the mixed wastestream, including yard waste, food waste, mixed paper and other organic materials are separated from non-compostable materials in the wastestream, such as metals, glass and plastics. This can be achieved using modified collection procedures, automated processing techniques at a facility or through modified collection procedures, or through a combination of these methods.

Some of the non-compostable materials typically end up in the final compost product, such as pieces of glass and plastic. Although contamination from these materials will not necessarily effect the use of the product, it will undoubtedly effect the marketability of the final product. One of the primary problems with mixed organics composting is finding and developing viable markets for the finished compost product. This problem may be exacerbated in California by the lack of regulations governing compost feedstocks and end products.

The development of markets, particularly local ones, for the final compost products is crucial to the success of the composting system. Potential end-use markets for compost products include commercial landscaping, home and garden use, agriculture, public facilities (i.e., parks and recreation facilities), land reclamation, and landfill cover. Consistent quality, as well as consistent availability is critical in determining the marketability of compost. In general, the jurisdictions involved in a composting facility should not expect to generate the revenues that commodities like aluminum, high-grade paper and other recyclable materials are capable of producing. The sale of compost products can only be expected to partially offset compost facility operating costs. Gross revenues for yard waste compost products exhibit a wide range: from $0 to $25 per ton for an especially high-grade product that meets a targeted end-use market. Recent legislation (SB 1322) creates new markets for compost by requiring virtually all state agencies to develop plans for the utilization of compost and mulch produced from yard waste and other materials diverted from the wastestream. State procurement requirements for compost are expected to begin to take effect in two to three years, particularly from agencies such as Caltrans.
6.1 EXISTING CONDITIONS

6.1.1 Vandenberg Air Force Base

There are currently no municipal, private, or base-sponsored composting activities underway serving Vandenberg AFB.

6.1.2 City of Lompoc

There are currently no municipal or private composting activities underway in the City of Lompoc.

6.1.3 County of Santa Barbara Unincorporated Areas

The County of Santa Barbara Waste Generation Study identified Valley Compost and Topsoil, Santa Ynez, California, as the only composting operation in the County. Commercial agricultural crop residues and manure are used to produce fertilizer and soil amendments.

Although there are currently no large scale composting activities in the County of Santa Barbara, the Community Environmental Council (CEC) has conducted a Mini-Compost Digester Project. The purpose of the study is to determine the feasibility of composting various components of the County's wastestream. Two ton samples of materials are being composted in a mini-compost digester. The free standing vessel imitates a full scale European compost plant which processes about 200 tons of organic material a day. Currently, three combinations of waste are being tested: municipal solid waste (MSW) only, MSW and sewage sludge, and yard waste only. All combinations are being chemically tested and analyzed for soil enhancement qualities.

A preliminary market study was also conducted by CEC in December 1988 which revealed a significant amount of local interest in purchasing compost products. The report addressed issues concerning the volumes of compost that different market sectors utilize, the need for chemical and physical testing prior to large scale production and potential compost procurement by local governments, nurseries and farmers.

6.1.4 Local Sanitary Districts

The Carpinteria, Montecito, and Goleta Sanitary Districts as well as the City of Santa Barbara have expressed a strong interest in participating with local jurisdictions in a program to co-compost wastewater sludge with yard wastes. Although materials co-
Composted with sewage sludge can not currently be credited towards the diversion mandates under AB 939, the CIWMB is considering reversing its position and allowing these materials to count.

6.2 COMPONENT OBJECTIVES

The AB 939 regulations require each jurisdiction to adopt short- and medium-term objectives for composting activities. The following objectives are based on local conditions, input from the Local Task Force, staff, and the composting programs selected in this component.

The short-term objectives (1991 to 1995) are:

* To participate in a regional yard waste composting program by January 1995.

* To attain at least 5 percent diversion through yard waste composting activities in the short-term planning period.

The medium-term objectives (1996 to 2000) are:

* To divert at least 50 percent of Vandenberg AFB’s yard waste from disposal through composting activities by July 1996.

* To target organic materials such as food waste, other paper and other organic materials for composting in the residential and commercial waste streams to help achieve the State mandated 50 percent diversion goal.

The short-term market development objectives are:

* To develop and expand local public and private sector markets for compost products produced through composting programs.

* To facilitate the use of locally produced compost and mulch products by governmental agencies in public parks, civic centers and other facilities.

* To provide a range of compost and mulch products specifically produced to meet market needs.

* To develop education programs emphasizing the beneficial uses of compost and mulch products.
6.2.1 Priority Waste Types

The AB 939 regulations require each jurisdiction to identify specific waste types as priorities for waste diversion. The jurisdictions may select priority wastes based on criteria such as volume of the solid waste, weight of the solid waste, hazard of the solid waste, non-renewability of the materials that compose the solid waste, or any other relevant selection criteria.

<table>
<thead>
<tr>
<th>Table 6.1: The priority wastes and the criteria and/or rationale for targeting these wastes in the Vandenberg AF Base wastestream.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority Wastes</td>
</tr>
<tr>
<td>Yard waste</td>
</tr>
<tr>
<td>Wood waste</td>
</tr>
</tbody>
</table>

6.3 EVALUATION OF ALTERNATIVES

6.3.1 Considered Composting Program Alternatives

The alternatives evaluated in this component have been divided into three categories: processing alternatives, collection alternatives and policy alternatives. The following section presents a brief description of each alternative evaluated.

Processing Alternatives

* yard waste composting: In this alternative one or more facilities would be developed which accept mixed yard waste, including leaves, grass, brush, prunings and other green waste for processing into marketable compost products. In addition, this facility would also accept wood waste. The wood waste would be processed to produce compost, mulch materials, fuel and other useful products.

* mixed municipal solid waste (MSW) composting: In this alternative a facility would be developed which would accept mixed solid waste for processing into a marketable compost product. This type of facility would use manual and automated means to remove non-compostable materials (metals, glass, bulky materials) from incoming waste,
leaving the organic fraction (food waste, plant material, paper and other miscellaneous organic materials) for further processing into a stable compost end-product which can be used as a soil conditioner, organic fertilizer or cover material.

* co-composting of yard waste with sewage sludge: In this alternative a facility would be developed for composting a combination of yard waste materials and sludge from wastewater treatment plants. This process would produce a stable compost end-product which can be used as a soil conditioner, organic fertilizer or cover material.

Collection Alternatives

* curbside collection of yard waste: Yard waste would be collected from residential generators receiving waste collection separately from mixed wastes. Collected yard waste would then be transported to a composting facility for processing.

* drop-off sites for yard waste: Designated tipping areas would be established for clean loads of yard waste at the Vandenberg AFB landfill. These drop-off site areas would be supervised by landfill staff. Yard waste collected through these drop-off sites would be periodically transported to a composting facility for processing.

* satellite yard waste drop-offs: In this alternative, one or more satellites (which could be mobile) drop-off sites would be established on the Base residential generators to drop their yard waste. These drop-off sites could be mobile and would be supervised to prevent illegal dumping and contamination. The materials collected at the drop-off sites would be periodically transported to a composting facility for processing into mulch or compost products.

Policy Alternatives

* mandatory separation of yard waste: In this alternative those who haul their yard waste materials directly to the landfill would be required to bring these materials segregated from other waste materials. This would increase the effectiveness of yard waste drop-off sites at the landfill/transfer station.
* yard waste landfill disposal bans: In this alternative yard waste would be banned from disposal at the landfill and transfer station. All yard waste would be required to be separately collected or dropped off for processing at a special drop-off or composting facility.

6.3.2 Evaluation of Processing Alternatives

Effectiveness

Yard Waste Composting: Effective means of diverting yard waste and some wood waste. This alternative can typically divert between 5 and 15 percent of the wastestream.

Mixed Organics Composting: Effective means of diverting organic fraction of the waste, including yard waste, food waste, some wood waste, and other miscellaneous organic materials. A typical facility of this type would divert from 10 to 25 percent of the wastestream.

Co-Composting with Sewage Sludge: Effective means of diverting yard waste and some wood waste as well as sludge from wastewater treatment facilities. Diversion potential similar to yard waste composting.

Hazards

Yard Waste Composting: Yard waste composting facilities can potentially produce air quality hazards from dust and particulates, odors from the composting process, water pollution from run-off and worker safety hazards from heavy equipment and facility operation.

Mixed Organics Composting: Hazards similar to yard waste composting. In addition there may be potential hazards from contaminants in compost product such as household hazardous materials.
Co-Composting
with Sewage Sludge: Hazards similar to yard waste composting. There may be risk of contaminants from metals and chemicals emanating from the municipal sludge. Pretreatment programs combined with close monitoring and testing by the Sanitation Districts greatly reduces this risk.

Ability to Accommodate Change

Yard Waste Composting: Yard waste composting is a relatively flexible alternative. These facilities can be expanded or reduced in scope depending on conditions. Operational changes will accommodate increases in quantities or changes in the wastestream composition.

Mixed Organics Composting: Facility designs are typically more complex than yard waste composting facilities, and may be more difficult to modify to accommodate changing conditions. However, these type of facilities tend to be more versatile than yard waste composting facilities to begin with, often incorporating capabilities such as materials recovery and refuse derived fuel (RDF) production.

Co-Composting with Sewage Sludge: Co-composting is a relatively flexible alternative. These facilities can be expanded or reduced in scope depending on conditions. Operational changes will accommodate increases in quantities or changes in the wastestream composition. If this facility is a closed system and or designed to also accommodate mixed organics composting the ability to accommodate changing conditions is similar to mixed organics composting.

Consequences on Wastestream

Yard Waste Composting: Will reduce the quantities of yard waste
and wood waste in the disposed wastestream.

Mixed Organics Composting: Will reduce the quantities of yard waste, wood waste, food waste, paper and other miscellaneous organic materials in the disposed wastestream.

Co-Composting with Sewage Sludge: Will reduce the quantities of yard waste, wood waste and sewage sludge in disposed wastestream.

Time Frame for Implementation

Yard Waste Composting: May be implemented in the short or medium-term planning period.

Mixed Organics Composting: May be implemented in the short or medium-term planning period.

Co-Composting with Sewage Sludge: May be implemented in the short or medium-term planning period.

Need For Facilities

Yard Waste Composting: Will require a facility. May be developed in conjunction with other facilities such as a mixed waste processing facility.

Mixed Organics Composting: Will require a facility or may be part of an expanded yard waste composting facility.

Co-Composting with Sewage Sludge: Will require a facility or may be part of an expanded yard waste or mixed organics composting facility.
6.3.3 Evaluative Discussions for Processing Alternatives

Consistency With Local Policies

The development of a yard waste composting, mixed organics composting and/or co-composting facility(ies), located off of the Base, is not specifically inconsistent with any local plans, policies and ordinances. A compost facility developed at or adjacent to the City of Lompoc landfill currently used by the City of Lompoc would not be inconsistent with existing land-use and zoning regulations. Other potential facility sites may be inconsistent with local land-use restrictions. The development of a compost facility at the City of Lompoc landfill would require a California Environmental Quality Act (CEQA) determination, and the fulfillment of State and local facility permitting requirements.

Institutional Barriers

Potential institutional barriers for yard waste composting, mixed organics composting and co-composting (occurring off of the Base) include State permitting requirements, local permitting requirements, hauling permits, existing solid waste franchise agreements, siting constraints, environmental documentation requirements as well as applicable zoning and land-use regulations.

Implementation Costs

The cost of yard waste composting facilities vary significantly based upon the types of processing technology utilized. In the simplest type of composting system, long piles of ground yard waste materials are formed using a front-end loader. The windrows are kept wet (often using a water truck borrowed from the landfill) and are turned periodically. Typically, the final compost product is screened prior to marketing. As the complexity of the yard waste composting facility increases (adding equipment such as grinders, aeration systems, screens and windrow turners), the capital costs increase. However, the added processing capability typically reduces the cost per ton as equipment is more efficiently utilized and economies of scale are realized. Based on the costs of planned and existing facilities, capital costs for this type of facility range between $15,000 and $30,000 per ton of capacity per day. Thus, a facility processing 100 tons per day (tpd) may have capital costs ranging from $1,500,000 and $3,000,000. Annual operations and maintenance (O&M) costs for relatively low-technology yard waste composting

6-12
systems range from $8 to 15 per ton of capacity per day. Thus, a 100 tpd yard waste composting facility would have annual O&M costs in the range of $240,000 and $450,000/year. If an open aerated windrow system is used, the costs of co-composting yard waste and sewage sludge would be similar to yard waste composting.

The costs of mixed municipal solid waste (MSW) composting facilities also vary significantly depending on a variety of factors such as the type of facility (in-vessel vs. windrow), and the degree of front-end processing (to recover recyclables or remove certain materials). An in-vessel system (which provides more process and odor control than a windrow system) with some front-end processing might have capital costs in the range of $30,000 to $50,000 per ton of capacity per day, and annual O&M costs of $20 to $30 per ton of capacity per day. Thus, a 100 tpd Mixed Organics composting facility would have an approximate capital cost of between $3,000,000 to $5,000,000 and annual O&M costs of approximately $600,000 to $900,000. The costs of co-composting yard waste and sewage sludge using similar in-vessel technology are comparable to the costs of Mixed Organics composting.

Market Availability

Potential end-use markets for compost products include commercial landscaping, home and garden use, agriculture, public facilities (i.e., parks and recreation facilities) and landfill cover. Consistent quality, as well as consistent availability, are critical in determining the marketability of compost products. Mixed organic wastes from previously mixed wastes usually contains small pieces of glass, plastics and other objects. Mechanical screening processes can remove a substantial portion, but not all of the contaminants in the final compost product. Compost produced from clean loads of yard waste alone are typically free of these types of contaminants.

In general, the jurisdictions involved in a composting facility should not expect to generate the revenues that commodities like aluminum, high grade paper and other recyclable materials are capable of producing. The sale of compost products can only be expected to partially offset compost facility operating costs. Gross revenues for yard waste compost products exhibit a wide range: from $0 to $25 per ton for an especially high-grade product that meets a targeted end-use market.
Recent legislation (SB 1322) creates new markets for compost by requiring virtually all state agencies to develop plans for the utilization of compost and mulch produced from yard waste and other materials diverted from the wastestream. State procurement requirements for compost should be expected to begin to take effect in 2 to 3 years, particularly from agencies such as Caltrans.

6.3.4 Evaluation of Yard Waste Collection Alternatives

Effectiveness

Curbside Collection: Curbside collection of yard waste can be a very effective means of diverting residential yard waste. Curbside collection of yard waste typically achieves between 50 and 90 percent participation. Curbside collection will not capture commercial and self-haul yard waste.

Drop-Off Sites: Drop-off sites typically achieve lower participation rates than curbside programs. However, drop-offs located at landfills and transfer stations may achieve high participation rates from commercial and self-haul generators.

Satellite Drop-off Sites: The effectiveness of satellite drop-offs depends on location. Satellite drop-offs for yard waste are likely to have lower recovery rates than drop-off sites at landfills or transfer stations due to convenience factors.

Hazards

Curbside Collection: Will result in increased truck traffic and associated noise and air quality impacts.

Drop-Off Sites: May increase traffic at transfer stations and landfills. Potential for increased accidents.
Satellite Drop-off Sites: Will result in increased traffic and associated noise and air quality impacts. Unsupervised drop-off sites may result in illegal dumping and load contamination.

Ability To Accommodate Change

Curbside Collection: Can be expanded or reduced in scope to accommodate changing conditions. Collection routes may be altered to accommodate changes in population or waste characteristics. Number and types of collection vehicles may be changed.

Drop-Off Sites: Easily expanded or reduced in scope to accommodate changing conditions. Number, size and location of drop-off sites may be modified.

Satellite Drop-Off Sites: Satellite drop-off sites are easily expanded or reduced in scope to accommodate changing conditions. Number, size and location of drop-off sites may be modified.

Consequences on Wastestream

Curbside Collection: Will decrease the quantities of waste in disposal composition profile.

Drop-Off Sites: Will decrease the quantities of waste in disposal composition profile.

Satellite Drop-off Sites: Satellite drop-off sites for yard waste will decrease the quantities of yard waste in the disposal composition profile.

Time Frame for Implementation

Curbside Collection: May be implemented in the short or medium-term. Schedule dependant on the development of processing capabilities.
Drop-Off Sites: May be implemented in the short or medium-term. Schedule dependant on the development of processing capabilities.

Satellite Drop-off Sites: May be implemented in the short or medium-term. Schedule dependant on the development of processing capabilities.

Need For Facilities

Curbside Collection: Will require collection vehicles.

Drop-Off Sites: May require expansion and modification of tipping areas at the landfill and transfer station.

Satellite Drop-Off Sites: Will require collection containers and one or more locations to place them.

6.3.5 Evaluative Discussions for Collection Alternatives

Consistency With Local Policies

Curbside collection of yard wastes and yard wastes drop-off sites at the Vandenberg AFB landfill or satellite (mobile) collection sites are not inconsistent with Base policies or ordinances. Potential sites for satellite/mobile yard waste drop-off sites may require review.

Institutional Barriers

Potential institutional barriers to curbside yard waste collection include existing franchise agreements and hauling permits for solid waste collection. These may have to be renegotiated in order to implement a modified collection system for yard waste/food waste generators. Drop-off locations which generate more than 15 cubic yards of waste per day are required to obtain a solid waste facility permit. In addition, the existing solid waste facility permit, the Report of Disposal Site Information and current facility environmental documents must be updated to address changes in collection operations.
Implementation Costs

There are many factors which effect the costs of developing curbside yard waste collection systems including the type of collection program, the type of equipment used, the availability of existing equipment, labor costs, participation rates, institutional arrangements and other factors. Curbside yard waste collection programs in the range of $60 to $80 per ton are common (Biocycle, June 1989). The City of Seattle pays $56 to $84 per ton for a contractor to pick up yard waste depending on location. These costs ranges translate into costs on the order of $2 to $5 dollars per household serviced per month. Yard waste drop-off sites at landfills and transfer stations can typically be carried out without significant additional expenditure. Typically, these drop-offs require a special tipping area be designated at the landfill or transfer station for clean loads of yard waste and wood waste. This activity can usually be carried out without additional staff or equipment. Satellite yard waste drop-offs will require mobile collection equipment (either a truck or roll-off debris box) and a supervisor to insure only designated materials are dropped off. Satellite drop-off sites can be placed at community parks, city yards and other existing public locations, avoiding site costs.

Market Availability

This criterion is not applicable to composting collection alternatives. See the evaluation of processing alternatives for a discussion of market availability.

6.3.6 Evaluation of Policy Alternatives

Effectiveness

Mandatory Separation of Yard Wastes:

Requirements for mandatory separation can significantly increase residential participation rates which will increase the effective capture rate and diversion potential of the program.

Yard Waste Landfill Disposal Ban:

Similar to mandatory separation requirements except a disposal ban would increase capture rates from all yard waste generators (residential and commercial).
Hazards

Mandatory Separation of Yard Wastes: May be difficult to enforce.

Yard Waste Landfill Disposal Bans: May be difficult to enforce.

Ability To Accommodate Change

Mandatory Separation of Yard Wastes: Can easily accommodate change; policy may be modified or discontinued at any time.

Yard Waste Landfill Disposal Bans: Can easily accommodate change; policy may be modified or discontinued at any time.

Consequences on Wastestream

Mandatory Separation of Yard Wastes: Will increase yard waste diversion from commercial generators.

Yard Waste Landfill Disposal Bans: Will increase yard waste diversion from all generators.

Time Frame for Implementation

Mandatory Separation of Yard Wastes: May be implemented in the short or medium-term.

Yard Waste Landfill Disposal Bans: May be implemented in the short or medium-term.

Need For Facilities

Mandatory Separation of Yard Wastes: Criterion not applicable.

Yard Waste Landfill Disposal Bans: Criterion not applicable.
6.3.7 Evaluative Discussions for Policy Alternatives

Consistency With Local Policies

Mandatory separation by commercial generators and yard waste disposal bans are inconsistent with local policies and would require the enactment of specific ordinances in order to implement them.

Institutional Barriers

Institutional barriers to mandatory separation by commercial generators and landfill disposal bans for yard waste include the current lack of compost or mulch facilities which would accept the materials for processing. Without alternatives for diverting the yard waste materials, the yard waste diversion policies would not be feasible. Barriers to yard waste disposal bans include the lack of a separate collection infrastructure for residentially generated yard waste materials.

Implementation Costs

Implementation costs associated with enacting policies such as mandatory separation requirements and landfill disposal bans include staff time and administrative costs associated with developing and enacting the policy change and policy implementation monitoring costs.

Market Availability

This evaluative discussion does not apply to compost policy alternatives. See the market availability evaluative discussion of compost processing alternatives.

6.3.8 Summary Matrix of Evaluation of Alternatives

The matrices on the following pages provide a summary of the comparative evaluation of composting alternatives (Tables 6.2, 6.3 and 6.4).

6.4 SELECTION OF COMPOSTING ALTERNATIVES

Based upon existing conditions and the evaluation of alternatives in the previous section the following yard waste processing, collection and policy alternatives have been selected for implementation.
### EVALUATION OF COMPOSTING ALTERNATIVES

<table>
<thead>
<tr>
<th>Evaluative Criteria</th>
<th>Evaluative Discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Hazards</td>
<td>Consistency with Local Policy</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Institutional Barriers</td>
</tr>
<tr>
<td>Consequences on Wastestream</td>
<td>Implementation Costs</td>
</tr>
<tr>
<td>Time Frame for Implementation</td>
<td>Market Availability</td>
</tr>
<tr>
<td>Facility Need</td>
<td></td>
</tr>
</tbody>
</table>

**Evaluative Criteria**

<table>
<thead>
<tr>
<th>Composting Alternative</th>
<th>Potential Hazards</th>
<th>Adaptability</th>
<th>Consequences on Wastestream</th>
<th>Time Frame for Implementation</th>
<th>Facility Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-composting</td>
<td>Can produce air and water hazards. Worker safety hazards are present.</td>
<td>Operational changes will accommodate changes in waste-stream volumes or compostion.</td>
<td>Will reduce quantities of yard and wood waste.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Will need facility that may be developed with a mixed waste facility.</td>
</tr>
<tr>
<td>Isolated from Existing Waste Stream</td>
<td>Similar to yard waste composting, with greater potential for contaminants.</td>
<td>Less adaptable to change due to significant capital investment. However, typically more flexible original design.</td>
<td>Will reduce quantities of yard, wood, food, paper, and other wastes.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Will need facility that may be developed with a yard waste facility.</td>
</tr>
<tr>
<td>Isolated from Existing Waste Stream</td>
<td>Similar to yard waste composting, with potential heavy metal contaminants.</td>
<td>If co-composting only then similar to yard waste composting. If facility has broad capabilities then similar to mixed organics composting.</td>
<td>Will reduce quantities of yard and wood waste and sewage sludge.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Will need facility that may be developed with a yard waste facility.</td>
</tr>
</tbody>
</table>

**Evaluative Discussions**

<table>
<thead>
<tr>
<th>Consistency with Local Policy</th>
<th>Institutional Barriers</th>
<th>Implementation Costs</th>
<th>Market Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not inconsistent with local policies but would need a CEQA determination.</td>
<td>State and local permits, franchise agreements and siting constraints.</td>
<td>Capital costs range from $10 - 20,000 per ton capacity. O&amp;M costs $8 - 15 per ton per day.</td>
<td>Potential end use markets with home, agriculture and public use.</td>
</tr>
<tr>
<td>Not inconsistent with local policies but would need a CEQA determination.</td>
<td>State and local permits, franchise agreements and siting constraints.</td>
<td>Capital costs range from $30 - 60,000 per ton capacity. O&amp;M costs $20 - 30 per ton per day</td>
<td>Market availability may be affected by quality concerns. Use may include agriculture &amp; landscape.</td>
</tr>
<tr>
<td>Not inconsistent with local policies but would need a CEQA determination.</td>
<td>State and local permits, franchise agreements and siting constraints.</td>
<td>Capital costs range from $10 - 60,000 per ton capacity. O&amp;M costs $6 - 30 per ton per day</td>
<td>Potential end use markets with home, agriculture and public use.</td>
</tr>
</tbody>
</table>
### Evaluation of Composting Alternatives

<table>
<thead>
<tr>
<th>Evaluative Criteria</th>
<th>Evaluative Discussions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potential Hazards</strong></td>
<td><strong>Consistency with Local Policy</strong></td>
</tr>
<tr>
<td>Will cause increased traffic impacts.</td>
<td>Not inconsistent with existing plans and policies.</td>
</tr>
<tr>
<td>May increase traffic at drop-off sites. Unsupervised sites may cause illegal dumping.</td>
<td>May require modification of existing franchise agreements. Cost is typically between $50 - $90 per ton or $2 - $5 per household serviced per month.</td>
</tr>
<tr>
<td><strong>Adaptability</strong></td>
<td><strong>Institutional Barriers</strong></td>
</tr>
<tr>
<td>Can be altered to accommodate changes in waste volumes and characteristics.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Can be altered to accommodate changes in waste volumes and characteristics.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Consequences on Wastestream</strong></td>
<td><strong>Implementation Costs</strong></td>
</tr>
<tr>
<td>Will decrease quantities of yard wastes disposed of.</td>
<td>Minimal additional expenditure.</td>
</tr>
<tr>
<td>Will decrease quantities of yard wastes disposed of.</td>
<td>Minimal additional expenditure.</td>
</tr>
<tr>
<td><strong>Time Frame for Implementation</strong></td>
<td><strong>Market Availability</strong></td>
</tr>
<tr>
<td>May be implemented in short or medium term planning period. Schedule dependent on development of processing capabilities.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>May be implemented in short or medium term planning period. Schedule dependent on development of processing capabilities.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Facility Need</strong></td>
<td></td>
</tr>
<tr>
<td>Will require collection vehicles.</td>
<td></td>
</tr>
<tr>
<td>Will require collection containers at drop-off sites.</td>
<td></td>
</tr>
</tbody>
</table>
## EVALUATION OF COMPOSTING ALTERNATIVES

<table>
<thead>
<tr>
<th>Potential Hazards</th>
<th>Adaptability</th>
<th>Consequences on Wastestream</th>
<th>Time Frame for Implementation</th>
<th>Facility Need</th>
<th>Consistency with Local Policy</th>
<th>Institutional Barriers</th>
<th>Implementation Costs</th>
<th>Market Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>May be difficult to enforce.</td>
<td>Can easily accommodate change.</td>
<td>Will decrease quantities of yard wastes from commercial generators.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Not applicable.</td>
<td>Is inconsistent with local policies and would require adjustment to standard operating procedures.</td>
<td>Lack of existing processing infrastructure.</td>
<td>Staff and administration time and potential loss of landfill fee.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>May be difficult to enforce.</td>
<td>Can easily accommodate change.</td>
<td>Will decrease quantities of yard wastes from all generators.</td>
<td>May be implemented in short or medium term planning period.</td>
<td>Not applicable.</td>
<td>Is inconsistent with local policies and would require adjustment to standard operating procedures.</td>
<td>Lack of existing processing and collection infrastructure.</td>
<td>Staff and administration time and potential loss of landfill fee.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**Source Reducing and Recycling Element**
In the short-term planning period (1991 to 1995), Vandenberg AFB will:

* Participate with other jurisdictions in the region in the planning development of a regional yard waste composting facility to serve the Vandenberg AFB, the City of Lompoc and the surrounding County Unincorporated area. This facility would become operational in the medium-term (1996 to 2000).

* Establish a drop-off site at the Vandenberg AFB Landfill for yard wastes, wood wastes and agricultural wastes to serve Vandenberg AFB and the Lompoc Federal Penitentiary.

* Participate in the development of a local compost product market development program emphasizing agricultural uses of the municipally produced compost product.

In the medium-term planning period (1996 to 2000), Vandenberg AFB will:

* Participate with other jurisdictions in the region in evaluating expansion of the composting system to include other organic materials diverted through source separation techniques or through processing of mixed wastes. Materials which could potentially be composted include food wastes, mixed paper, and other miscellaneous organic materials.

* Establish a source separated yard waste collection program for residential generators at Vandenberg AFB.

6.4.1 Rationale for Selection

Yard Waste Composting

Yard waste composting serving Vandenberg AFB, the City of Lompoc and the surrounding County of Santa Barbara unincorporated area has been selected for implementation for several reasons. Based on the evaluation of alternatives in the previous section, it has been determined that a significant amount of diversion can be achieved through yard waste composting. Although diversion through composting will be necessary for the City of Lompoc and County of Santa Barbara to meet the "25 percent by 1995" state mandate, Vandenberg AFB is already essentially at 25 percent diversion. However, yard waste makes up over 30 percent of
Vandenberg AFB's wastestream. Therefore, participation in the regional composting facility will provide a significant contribution towards the 50 percent diversion mandate set for the year 2000. Yard waste composting also results in an end-product which is much easier to market (particularly to agriculture) than a product produced from mixed municipal solid waste composting and is less expensive on a per ton basis than other composting alternatives. In the medium-term (1995 to 2000), when compost end-markets and processing technologies have matured, Vandenberg AFB and the other participating jurisdictions should evaluate expanding their yard waste composting system to include materials found in the mixed wastestream such as food wastes, mixed paper and other miscellaneous organic materials.

Yard Waste Drop-Off Site

A special drop-off area will be established at a to-be-determined location on base for yard wastes, wood wastes, and agricultural wastes. This drop-off will primarily serve commercial customers, although residential generators could also use it. A yard/wood waste drop-off site has been selected for implementation because it is a relatively inexpensive, effective means of collecting clean (uncontaminated) loads of compostable materials. In addition, this alternative enables Vandenberg AFB to build on existing infrastructure. If Vandenberg AFB determines that it is more feasible to develop a composting facility on base, this drop-off site would be relocated to such a facility.

Source Separated Collection of Yard Wastes

Source separated yard waste collection at Vandenberg AFB can achieve a significant level of diversion (10 to 15 percent) while providing a quality yard waste feedstock to the Lompoc watershed composting facility. Curbside collection of yard wastes at Vandenberg AFB is an effective alternative because the majority of the Base's yard wastes are residentially generated. In addition, residents may not own vehicles or may not have the appropriate vehicle for transporting yard wastes to a drop-off location or a regional composting facility. Yard waste drop-offs typically target commercial self-hauled yard wastes. The evaluation of alternatives indicates that curbside yard waste collection is a relatively expensive alternative for yard waste recovery, but also the most effective for residential generators. Other alternatives, such as mobile collection are less expensive, but not as effective. Source separated curbside collection of yard wastes from residential generators provides a reliable, high quality source of compostable yard waste materials. In addition,
compost feedstocks collected in this manner help to maximize the quality of the final compost product, which will improve the prospects of marketing the material.

**Anticipated Diversion Quantities from Selected Composting Programs**

Table 6.5 summarizes the estimated diversion for Vandenberg AFB through a curbside yard waste collection program. The estimate is based on the Waste Generation Study completed as part of the SRRR.

### 6.4.2 Methods of Handling and Disposal

**Yard Waste Composting**

Source separated yard wastes, wood wastes and agricultural wastes recovered through drop-off sites and curbside collection will be transported to the yard waste composting facility for processing. The materials will be temporarily stored until they can be ground and screened to prepare them for curing. The materials will either be cured in windrows or inside specially designed vessels. The finished compost product will be screened again and tested for physical and chemical characteristics. The resulting compost product will be marketed to local and regional end-users such as farmers and landscapers, as well as governmental agencies. Any non-compostable residuals will be backhauled to the Vandenberg AFB landfill for disposal.

**Yard Waste Drop-Off Site**

Clean, uncontaminated loads of yard waste, wood waste, and agricultural waste from both commercial and residential generators will be collected. The materials brought to this facility will be deposited at a designated area for temporary storage. The yard and wood waste materials will then be transported to the composting facility for processing.

**Curbside Collection of Yard Waste**

Curbside yard waste collection can be accomplished in a number of ways. Some communities have used a combination of a packer truck and a front-end loader with a modified bucket known as a "claw." Other communities have used bags and special containers. Typically, communities select the yard waste collection system which is compatible and consistent with their existing solid waste management system.
**Program Diversion Estimate for the Short and Medium-Term Planning Periods**

<table>
<thead>
<tr>
<th>Component (i):</th>
<th>Vandenberg Composting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program (j):</td>
<td>Curbside Yard Waste Collection</td>
</tr>
<tr>
<td>Generator Type (l):</td>
<td>Residential</td>
</tr>
</tbody>
</table>

**Composition Data and Estimates of Participation and Capture**

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Percent of Residential (i)</th>
<th>Average Participation Rate</th>
<th>Estimated Capture Rate</th>
<th>Effective Recovery Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yard Waste</td>
<td>41.3%</td>
<td>75%</td>
<td>90%</td>
<td>27.9%</td>
</tr>
</tbody>
</table>

**Diversion Quantities by Material Type and Percent of Total Waste Stream Diverted**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Generated (l):</td>
<td>21,160</td>
<td>21,250</td>
<td>21,340</td>
<td>21,430</td>
<td>21,520</td>
<td>21,610</td>
<td>21,700</td>
<td>21,790</td>
<td>21,880</td>
<td>21,970</td>
<td>22,070</td>
</tr>
<tr>
<td>Total Residential Disposal (l):</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
<td>11,500</td>
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<td>3,206</td>
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<td>3,206</td>
<td>3,206</td>
<td>3,206</td>
<td>3,206</td>
</tr>
<tr>
<td>Total Quantity Diverted (tpy)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,206</td>
<td>3,206</td>
<td>3,206</td>
<td>3,206</td>
<td>3,206</td>
<td>3,206</td>
</tr>
<tr>
<td>Total Diversion (%)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

**Notes:**
1. Estimated Waste Disposal Growth Rate: 0.0% based on Waste Generation Study.
waste collection system; this enables the jurisdiction to build on existing equipment and technical capabilities. This approach also avoids the problems associated with using a new system which has not been locally tested and proven.

An example of an automated approach is the County of Sacramento, which is planning to supply all eligible households with automated collection containers for yard waste over a phased three year period. In this type of system, residents are asked to place all of their yard waste into a (90 gallon) automated yard waste collection container. The containers are specially marked to avoid contamination of the yard waste by other refuse. These special containers are then placed out on the curb by residents on a weekly basis for collection. Packer trucks with automated lifts collect the yard waste and transport it directly to the composting facility for processing. In the claw and packer system, residents place their yard wastes on the street at the curb in piles approximately 3'x3'x3'. A modified front end loader with a modified bucket (the "claw") picks up the curbside yard waste piles and places them in the back of the packer.

6.4.3 Facility to be Utilized in Implementation

Yard Waste Composting

A composting facility will be necessary for processing source separated yard waste collected at the drop-offs and through curbside yard waste collection. This facility could be an independent facility or it could be developed in conjunction with the intermediate processing/mixed waste processing facility selected in the recycling component of this plan. The composting facility, or composting portion of a more general facility, will require an area for collecting and storing incoming compostable materials (yard waste, wood waste, agricultural waste), an area for pre-processing materials (sorting, grinding, screening), an area for active composting (either windrows or vessels), an area for screening and storing the final product prior to marketing, and a buffer area around the facility to reduce visual, noise and odor impacts.

Yard Waste Drop-Off Site

A designated drop-off site will be established on Vandenberg AFB for clean, source separated compostable materials such as yard waste, wood waste, and agricultural waste. This could be in containers (debris boxes) or simply be an open pile on asphalt or concrete pad.
Identification of End-Users

Potential end-use markets for compost products include commercial landscaping, home and garden use, agriculture, public facilities (i.e., parks and recreation facilities) and landfill cover. Recent legislation (SB 1322) creates new markets for compost by requiring virtually all state agencies to develop plans for the utilization of compost and mulch produced from yard waste and other materials diverted from the wastestream. State procurement requirements for compost should be expected to begin to take effect in 2 to 3 years, particularly from agencies such as Caltrans.

Alternative Market Strategy

In the event local marketing efforts for compost prove inadequate, the participating jurisdictions will do one or more of the following:

1. Develop policies requiring the use of municipally produced compost by all local landscaping operations.

2. Explore the feasibility of requiring developers of communities and major shopping centers utilize compost for landscaping.

3. Seek new markets outside of County of Santa Barbara

4. Work with local farmers and the regional agricultural extension to find ways to use municipally produced compost to meet local agricultural needs.

6.5 COMPONENT IMPLEMENTATION

This section identifies those responsible for implementation of the composting alternatives, provides tasks and schedules associated with implementation of the alternatives, as well as program implementation costs and revenue sources.

6.5.1 Responsible Agencies

The responsibility for implementation of the activities selected in this component will be shared by Vandenberg AFB, the City of Lompoc, the County of Santa Barbara and the private sector. The City of Lompoc will be the lead agency for the development of the composting facility which could be part of other facilities recommended in the recycling component of this plan. The other
jurisdictions involved will participate in close cooperation with the City of Lompoc in the scoping, design, funding and operation of the composting facility. Operation of the curbside yard waste collection and the yard waste drop-off site serving the base will be the responsibility of Vandenberg AFB.

6.5.2 Implementation Tasks and Schedules

<table>
<thead>
<tr>
<th>Table 6.6: Yard Waste Composting at the Lompoc Composting Facility.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tasks</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>3</td>
</tr>
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<td>4</td>
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<td>5</td>
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<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
</tbody>
</table>
Table 6.7: Yard Waste Drop-off Site.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>January 1992</td>
<td>Vandenberg AFB identifies a site(s) and any necessary changes such as site improvements.</td>
</tr>
<tr>
<td>Task 2</td>
<td>January 1992</td>
<td>Vandenberg AFB conducts any necessary permitting requirements.</td>
</tr>
<tr>
<td>Task 3</td>
<td>January 1993</td>
<td>Vandenberg AFB establishes a yard waste/agricultural waste drop-off site.</td>
</tr>
<tr>
<td>Task 4</td>
<td>January 1994</td>
<td>Begin transporting yard waste and wood waste materials collected at the drop-off site for composting.</td>
</tr>
</tbody>
</table>

Table 6.8: Curbside Yard Waste Collection.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>January 1994</td>
<td>Vandenberg AFB evaluates institutional arrangements and curbside yard waste collection program design.</td>
</tr>
<tr>
<td>Task 2</td>
<td>January 1995</td>
<td>Vandenberg AFB (or contractor) conducts initial yard waste collection pilot to identify configuration of full scale program.</td>
</tr>
<tr>
<td>Task 3</td>
<td>January 1996</td>
<td>Full scale curbside yard waste collection becomes operational.</td>
</tr>
</tbody>
</table>

6.5.3 Program Implementation Costs

The following section contains cost estimates for the development of composting facilities necessary for the implementation of the selected composting programs. It is important to understand the following costs are planning level estimates which are necessarily based on a number of broad assumptions. The actual costs will vary based on site selection, facility specifications and other specific conditions.

6-30
Yard Waste Composting

Yard waste composting can be carried out using a variety of available technologies. The different approaches are often referred to as low-tech, medium-tech and high-tech. These differences are typically based on the degree of automation used at the facility. For example, some composting operations turn windrows with front-end loaders borrowed from the landfill, while others buy highly specialized windrow turning machines.

A windrow yard waste composting facility with a design capacity of approximately 50 tons per day (tpd) will require a site area of approximately 15 to 25 acres and will have capital costs in the range of $10,000 to $30,000 per ton of daily capacity and annual operations and maintenance costs on the order of $10 to $25 per ton of daily throughput. Assuming the Lompoc wasteless yard waste composting facility will have a daily throughput of approximately 50 tpd in 1995 the estimated capital costs are $500,000 to $1,500,000 and the estimated annual operations and maintenance costs are $150,000 to $375,000. If it is determined that it is necessary to use in-vessel technology to add sludge composting and mixed organics composting capability, the capital costs will be on the order of $30,000 to $50,000 per ton of daily capacity, or a total of $1,500,000 to $2,500,000. Composting could be developed in a later phase of the mixed waste processing facility selected for the Lompoc wasteless. The facility development and operations costs would be shared by the City of Lompoc, County of Santa Barbara and Vandenberg AFB, if Vandenberg AFB determines that it is feasible to participate in the facility.

Yard Waste Drop-off Site

The costs of a yard waste drop-off facility are dependent on a number of factors. If the yard waste composting facility is 10, 15 or 20 miles away from the drop-off site transportation costs can become significant. Staffing requirements are also highly variable. Some drop-off sites are operated using existing staff resources while others require additional employees to monitor the site. One example of a yard waste drop-off site with a medium range cost is the City of Seattle yard waste drop-off sites at their transfer stations, which are estimated to cost $10 per ton. If this value is used as an approximation for the

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Vandenberg AFB yard waste drop-off sites, the approximate costs will be as follows:

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Drop-Off Quantities (tpy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vandenberg AFB</td>
<td>860</td>
</tr>
</tbody>
</table>

$10/ton \times 860 \text{ ton/year} = $8,600/\text{year}

Curbside Yard Waste Collection

Curbside yard waste collection costs depend on the type of technology used, the frequency of collection, the availability of existing equipment, the amount of yard waste in the wastestream and a variety of other factors.

Studies have shown that curbside yard waste collection costs range from $60 to $80 per ton collected.\(^{3}\) It is assumed that Vandenberg AFB will collect approximately 3,200 tons of yard waste through curbside yard waste collection (in 1995), the costs will range from approximately $190,000 to $256,000 per year.

6.5.4 Revenue Sources

See the funding component of this SRRE for a detailed description of revenue sources and program funding.

6.6 PROGRAM MONITORING AND EVALUATION

This section provides program monitoring and evaluation mechanisms for the recommended composting component programs by proposing methods for monitoring achievement of the component objectives; identifying agencies responsible for monitoring and evaluation; identifying criteria for evaluating program effectiveness; discussing monitoring and evaluation funding; and identifying measures to be taken if monitoring shows a shortfall in the attainment of the component objectives.

Note: Article 6.2, Section 18733.6(b)(4) of the AB 939 regulations requires Vandenberg AFB to obtain prior written approval of this monitoring and evaluation methodology.

6.6.1 Monitoring Methods

Composting activities serving Vandenberg AFB and other jurisdictions in the region will be monitored using a detailed
reporting system. All entities (public and private) providing solid waste diversion for Vandenberg APF through composting will submit detailed diversion data to the base. An annual Compost Program Monitoring and Evaluation Report will be compiled which identifies the quantities and composition of materials diverted through composting by generator type and describes the various aspects of the composting system in accordance with the evaluative criteria listed in the next section.

The Composting Program Monitoring and Evaluation Reports will contain the following:

1. a brief summary of the composting programs being implemented in the area affected by the report and the schedules for any programs in planning and/or development;

2. a brief discussion of progress towards the objectives established for the composting component; and

3. a short evaluation of the composting programs in terms of the evaluative criteria listed in this section (see below).

4. If a shortfall in the attainment of composting objectives is identified, a special section of the report will be compiled which summarizes the shortfall(s) in terms of the list contained at the end of this section.

The completed reports will be submitted to the Local Solid Waste Task Force and the CIWMB.

6.6.2 Criteria For Measuring Effectiveness

* Quantity of yard waste diverted from landfiling.

* Percent of residential and commercial participation in the composting program.

* Percent diverted of the total wastestream generated.

* Quantity and quality of compost distributed to markets.

* Program implementation costs (i.e., cost per ton diverted).
6.6.3 Responsible Agency and Person

Vandenberg AFB in cooperation with the City of Lompoc, and the County of Santa Barbara Public Works Department, Solid Waste Management Division will be responsible for compiling monitoring and evaluation data from the composting facility. This responsibility includes considering the program in light of all of the monitoring and evaluation criteria listed in the previous section. Vandenberg AFB will monitor and evaluate the yard waste drop-off site on base and the curbside yard waste collection program. The City of Lompoc and the County of Santa Barbara will cooperate with Vandenberg AFB in monitoring and evaluation requirements.

6.6.4 Monitoring Costs and Funding Requirements

Monitoring and evaluation costs include staff time for compiling the necessary data inputs (such as recording tons diverted, waste diversion composition, and program costs), and staff time for producing the annual Compost Program Monitoring and Evaluation Report.

The costs of monitoring and evaluation for the composting facility will be funded primarily by facility tip fees and any revenues from sale of the final compost products. Revenue sources and funding are discussed in detail in the funding component of this SRRE.

6.6.5 Measures to be Implemented in the Event of a Shortfall

In event of any significant shortfall in achieving the established goals and objectives, Vandenberg AFB will produce a special report which will include the following:

* specific areas in the compost processing, collection and marketing system which are deficient;

* potential measures to improve compost program participation levels, processing, collection and/or marketing activities. These measures may include, but are not limited to, increased promotion and public information, increased market development and revision of component activities.

The special report will be submitted to the Vandenberg AFB environmental affairs officials, County of Santa Barbara, the Local Task Force, and the CIWMB for evaluation and direction.
SPECIAL WASTE COMPONENT
7: SPECIAL WASTES COMPONENT

Component Summary

The special waste component describes the management procedures for handling special wastes at the Vandenberg Air Force Base (AFB) sanitary landfill. The existing conditions and disposal procedures are regulated by the Waste Discharge Requirements for the Vandenberg facility. In addition, this component identifies responsible parties, estimates costs, and proposes an annual program monitoring and evaluation system. The format of this component is guided by the requirements of the AB 939 Emergency Regulations.

The existing special waste management procedures are adequate to serve the needs of Vandenberg AFB. Therefore, the existing conditions are explained within, and no new programs are recommended at this time. When technological developments provide adequate alternatives to the existing management procedures, such alternatives will be evaluated according to the AB 939 regulations.

Introduction

Special wastes are materials which require special collections, handling, or disposal. According to the California Integrated Waste Management Act of 1989 (AB 939), special wastes are:

* any hazardous waste listed in section 66740 of Title 22 of the California Code of Regulations, or

* any waste which has been classified as a special waste pursuant to section 66744 of Title 22 of the California Code of Regulations, or

* any waste which has been granted a variance for the purpose of storage, transportation, treatment, or disposal by the Department of Health Services pursuant to


section 66310 of Title 22 of the California Code of Regulations, or

* any solid waste which, because of its source of generation, physical, chemical or biological characteristics or unique disposal practices, is specifically conditioned in the solid waste facilities permit for handling and/or disposal.

Article 6.1 of the Emergency Regulations specifically lists ash, non-hazardous sewage sludge, non-hazardous industrial sludge, asbestos, automobile shredder waste, automobile bodies, as well as "other" special wastes.

Materials which meet the above criteria and are handled by the Vandenberg solid waste facility include asbestos, dead animals, grease trap wastes, automobile tires, bulky goods, and medical wastes.

7.1 COMPONENT OBJECTIVES

The short term special waste component objectives are:

* to continue handling asbestos using the current methods which comply with applicable regulations until such time as alternative methods for recycling and/or reuse have been developed;

* to continue handling dead animals and grease trap wastes using the current methods which comply with applicable regulations until such time as alternative methods for recycling and/or reuse have been developed; and

* to monitor and evaluate technological developments for methods to recycle and/or reuse of asbestos, and if feasible, implement such method of recycling and/or reuse.

7.2 EXISTING CONDITIONS

A brief description of the current management practices for the seven types of special wastes described in the Emergency Regulations is discussed below.

7.2.1 Incinerator Ash

There are currently no incinerators operating within the County
of Santa Barbara. Therefore, no incinerator ash is disposed of at the Vandenberg AFB sanitary landfill.

7.2.2 Sewage Sludge

All sewage sludge generated by Vandenberg Air Force Base are treated at the Lompoc Regional Wastewater Reclamation Plant. The City of Lompoc owns and operates the wastewater reclamation plant located at 1801 West Central Avenue in Lompoc, California. The facility generates 500 tons per year of sewage sludge (dry weight) and 200 tons per year of grit (dry weight). The facility does not treat septic collections.

The facility services residential (75%), commercial (24%), and industrial (1%) generators. Of these generators, 45 percent are located in Unincorporated County (including Vandenberg AFB) and 55 percent are located in the City of Lompoc.

Two permanent and one temporary lagoons are located at the facility. Material is held five to eight years before final disposal. It is estimated at the lagoons can hold a maximum of 30,000 cubic yards (including water) or an estimated three to four thousand tons (dry weight) of sludge.

Of the material generated, the grit is landfilled at the Lompoc Sanitary Landfill and the sludge is land applied. Approximately 500 tons of sludge is land applied at the Lompoc Federal Penitentiary every five to eight years as needed. The Lompoc Federal Penitentiary is located at 3600 Guard Road in Lompoc, California. The material is estimated to be four percent dry before land application occurs.

There are no plans to increase the size of the facility or to increase the amount of material processed by the facility. There are also no plans to change the method of disposal or the disposal site in the future.

No sewage sludge is accepted at the Vandenberg AFB sanitary landfill for disposal.

7.2.3 Non-Hazardous Industrial Sludge

Industrial sludge is generated by industries which operate pre-treatment plants for industrial materials which can pose a hazard to the safe and effective operation of publicly owned treatment plants. Industrial sludges may contain constituents which require the sludge to be classified as a hazardous waste. If so,
these wastes must be disposed at Class I landfills. There are no Class I landfills within the County of Santa Barbara.

As identified in the Waste Generation Study, Vandenberg does not have an industrial population residing on the base. Therefore, no industrial sludges are generated by Vandenberg AFB or disposed at the base sanitary landfill.

7.2.4 *Asbestos*

Pursuant to Section 25143.7 of the Health and Safety Code, wastes containing asbestos may be disposed of at any landfill which has waste discharge requirements issued by the Regional Water Quality Control Board that allow the disposal of such waste, provided that the wastes are handled and disposed of in accordance with the Toxic Substances Control Act (P.L. 94-469) and all applicable laws and regulations. The Vandenberg AFB landfill has approval from the California Regional Water Quality Control Board (Order 88-161).

Contractor or base-generated asbestos is manifested and routed through Western Space and Missile Center Directorate of Environmental Management (WSMC/ET). Once the manifest is signed by WSMC/ET, the contractor must contact the landfill manager to coordinate actual disposal. In addition, WSMC/ET maintains accurate records of the volumes of asbestos accepted, including load description, source of material, type of vehicle, estimated loose and compacted load volume, and any pertinent remarks.

The generator must ensure the asbestos is properly wetted, containerized, bagged, or wrapped prior to disposal. A trench is prepared for asbestos disposal prior to the arrival of the generator. The trenching technique allows application of soil cover without disturbing the asbestos waste containers. After disposal, the asbestos is covered by a 6-inch layer of non-asbestos material (i.e., soil) prior to compaction.

7.2.5 *Automobile Shredder Wastes*

There are no automobile shredders located within the County of Santa Barbara. The Santa Barbara County Code, Chapter 17, Section 46 prohibits the importation of wastes from outside the County. Therefore, automobile shredder wastes are not handled by the Vandenberg AFB sanitary landfill.
7.2.6 Abandoned Vehicles

Vandenberg AFB sanitary landfill does not accept vehicle bodies for disposal. Abandoned vehicles are turned over to the Morale, Wellness and Readiness (MWR) office by the Security Police. Parts and scrap metal are salvaged for resale.

7.2.7 Other Special Wastes

Many other special wastes are handled by the Vandenberg AFB sanitary landfill. These include dead animals, grease trap wastes, automobile tires, bulky goods, and medical wastes.

Automobile Tires

The landfill accepts approximately 5,000 automobile and truck tires annually. Currently, the tires are disposed of at a location in the landfill where they can be efficiently compacted. This designated area will vary depending on the location of the working face.

Bulky Goods

Bulky goods, such as household furnishings and white goods, are diverted for reuse. Government-owned furniture is released through the Defense Reutilization and Marketing Office (DRMO) for sale. Privately owned items are turned in to the Base Thrift Shop for consignment or sold in yard sales. Wooden crates, pallets, and cable reels are shredded prior to disposal or diversion.

Landfilling of bulky goods is done only as a last resort, and no salvaging is conducted at the Vandenberg AFB sanitary landfill. Therefore, any bulky goods that are not diverted prior to landfilling are buried as general refuse.

Medical Wastes

In order for medical wastes to be disposed of at any facility located in the County, they must be treated prior to disposal. Treatment includes autoclaving and incineration of flammable materials. All sharps must be disposed of in a hard, rigid container which is properly labeled and sealed. The sharps container, and its contents, are not considered a solid waste until properly treated (i.e., autoclaved). Once medical wastes have been treated, they are considered general refuse and, as such require no special handling. Untreated medical wastes are
not accepted at the VAFB landfill. The County of Santa Barbara Environmental Health Services, the County local enforcement agency (LEA), is notified if untreated medical wastes are found at the landfill.

7.2.8 Special Wastes Not Accepted

Special wastes that are not accepted at any County facility include any material determined to be a hazardous waste; designated wastes; liquids; semi-solids, such as septic tank pumpings or sewage sludge with greater than 50% moisture content; automobile shredder wastes; and abandoned vehicles. Automobile shredder wastes and abandoned vehicles are discussed above.

Hazardous Wastes

Hazardous wastes are not accepted at any facility located within the County of Santa Barbara. The County of Santa Barbara Hazardous Waste Management Plan describes the methods of disposal for hazardous wastes generated within the County. For those materials considered household hazardous wastes, the Household Hazardous Waste Element describes the existing conditions and any new programs to handle these special wastes.

Designated Wastes

As defined by Title 23, Chapter, 3, Subchapter 15, Section 2522 of the California Administrative Code, designated wastes are:

* nonhazardous waste which consists of or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the state; and

* hazardous waste which has been granted a variance from hazardous waste management requirements pursuant to Section 66310 of Title 22 of the California Administration Code.

If, after chemical analysis, such designated wastes are determined to no longer pose a threat to the health and safety of the state, a generator can contact the LEA and request permission to dispose of such wastes. After examination of the chemical analysis, the LEA submits a letter to the Vandenberg AFB sanitary landfill stating that the waste is no longer considered a
designated waste, and that the waste can, therefore, be disposed of at the Vandenberg facility.

**Liquids**

Vandenberg Air Force Base Sanitary Landfill is a Class III facility. Therefore, no liquids are accepted, with the exception of grease trap pumpings as explained above. The County of Santa Barbara Hazardous Waste Management Plan describes the methods of disposal for hazardous liquid wastes generated within the County. Those liquids considered household hazardous wastes are discussed in the Household Hazardous Waste Element.

**Semi-Solids**

Semi-solids, such as septic tank pumpings and sewage sludge, containing less than 50% solids are not accepted at the Vandenberg AFB sanitary landfill as specified in the Waste Discharge Requirements. Current disposal methods for such material is included above under the discussion of sewage sludge.

**7.3 EVALUATION OF ALTERNATIVES**

The Emergency Regulations require special waste management alternatives to be evaluated using the following criteria:

* effectiveness in diverting special waste generated from disposal;

* hazards created by the alternative;

* ability to accommodate changing economic, technological, and social changes;

* consequences of the diversion alternative on the waste stream composition;

* whether the alternative can be implemented in the short-term or medium-term; and

* the need for expanding existing facilities or building new facilities to support implementation of the alternative.
In addition to the above criteria, the regulations require the evaluation of each waste management alternative to include discussions of the following:

* consistency with applicable local policies, plans, and ordinances;
* institutional barriers to implementation of the alternative;
* estimated costs related to the implementation for the short and medium terms; and
* a discussion of the availability of markets for the materials which would be diverted through implementation of the alternative.

7.4 PROGRAM SELECTION

According to the emergency regulations, the focus of the special waste component is to reduce the hazard posed by these wastes, rather than instituting any specific type of recycling mechanisms. Current management practices for special wastes at the Vandenberg AFB sanitary landfill comply with applicable regulations. Therefore, no new management programs need to be developed at this time to handle conditionally permitted special wastes accepted at this facility. When safe and effective means of recycling special wastes, such as sewage sludge and non-friable asbestos are developed, the alternatives will be evaluated according to the above criteria. When determined to be feasible, a program will be developed, implemented, and monitored at that time.

Discussions on the possibility of using sewage sludge as a feedstock in proposed composting programs is discussed in the composting component. A final decision will include the finding of the March 1991 report to the California Integrated Waste Management Board on sewage sludge composting.

There are currently no plans to decrease the scope, phase-out, or discontinue any of the special waste management activities.

7.4.1 Priority Waste Types

The AB 939 regulations require each jurisdiction to identify specific waste types as priorities for waste diversion. The jurisdictions may select priority waste types based on criteria
such as volume of the solid waste, weight of the solid waste, hazard of the solid waste, the non-renewability of the materials that compose the solid waste, or any other selection criteria.

<table>
<thead>
<tr>
<th>Priority Waste</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>Hazard of the waste.</td>
</tr>
<tr>
<td>Sewage Sludge</td>
<td>Volume of the waste in the wastestream.</td>
</tr>
<tr>
<td>Automobile tires</td>
<td>Volume of the waste in the wastestream.</td>
</tr>
<tr>
<td>Household furnishings</td>
<td>Weight and volume of the waste in the wastestream.</td>
</tr>
<tr>
<td>Medical waste</td>
<td>Hazard of the waste.</td>
</tr>
<tr>
<td>White goods</td>
<td>Weight and volume of the waste in the wastestream.</td>
</tr>
</tbody>
</table>

7.5 MONITORING AND EVALUATION

7.5.1 Quantification and Monitoring Methods

The methods to quantify and monitor achievement of the objectives of the special waste component will include at least one of the following:

* perform an additional Waste Generation Study consistent with the study prepared under Section 18722 to determine the effectiveness of the program

* perform targeted solid waste characterization studies involving all or a representative sample of generator sites and recycling, composting, transformation, and landfill facilities to measure changes in volume, weight, and hazard of specific materials, with adjustments for shifts in solid waste generation cause by source reductions

* assess changes in the design, production, distribution, sale, and/or use of selected products and packages which affect solid waste generation

* develop an alternative methodology to quantify and monitor the program objectives for submittal to and approval by the LEA and subsequent submittal to and
7.5.2 Method to Monitor Selected Special Waste Programs

Special waste management activities at the Vandenberg AFB sanitary landfill will be monitored and evaluated using an annual report system. The landfill operator will collect specific information pertaining to quantities and composition of materials collected. The report will record recyclables by waste type, tonnage, and percent of the total wastestream. At the end of each fiscal year a Special Waste Management Program Monitoring and Evaluation Report will be completed by landfill staff.

The Special Waste Management Program Monitoring and Evaluation Report will contain the following:

1. a brief summary of the special waste programs being operated in the area affected by the report and the schedules for any programs in planning and/or development;

2. a brief discussion of progress towards the objectives established for the special waste component; and

3. a short evaluation of the special waste programs in terms of the evaluative criteria listed in this section (see below).

4. If a shortfall in the attainment of the special waste component objectives is identified, a special section of the report will be compiled which summarizes the shortfall(s) in terms of the list contained at the end of this section.

7.5.3 Criteria for Program Evaluation

The regulations require six criteria for evaluating program effectiveness. These criteria will be the basis for analyzing the effectiveness of the selected programs. Those criteria are:

* the total quantity of materials, by weight and volume, diverted from disposal by each recycling program;

* the percent of the total wastestream;
* the level of contamination of the materials collected through each program;
* the total cost of processing and the amount of residuals remaining for disposal after processing;
* the cost of transportation;
* marketing and marketability (quality) of recovered materials; and
* participation rates.

7.5.4 Responsible Parties

Vandenberg APB sanitary landfill is owned and operated by the United States Air Force under the operating control of the 4392 Civil Engineering Group. Monitoring and evaluation records will continue to be maintained by Air Force personnel at the landfill. Special wastes received at the facility will continue to be monitored by Air Force personnel and reported in the quarterly reports submitted to the County of Santa Barbara Environmental Health Services, which is the County Local Enforcement Agency (LEA). The LEA will also continue to monitor landfill operations to assure compliance with the solid waste permits.

Annual reports on the quantities and types of materials processed at the landfill will be compiled by Air Force personnel. The annual reports will contain an analysis of program data. An evaluation of the special waste programs based on the evaluation criteria will also be included.

7.5.5 Funding Requirements and Revenue Sources

Funding for all programs at the Vandenberg APB sanitary landfill are allocated by the Department of Defense budget. This sole funding mechanism is described in the Funding Component.

7.5.6 Program Shortfalls

Since the special waste component does not select any new programs for implementation, there will not be any measurable shortfalls of the goals set forth. The annual monitoring and evaluation report, compiled by the Vandenberg APB landfill

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manager and submitted to the Civil Engineering Squadron for review, will discuss such items as:

* the amounts of conditionally permitted special wastes which were accepted for disposal during the report year;

* the results of monitoring and evaluating technological developments for methods to recycle, reuse, reduce, and/or compost special wastes;

* the feasibility of implementing a previously unknown and/or recently developed method of recycling, reusing, reducing, and/or composting of any special waste according to the evaluation criteria set forth by the Emergency Regulations.

This special report will be submitted for review by the Solid Waste Minimization Subcommittee of the Environmental Protection Committee, chaired by the Civil Engineering Group Commander. In an attempt to address the identified shortfalls, directives will be issued by the Installation Commander.
EDUCATION AND PUBLIC INFORMATION COMPONENT
8: EDUCATION AND PUBLIC INFORMATION COMPONENT

Component Summary

The County of Santa Barbara is currently developing a countywide umbrella campaign that will target the general public, schools, institutions and consumers. A slogan, concept and character will be developed and used in all the educational and promotional materials produced. In this way, a synergistic approach will unite all educational efforts under one promotional image and promotional activities will support each other.

In order for Vandenberg Air Force Base's (AFB) Education and Public Information program to be successful, cost-effective and consistent with other promotional efforts throughout the County, the Education and Public Information Component recommends that Vandenberg AFB participate in the countywide campaign. Under this plan, Vandenberg AFB will contribute funds, based on population, toward the development of the campaign and production of associated materials (flyers, radio, television, and newspaper ads, informational brochures). In return, Vandenberg AFB, acting as a liaison with the countywide campaign, may incorporate the slogan, concept and character in other Vandenberg AFB promotional activities.

The County staff will be responsible for the production of campaign materials and placement of advertisements for the countywide campaign. Vandenberg AFB will benefit from these efforts as well as associated efforts such as the organization of workshops that will promote various recycling, source reduction and composting activities. The overall budget for the countywide campaign is $125,000.00; Vandenberg’s share based on population reached is approximately $2,900.00. (See Table 8.1.)
Table 8.1: Education and Public Information Costs.

<table>
<thead>
<tr>
<th>Budget Breakdown</th>
<th>Production and/or Placement</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Public Information</td>
<td>$1,430.00</td>
<td>$165.00</td>
</tr>
<tr>
<td>School Education/Outreach</td>
<td>$539.00</td>
<td>$110.00</td>
</tr>
<tr>
<td>Business/Institutional</td>
<td>$539.00</td>
<td>$110.00</td>
</tr>
<tr>
<td>Total</td>
<td>$2,508.00</td>
<td>$385.00</td>
</tr>
</tbody>
</table>

8.1 GENERAL PUBLIC INFORMATION

A professional media campaign will be the basis from which all other recycling promotions in the County will be launched. The campaign will center on the slogan, Recycle—It’s Habitat Forming. This slogan was chosen because it ties recycling to environmental concerns while suggesting the importance of making recycling a habit. In this way the campaign will target:

1. those people who have never participated in recycling, source reduction and composting activities; and

2. those people currently participating in recycling, source reduction or composting activities on a limited basis who are receptive to increasing their participation to other areas.

A visual concept will be developed that supports the slogan, and a promotional character created to carry the message presented in the slogan and concept. The character will be used for consistency and will identify the wise choices of recycling, source reduction and composting.

The slogan, concept and character will be first established in a 30-second television commercial that will air as a PSA and a paid commercial on television stations serving the County. The television spot will be a high-quality, strongly visual commercial establishing the media campaign. A press conference will be held concurrently to announce the new media campaign.

The concept and character established in the television spot will be easily adapted to the other targeted elements of the component. It will be supported by newspaper ads that use the character to establish the recycling, source reduction and
composting as a habit worth developing. Radio advertising and other print media such as school posters and business information brochures, will also center on the slogan, concept and character. This synergistic media approach will achieve saturation of public awareness.

The television commercial will air on stations throughout the County beginning in the Fall of 1991. The commercial will be made available to Vandenberg AFB for placement on its cable system. Other elements of the campaign will follow in a cohesive effort to promote the message. Continuing efforts will include the further development of the slogan and concept through local media sources and the adaptation of the campaign to be specific to Vandenberg’s unique needs.

8.1.1 Production Elements Provided by the County

* a media plan for television, print, and radio;
* development of a 30-second television commercial;
* development of other Education and Public Information elements;
* placement advertising to reach Vandenberg AFB;
* adaptation of campaign to meet specific needs of Vandenberg AFB.

8.1.2 Vandenberg AFB Responsibilities

* organization of press conferences and press releases supporting the campaign on base;
* establish commanders and units directives to mandate participation.

8.1.3 Costs

The overall countywide budget is $65,000.00; the Vandenberg AFB share, based on population reached, is approximately $1,430.00. Monitoring and evaluation costs are approximately $165.00 of a total of 7,500.00. (See Table 8.1.)
8.2 SCHOOL EDUCATION AND OUTREACH

Various approaches will be taken in the County of Santa Barbara program, including increasing educational efforts at schools through: development of motivational presentations for various grade levels; provision of curricula and videos to teachers on request; and assistance in either establishing or bolstering office paper recycling projects in the schools. School Education and Outreach efforts will employ the use of the slogan, concept and character established in the general media campaign.

The best way to learn is by doing, and beginning recycling in the schools at an early age is likely to set a pattern that will be carried into adulthood. When a student recycles at school, it is likely that he/she will continue in the future.

8.2.1 Recycling Education and Outreach Program

The County of Santa Barbara's plan is to provide educational outreach and promotion of office paper recycling in schools through a pilot program in area schools. The pilot program will serve 10 to 12 schools in the Santa Barbara School District (including schools in Santa Barbara and the unincorporated areas) in the 1991/1992 school year; schools in other cities and unincorporated areas will be added during the next three years, so that all schools in the county that are interested in participating in the program will be doing so by 1995. Schools will be included in the program each year based on interest and the availability of recycling collection. The program will include the provision of:

* classroom recycling containers;
* instructional bi-lingual labels;
* motivational posters;
* educational flyers.

All educational material will carry the slogan and visual concept of the general campaign. The posters and flyers will be developed to reach two main grade levels; elementary school and junior high/high school. The bin labels (one for white paper; another for colored paper) will include brief instructions on what is recyclable and should be put in the containers and what is not. The posters will serve as a "masthead" for the program and will be artistic, colorful and motivational. A series of five flyers will be used throughout the year to educate the students on the topics of recycling and source reduction and to encourage ongoing participation in the program.
A press conference will be held at the inception of the pilot program to promote the program and to gain the interest of other County schools. The program will be expanded each year to include more schools in the cities and unincorporated areas. An informal task force of teachers, recycling coordinators, community recycling activists and program coordinators will meet two to three times a year to assist in developing and shaping the program as more schools are added.

Educational presentations will be offered as an element of the Recycling Education and Outreach Program. The presentations will be coordinated through the Recycling Coordinator at each of the participating schools. Pre-visit materials will be distributed to teachers interested in participating. Presentations will then be given to the students by Outreach Program Staff.

The Outreach Program will feature an information library. The library will take advantage of the vast pool of educational resources available throughout the country. This resource center will feature an assortment of educational videos for classroom viewing, as well as curricula and activity alternatives and environmental contacts. Recycling coordinators at participating schools may request any variety of these materials for use in their schools.

8.2.2 Production Elements Provided by the County

* Classroom containers;
* Bi-lingual container labels;
* Posters;
* Assistance in setting up the program;
* Information flyers;
* Classroom presentations;
* Information library.

8.2.3 Vandenberg AFN Responsibilities

* Participation in the Task Force;
* Assistance in coordinating the program for the Lompoc School District schools located on Vandenberg AFN;
* Ongoing promotion of the program through the press.

8.2.4 Costs

The program will be started as a pilot program in the Santa
Barbara School District in the first year. The County plans to expand the program countywide over the next three years. Therefore, there will be no cost to Vandenberg in the first year.

8.3 BUSINESS AND INSTITUTIONAL EDUCATION

An outreach program businesses and institutions will be developed to reach three sectors:

1. office oriented businesses and institutions;
2. commercial; and
3. restaurant, hotel and bars.

Direct mail ads, using the slogan and concept of the general media campaign, will be used to promote business and institutional recycling, source reduction and composting. Brochures featuring recycling, source reduction and composting methods will be developed for each sector listed above. Open house workshops will be held for each sector, wherein experts will be available to answer questions and help those interested in establishing recycling, source reduction and composting programs in their businesses.

A countywide business recycling task force will be established to help other businesses in setting up recycling programs. Press releases and press conferences will be held throughout the year to bring attention to recycling, source reduction and composting approaches in businesses and institutions, and to promote the open houses.

8.3.1 Production Elements Provided by the County

* brochures that reach target groups;
* development of radio, newspaper and direct mail ads;
* placement of advertising to reach Vandenberg AFB;
* organization of open house work shops;
* establishment of countywide task force;
* development of press releases and press advisories.

8.3.2 Vandenberg AFB Responsibilities

* participation in the Task Force;
* assistance in the work shops to cover Vandenberg’s specific needs;
* encouraging waste reduction practices on base.
8.3.3 Costs

The overall countywide budget is $24,500.00; the Vandenberg AFB share, based on population reached, is approximately $539.00. Monitoring costs are approximately $110.00 out of a countywide total of $5000.00. (See Table 3.7.)

8.4 CONSUMER EDUCATION

The consumer education campaign will be directed toward raising the awareness of the need for consumers to adopt recycling, source reduction and composting methods. Newspaper and radio ads will be developed, using the slogan and concept from the general media campaign, to promote various ways of reducing, reusing and recycling. In-store promotions will be used to promote source reduction methods.

8.4.1 Production Elements Provided by the County

* development of radio, newspaper and point of purchase advertising materials;
* placement of advertising elements to reach Vandenberg AFB;
* development of press releases promoting consumer education.

8.4.2 Vandenberg AFB Responsibility

* assistance in identifying businesses and AAFES and AFCOMS facilities located on base to participate in the Consumer education element.

8.4.3 Costs

The overall countywide budget is $24,500.00; the Vandenberg AFB share, based on population reached, is approximately $539.00. Monitoring costs are approximately $110.00 out of a countywide total of $5000.00. (See Table 8.1.)
FACILITY CAPACITY COMPONENT
9: FACILITY CAPACITY COMPONENT

Component Summary

The facility capacity component describes the existing permitted solid waste facilities, the solid waste disposal facility needs projection, phase-outs and closures of any solid waste facilities, and the development of new facilities and expansion of existing permitted facilities. The Vandenberg Air Force Base Landfill is described within this component.

Introduction

In the past, landfilling has been considered the primary method of handling solid waste. With the increasing costs of disposal of solid waste and the awareness of the general public, there has been a growing concern over the amount of solid waste generated and the methods of disposal. With the enactment of the California Integrated Waste Management Act of 1989, landfilling is now the last method of solid waste disposal to be considered. This goal does not, however, preclude the ultimate need for landfill disposal of wastes that have no existing, cost-effective method available for recycling or composting.

9.1 EXISTING SOLID WASTE FACILITIES

There are seven landfills and one transfer station operated within the County of Santa Barbara. The City of Santa Maria and the City of Lompoc operate landfills for their respective waste sheds. In addition, the County of Santa Barbara operates four landfills and the transfer station, all of which are located in the unincorporated areas of the County. These landfill sites will be discussed in the respective Source Reduction and Recycling Elements.

Vandenberg Air Force Base (AFB) operates one landfill, located on federal property, for the use of the Air Force base and the Lompoc Federal Penitentiary.
9.1.1 Vandenberg Air Force Base Landfill

The United States Air Force is the owner and operator of the Vandenberg AFB Landfill. The landfill is located on federal property in the western part of the County of Santa Barbara, approximately two miles north of the City of Lompoc, California.

The waste disposal analysis for each generated waste type is described in Table 2-S of the County of Santa Barbara Waste Generation Study.

The permitted site acreage at the Vandenberg AFB Landfill is 151 acres, of which 110 acres are active. Under the terms and conditions of the current Solid Waste Facilities Permit, there is no permitted capacity limit on the volume of waste the Vandenberg AFB Landfill is allowed to receive. It is estimated that approximately 80 tons per day are currently disposed in this landfill. The remaining capacity for the Vandenberg AFB sanitary landfill is 750,000 cubic yards until the year 2040.

There are no disposal fees at this landfill. The landfill is for the use of the residential base housing and the commercial activities occurring on base. Waste is also accepted from the Lompoc Federal Penitentiary. Waste is not accepted from any other residential or commercial sector within the County of Santa Barbara.

9.2 SOLID WASTE DISPOSAL NEEDS PROJECTION

The solid waste disposal needs projection for the Vandenberg AFB Landfill has been calculated using the following equation (Section 18744):

\[
\text{ADDITIONAL CAPACITY}_{\text{year} \ n} = [(G + I) - (D + TC + LF + E)]_{\text{year} \ n}
\]

where:

\( G \) = The amount of solid waste projected to be generated on Vandenberg Air Force Base

\( I \) = The amount of solid waste which is expected to be imported to the Vandenberg Air Force Base landfill for disposal in permitted solid waste disposal facilities through interjurisdictional agreement(s) with other federal entities, as defined in section 40193 of the Public Resources Code.

\( D \) = The amount diverted through successful implementation of proposed source reduction, recycling, and composting
programs.

TC = The amount of volume reduction occurring through available, permitted transformation facilities. There are no transformation facilities located within the County of Santa Barbara. Therefore, for the Vandenberg Air Force Base needs projection, this value will be zero.

LP = The amount of permitted solid waste disposal capacity elsewhere on Vandenberg, which is available for disposal of certain wastes generated on Vandenberg Air Force Base.

E = The amount of solid waste generated on Vandenberg Air Force Base which is exported to solid waste disposal facilities through interjurisdictional agreement(s) with other cities or counties, or through agreements with solid waste enterprises, as defined in section 40193 of the Public Resources Code.

n = Each year of a 15-year period commencing in 1991 [iterative in one-year increments].

Using this calculation, the projection for the Vandenberg AFB sanitary landfill for 15 years beginning in 1991 is shown in Table 9.1.

9.3 PREDICTED LANDFILL PHASE-OUTS AND CLOSURES

Based on the current annual disposal of approximately 15,000 tons per year, the ultimate life of the landfill has been estimated to be 48 years. The landfill has an estimated additional capacity of 750,000 tons. Using these figures, the Vandenberg Air Force Base landfill will not face closure until 2038.

9.4 NEW FACILITIES AND EXPANSIONS

There is no expansion or new facility planned by Vandenberg Air Force Base at this time.

9.5 WASTE EXPORTATION

At this time, Vandenberg Air Force Base has no export agreements with other jurisdictions and has no plans to enter into such agreements to export wastes from the base facility in the short or medium term planning periods.
<table>
<thead>
<tr>
<th>Year</th>
<th>Solid Waste Generated</th>
<th>Solid Waste Imported</th>
<th>Solid Waste Diverted</th>
<th>Solid Waste Transformed</th>
<th>Disposal Capacity</th>
<th>Solid Waste Exported</th>
<th>Projected Needs</th>
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<tbody>
<tr>
<td>1991</td>
<td>21250</td>
<td>0</td>
<td>5220</td>
<td>0</td>
<td>750000</td>
<td>0</td>
<td>0</td>
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<td>1992</td>
<td>21340</td>
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<td>5250</td>
<td>0</td>
<td>728660</td>
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<td>0</td>
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<tr>
<td>1993</td>
<td>21430</td>
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<td>5280</td>
<td>0</td>
<td>707230</td>
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<td>0</td>
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<td>21520</td>
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<td>5310</td>
<td>0</td>
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<td>664100</td>
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<td>620610</td>
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<td>5460</td>
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<td>576780</td>
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</tr>
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<td>2005</td>
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<td>5770</td>
<td>0</td>
<td>442810</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
FUNDING COMPONENT
10: FUNDING COMPONENT

10.1 EXISTING FUNDING MECHANISM

Vandenberg Air Force Base is funded from the Department of Defense (DoD) budget, as appropriated by Congress each year. Budget inputs for the various budget categories must be submitted several years in advance to Headquarters USAF for consolidation into the DoD budget. Some categories require specific line item approval and appropriation by Congress, such as military construction (MILCON). The base is provided with a fixed budget to operate within. The Base Financial Management Board, chaired by the installation commander, has the authority to allocate and authorize use of funds for specific purposes.

The Operations and Maintenance budget provides for the day-to-day operation of the landfill, with inputs made two fiscal years in advance. New construction projects costing more than $200,000 is MILCON and requires inputs five fiscal years in advance of need.

10.2 FUNDING ESTIMATED

10.2.1 Revenue Sources

Vandenberg Air Force Base does not currently generate any revenues from the traditional revenue sources such as tipping fees, user fees, commercial waste haulers fees, property taxes, or bonds. All operating costs are obtained from the DoD budget as explained under Existing Funding Mechanism above.

The feasibility of charging tipping fees at the Vandenberg AFB sanitary landfill was studied in 1991. It was determined that this option is not feasible for the landfill. To reduce the number of unauthorized users of the landfill, a manifest system for tracking the generators is under development.
10.2.1 Contingency Revenue Sources

If insufficient funds arise within any one budget category, requests may be made to the Base Financial Management Board for adjustments. This avenue is dependent, however, on the availability of funds from other categories.
INTEGRATION COMPONENT
11: INTEGRATION

Introduction

This component explains how the source reduction, recycling, and composting components combine to achieve the 25 percent and 50 percent diversion mandates established by AB 939. The integration component includes a description of solid waste management practices, an explanation of how the components are integrated to achieve diversion mandates, a discussion on how priorities between components were determined, and a calendar scheduling all program implementation tasks for the short-term planning period.

11.1 SOLID WASTE MANAGEMENT PRACTICES

The solid waste management programs developed as part of the Source Reduction and Recycling Element planning effort follow the solid waste management hierarchy as established in AB 939. Programs were developed in all component areas to fulfill diversion objectives in the following order:

1. source reduction
2. recycling
3. composting
4. environmentally safe transformation and land disposal

In light of these priorities Vandenberg AFB has developed an integrated waste management system that places preference on source reduction, recycling and composting programs for all solid waste generators located on the base. Vandenberg AFB's integrated waste management system establishes the following new and expanded programs within each of the four successive diversion objectives.
11.1.1 Source Reduction

The following list represents the alternatives selected for implementation in the source reduction component:

* Backyard composting
* Government procurement policies
* Source reduction education
* Develop an awards campaign
* Technical assistance to government and business
* Recoverable items drop-off center

11.1.2 Recycling

The following list represents the alternatives selected for implementation in the recycling component:

* Continue residential curbside programs
* Continue the drop-off centers
* Continue commercial collection
* Divert concrete and asphalt
* Mixed waste processing

11.1.3 Composting

The following list represents the alternatives selected for implementation in the composting component:

* Yard waste composting
* Yard and wood waste drop-off center
* Curbside yard waste collection
* Compost product market development program

11.1.4 Land Disposal

Environmentally safe land disposal will continue to be the disposal method use for materials that remain after source reduction, recycling, and composting programs have been implemented. Vandenberg AFB sanitary landfill will continue to be used for the materials generated on base.

11.2 INTEGRATION OF PROGRAM COMPONENTS

The waste management programs, both existing and new, established in this plan are designed to be cost effective, efficient, and achieve maximum diversion potential. Programs has been designed to complement and reinforce each other and to build upon the existing infrastructure.
For example, integration between component programs, services and facilities is key in the countywide education and public information program designed as part of this plan. Educational efforts will target all program areas and include each of the programmatic components. Programs will be developed to target a number of different waste generators such as consumers, product manufacturers, and commercial and industrial generators. These efforts can reduce the generation and disposal of a wide variety of packaging, paper, plastic, and one-time-use-only and non-recyclable products in the solid waste stream.

Countywide educational and informational programs provide a mechanism to change the purchasing, use and disposal habits of the communities, which will reduce the quantity of waste disposed and increase materials that are recycled and composted. Information will be presented in the context of the entire solid waste management system in the County drawing upon unified themes. Messages will aim to complement and reinforce each other and inform residents of the array of services and options available. All media material produced by the County is available to jurisdictions within the County, including Vandenberg AFB, for incorporation into existing education programs.

11.3 ACHIEVEMENT OF DIVERSION MANDATES

Table 11.1 demonstrates how the source reduction, recycling, and composting components achieve the AB 939 diversion mandates.

11.4 DETERMINATION OF PROGRAM PRIORITIES

Vandenberg AFB has established priorities for the programs selected for implementation in both the short-term and medium-term planning periods. In all cases, program implementation schedules were designed in light of the goals and objectives established by this plan. Tasks and schedules for program start-up through monitoring and evaluation phases are integrated between component areas to maximize diversion potential and achieve overall waste management priorities.

The following criteria were used to determine priorities between components:

* The hierarchy established by AB 939 which encourages, in the following order, source reduction, recycling, composting, and environmentally safe transformation and land disposal;
<table>
<thead>
<tr>
<th>Component/Program</th>
<th>Total Waste Generation (tons)</th>
<th>1995</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent Diverted</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Source Reduction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing source reduction programs</td>
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<td>2.6</td>
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<tr>
<td>Backyard composting</td>
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</tr>
<tr>
<td>All other alternatives</td>
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<td></td>
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<tr>
<td>Government procurement policies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source reduction education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awards campaign</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical assistance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feasibility study for variable can rates</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Recoverable items drop-off center</td>
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<tr>
<td>Feasibility study on business license fees</td>
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<td><strong>Recycling</strong></td>
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<td>Residential curbside collection</td>
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<td>8.0</td>
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<td>Commercial collection**</td>
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<td></td>
</tr>
<tr>
<td>Mulching</td>
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<td>3.0</td>
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</tr>
<tr>
<td>Intermediate processing</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Mixed waste processing</td>
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<td></td>
<td>15</td>
</tr>
<tr>
<td><strong>Composting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curbside yard waste collection</td>
<td>15</td>
<td>15</td>
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</tr>
<tr>
<td>Market development</td>
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</tr>
<tr>
<td><strong>Total Diversion</strong></td>
<td>42.0</td>
<td>59.0</td>
<td></td>
</tr>
</tbody>
</table>

* Diversion not quantifiable for these programs.
** Includes rock, concrete and asphalt.
*** Participation is dependant on Vandenberg AFB's feasibility determination.

Summed numbers may not total as displayed due to rounding.
* The existing waste management conditions and activities currently operating in the County;

* The wastestream composting and characteristics as identified in the County of Santa Barbara Countywide Waste Generation Study conducted as part of this planning effort; and

* The evaluation of alternatives contained within each of the programmatic components.

11.5 INTEGRATED IMPLEMENTATION SCHEDULE

This section outlines implementation tasks for all new and expanded programs on Vandenberg AFB. The schedule includes a short descriptive title for each task, designates the entity responsible for implementation and identifies task start dates by quarter (i.e., January, April, July, and October). The first schedule summarizes significant milestones for all new and/or expanded source reduction, recycling, composting and educational programs (Table 11.2). Detailed schedules for each of the diversion programs are then presented (Tables 11.3 through 11.6). Although Vandenberg has no responsibilities in the development of the countywide education and public information component, the integration schedules for this component have been added for completeness (Table 11.6). In addition, AB 939 requires that funding source availability also be included in this section. For Vandenberg AFB, funding is obtained through the Department of Defense budget, as appropriated by Congress each year. This mechanism is explained in detail in the Funding Component.
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<td>Discussion of composting issues and disseminate these for general campaign.</td>
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<td>Placement of bins, posters and flyers</td>
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<td>Conference announcing the school program.</td>
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<td>To survey to backyard composting issues, provide support, and estimate</td>
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<td>Continue monitoring &amp; evaluation.</td>
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<td>Palate items drop-off center.</td>
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<td>Land use plans and environmental documents for LCF.</td>
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<td>Yard/wood waste drop-off facility(ies).</td>
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<td>Operations begin at LCF.</td>
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<td>Yard waste collection pilot.</td>
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<td>Yard composting pilot program workshops and response to survey.</td>
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<td>Update VAFB procurement policy.</td>
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<td>Drafting direct mail campaign.</td>
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<td>Distribute backyard composting to participants.</td>
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<td>Conduct survey to backyard composting; provide support, and estimate.</td>
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→ Implementation task  
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<td>feasible, VAFB and adopt inter-jurisdictional composting facility (CF).</td>
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<td>Process for yard/wood waste facility(ies).</td>
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<td>Starting process for yard/wood waste facility(ies).</td>
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<td>Construction.</td>
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<td>Outside yard waste collection.</td>
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<td>Yard waste collection pilot.</td>
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> Implementation task

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Santa Barbara Board of Supervisors
Santa Barbara Public Works
Santa Barbara Solid Waste Management Division
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<td>Building relation with the Santa Barbara district.</td>
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<td>Develop an advisory task force and hold first meeting.</td>
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<td>Develop the 30-second television script.</td>
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<td>Initiation of schools in pilot outreach.</td>
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<td>Setting bins for participating schools.</td>
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<td>Meet with participating school coordinators.</td>
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<td>Develop a plan to television, print and radio.</td>
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<td>Develop a rural newspaper campaign.</td>
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<td>Collect and bin labels for pilot outreach.</td>
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<td>Develop a radio campaign.</td>
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<td>Develop a source reduction and recycling programs for schools.</td>
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<td>Develop a set of curricula and videos available for schools.</td>
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<td>Place first source reduction and source reduction newspaper ad(s).</td>
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<td>Placement of general campaign.</td>
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<td>Press conferences and disseminate messages for general campaign.</td>
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<td>Outreach to targeted business and other groups.</td>
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<td>Place first business education ad(s).</td>
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### INTEGRATION SCHEDULE
**EDUCATION AND PUBLIC INFORMATION PROGRAMS**

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<td>Conference announcing the school program.</td>
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<td>Place second recycling and source flyer for schools.</td>
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<td>Consumer education radio ads.</td>
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<td>Action plan for increasing County recycling, source reduction and Sustaining.</td>
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<td>Store promotion campaign to raise awareness of source reduction among</td>
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<td>Goals to be added to Outreach Program</td>
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<td>Place fifth recycling and source flyer for schools.</td>
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<td>Hold second open house in the City.</td>
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- Implementation task
- Major milestone
A: GLOSSARY

The following definitions contain those found in article 3, section 18720 of the California Integrated Waste Management Act of 1989 emergency regulations. In addition, other definitions have been added to clarify the conditions found in the County of Santa Barbara.

Agricultural wastes: the solid wastes of plant and animal origin, which result from the production and processing of farm or agricultural products, including manures, orchard and vineyard prunings, and crop residues, which are removed from the site of generation for solid waste management. Agricultural refers to SIC Codes 011 through 0291.

Aluminum can or aluminum container: any food or beverage container that is composed of at least 94 percent aluminum.

Asbestos: fibrous forms of various hydrated minerals, including chrysotile (fibrous serpentine), crocidolite (fibrous reibekite), amosite (fibrous cummingtonite-grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.

Ash: the residue from the combustion of any solid or liquid material.

Authorized recycling agent: a person that a local governing body or private commercial entity authorizes or contracts with to collect its recyclable waste material. An authorized recycling agency may be a municipal collection service, private refuse hauler, private recycling enterprise, or private nonprofit corporation or association.

Bi-metal container: any metal container composed of at least two different types of metals, such as a steel container with an aluminum top.

Best readily available and applicable data or representative data: information that is available to a jurisdiction from published sources, field sampling, the Board, or other
identifiable entities which is the most current data and which addresses the situation being examined.

Board: the California Integrated Waste Management Board.

Buyback recycling center: a facility which pays a fee for the delivery and transfer of ownership to the facility of source separated materials for the purpose of recycling or composting.

Capital costs: those direct costs incurred in order to acquire real property assets such as land, buildings and building additions, site improvements, machinery, and equipment.

Commercial solid wastes: solid waste originating from stores, business offices, and commercial warehouses; hospitals, educational, health care, military, and correctional institutions; non-profit research organizations; and government offices. Commercial solid waste refers to SIC Codes 401 through 439, 4961, and 4971 (transportation, communications and certain utilities), 501 through 5999 (wholesale and retail trade), 601 through 6799 (finance, insurance and real estate), 701 through 8748 (public and private service industries such as hospitals and hotels), and 911 through 9721 (public administration). Commercial solid wastes do not include construction and demolition waste.

Commercial unit: a site zoned for a commercial business and which generates commercial solid wastes.

Composition: a set of identified solid waste materials, categorized into waste categories and waste types pursuant to sections 18722(i) and (j) of Article 6.1, Chapter 9, Title 14.

Compost: the product resulting from the controlled biological decomposition of organic wastes that are source separated from the municipal solid waste stream, or which are separated at a centralized facility. Compost includes vegetable, yard and wood wastes which are not hazardous wastes.

Composting: a method of waste treatment which produces a product meeting the definition of compost.

Composting facility: a permitted solid waste facility at which composting is conducted and which produces a product meeting the definition of compost.
Construction and demolition waste: solid wastes, such as building materials, and packaging and rubble resulting from construction, remodeling, repair and demolition operations on pavements, houses, commercial buildings, and other structures. Construction refers to SIC Codes 152 through 1794, 1796, and 1799. Demolition refers to SIC Code 1795.

Corrugated container: a paperboard container fabricated from two layers of kraft linerboard sandwiched around a corrugating medium. Kraft linerboard means paperboard made from wood pulp produced by a modified sulfate pulping process, with basis weight ranging from 18 to 200 pounds, manufactured for use as facing material for corrugated or solid fiber containers. Linerboard also may mean that material which is made from reclaimed paper stock. Corrugating medium means paperboard made from chemical or semichemical wood pulps, straw or reclaimed paper stock, and folded to form permanent corrugations. Corrugated container refers to SIC Code 2653.

Cost-effective: a measurement of cost compared to an unvalued output (e.g., the cost per ton of solid waste collected) such that the lower the costs, the more cost-effective the action.


Designated recycling collection location: the place where an authorized recycling agent has contracted with either the local governing body or a private entity to pick up recyclable materials segregated from other waste material. Designated recycling collection location includes, but is not limited to, the curbside of a residential neighborhood or the service alley of a commercial enterprise.

Disposal: the management of solid waste through landfilling or transformation at permitted solid waste facilities.

Disposal capacity: the capacity, expressed in either weight in tons or its volumetric equivalent in cubic yards, which is either currently available at a permitted solid waste landfill, or will be needed for the disposal of solid waste generated within the jurisdiction over a specified period of time.

Disposal facility: any facility or location where disposal of solid waste occurs.

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Disposal site: includes the place, location, tract of land, area, or premises in use, intended to be used, or which has been used for the landfill disposal of solid wastes. Disposal site includes solid waste landfills.

Disposal site owner: the person who holds title to the property used as a disposal site after January 1, 1977.

Diversion alternative: any activity, existing or occurring in the future, which has been, is, or will be implemented by a jurisdiction which could result in or promote the diversion of solid waste, through source reduction, recycling or composting from solid waste landfills and transformation facilities.

Drop-off recycling center: a facility which accepts delivery or transfer of ownership of source separated materials for the purpose of recycling or composting, without paying a fee. Donation of materials to collection organizations, such as charitable groups, is included in this definition.

Durability: the ability of a product to be used for its intended purpose for a period greater than the mean useful product life span of similar products.

End market or end use: the use or uses of a diverted material or product which has been returned to the economic mainstream, whether or not this return is through sale of the material or product. The material or product can have a value which is less than the solid waste disposal cost.

Enforcement program: the regulations and procedures adopted by the Board.

Feasible: that a specified program, method, or other activity can, on the basis of cost, technical requirements and time frame for accomplishment, be undertaken to achieve the objectives and tasks identified by a jurisdiction in a Countywide Integration Waste Management Plan.

Ferrous metals: any iron or steel scrap which has an iron content sufficient for magnetic separation.

Food waste: all animal and vegetable solid wastes generated by food facilities, as defined in California Health and Safety Code section 27521, or from residences, that result from the storage, preparation, cooking, or handling of food.
Hazard: having one or more of the characteristics that cause a substance or combination of substances to qualify as a hazardous material, as defined by section 66084 of Title 22 of the California Code of Regulations. Hazard includes any condition, practice, or procedure which is or may be dangerous, harmful, or perilous to employees, property, neighbors, or the general public.

Household hazardous waste: those wastes resulting from products purchased by the general public for household use which, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may pose a substantial known or potential hazard to human health or the environment which improperly treated, disposed, or otherwise managed.

Household hazardous waste collection: a program activity in which household hazardous wastes are brought to a designated collection point where the household hazardous wastes are separated for temporary storage and ultimate recycling, treatment, or disposal.

Implementation: the accomplishment of the program tasks as identified in each component required by section 18733 of Article 6.1, Chapter 9, Title 14.

Industrial solid waste: solid waste originating from mechanized manufacturing facilities, factories, refineries, construction and demolition projects, and publicly operated treatment works, and/or solid wastes placed in debris boxes.

Industrial unit: a site zoned for an industrial business and which generated industrial solid wastes.

Inert solids or inert waste: a non-liquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board pursuant to Division 7 (commencing with section 13000) of the California Water Code and does not contain significant quantities of decomposable solid waste.

Integrated diversion facility (IDF): a mixed materials processing facility developed in conjunction with a compost facility to remove the recyclable fraction of the wastestream (including organics and paper grades suitable for compost feedstock). Such a facility would process the residential, commercial, and industrial wastestreams and accept source
separated and commingled recyclables for processing.

Intermediate processing centers (IPC): facilities that process both source separated and commingled materials collected in residential and commercial recycling programs. These facilities typically use both manual and mechanical methods for sorting materials and preparing them for market.

Jurisdiction: the city or county responsible for preparing any one or all of the following: the Countywide Integrated Waste Management Plan, the Countywide Siting Element, the Source Reduction and Recycling Element, or the Household Hazardous Waste Element.

Local governing body: the legislative body of the city, county, or special district which has authority to provide solid waste handling services.

Marine wastes: solid wastes generated from marine vessels and ocean work platforms, solid wastes washed onto ocean beaches, and litter discarded on ocean beaches.

Market development: a method of increasing the demand for recovered materials so that end markets for the materials are established, improved or stabilized and thereby become more reliable.

Materials recovery facility: a permitted solid waste facility where solid wastes or recyclable materials are sorted or separated, by hand or by use of machinery, for the purposes of recycling or composting.


Mixed paper: a waste type which is a mixture, unsegregated by color or quality, of at least two of the following paper wastes: newspaper, corrugated cardboard, office paper, computer paper, white paper, coated paper stock, or other paper wastes.

Mixed waste processing: facilities that receive solid waste for processing to remove the recyclable fraction from the wastestream. These facilities use both manual and mechanized means to segregate and process the incoming solid waste.

Model component format: that format described in sections 18733.1 through 18733.6 of Article 6.2, Chapter 9, Title 14,
which shall be used for the preparation of several of the individual components of a SRRE.

Municipal solid waste (MSW): all solid wastes generated by residential, commercial, and industrial sources, and all solid waste generated at construction and demolition sites, at food-processing facilities, and at treatment works for water and waste water, which are collected and transported under the authorization of a jurisdiction or are self-hauled. Municipal solid waste does not include agricultural crop residues (SIC Codes 071 through 0724, 0751), animal manure (SIC Code 0751), mining waste and fuel extraction waste (SIC Codes 101 through 1499), forestry wastes (SIC Codes 081 through 0851, 2411 and 2421), and ash from industrial boilers, furnaces and incinerators.

Non-ferrous metals: any metal scraps that have value, and that are derived from metals other than iron and its alloys in steel, such as aluminum, copper, brass, bronze, lead, zinc and other metals, and to which a magnet will not adhere.

Non-recyclable paper: discarded paper which has no market value because of its physical or chemical or biological characteristics or properties.

Non-renewable resource: a resource which cannot be replenished, such as those resources derived from fossil fuels.

Normally disposed of: those waste categories and waste types which: 1) have been demonstrated by the Solid Waste Generation Study, conducted pursuant to section 18722 of Chapter 9, Title 14, to be in a solid waste stream attributed to the jurisdiction as of January 1, 1990; 2) which are deposited at permitted solid waste landfills or transformation facilities subsequent to any recycling or composting activities at those solid waste facilities; and 3) which are allowed to be considered in the establishment of the base amount of solid waste from which source reduction, recycling, and composting levels shall be calculated, pursuant to the limitations listing in Public Resources Code section 41781(b).

Old newspaper: any newsprint which is separated from other types of solid waste or collected separately from other types of solid waste and made available for reuse and which may be used as a raw material in the manufacture of a new paper product.
Operational costs: those direct costs incurred in maintaining the ongoing operation of a program or facility. Operational costs do not include capital costs.

Operator: the person to whom the approval to operate a disposal site, transfer or processing station, or collection system is granted.

Organic waste: solid wastes originated from living organisms and their metabolic waste products, and from petroleum, which contain naturally produced organic compounds, and which are biologically decomposable by microbial and fungal action into the constituent compounds of water, carbon dioxide, and other simpler organic compounds.

Other plastics: all waste plastics except polyethylene terephthalate (PET) containers, film plastics, and high density polyethylene (HDPE) containers.

Permitted capacity: that volume in cubic yards or weight in tons which a solid waste facility is allowed to receive, on a periodic basis, under the terms and conditions of that solid waste facility’s current Solid Waste Facilities Permit issued by the local enforcement agency and concurred in by the California Integrated Waste Management Board.

Permitted landfill: a solid waste landfill for which there exists a current Solid Waste Facilities Permit issued by the local enforcement agency and concurred in by the California Integrated Waste Management Board, or permitted under the regulatory scheme of another state.

Permitted solid waste facility: a solid waste facility for which there exists a Solid Waste Facilities Permit issued by the local enforcement agency and concurred in by the California Integrated Waste Management Board or permitted under the regulatory scheme of another state.

Person: includes an individual, firm, association, copartnership, political subdivision, government agency, municipality, industry, public or private corporation, or any other entity whatsoever.

Processing: the reduction, separation, recovery, conversion, or recycling of solid waste.
Program: the full range of source reduction, recycling, composting, special waste, or household hazardous waste activities undertaken by or in the jurisdiction or relating to the management of the jurisdiction's waste stream to achieve the objectives identified in the Source Reduction, Recycling, Composting, and Special Waste components and the Household Hazardous Waste Element, respectively.

Purchase preference: a preference provided to a wholesale or retail commodity dealer which is based upon the percentage amount that the costs of products made from recycled materials may exceed that of similarly non-recycled products and still be deemed the lowest bid.

Rate structure: set of prices established by a jurisdiction, special district (as defined in Government Code section 56036), or other rate setting authority to compensate the jurisdiction, special district, or rate setting authority for the partial or full costs of the collection, processing, recycling, composting, and/or transformation or landfill disposal of solid wastes.

Recovered material: material which has been retrieved or diverted from disposal or transformation for the purpose of recycling, re-use or composting. Recovered material does not include those materials generated from and reused on site for manufacturing purposes.

Recycle/recycling: the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace. Recycling does not include transformation.

Region: the combined geographic area of two or more incorporated areas; two or more unincorporated areas; or any combination of incorporated and unincorporated areas.

Regional water board: California regional water quality control board.

Repairability: the ability of a product or package to be restored to a working or usable state at a cost which is less than the replacement cost of the product or package.
Residential solid waste: solid waste originating from single-family or multiple family dwellings.

Residential unit: a site occupied by a building which is zoned for residential occupation and whose occupants generate residential solid wastes.

Reusability: the ability of a product or package to be used more than once in its same form.

Re-use: the use, in the same form as it was produced, of a material which might otherwise be discarded.

Rubber: an amorphous polymer or isoprene derived from natural latex of certain tropical plants or from petroleum.

Salvage: the controlled removal of solid waste materials at a permitted solid waste facility for recycling, re-use, composting, or transformation.

Seasonal: those periods of time during the calendar year which are identifiable by distinct cyclical patterns of local climate, demography, trade or commerce.

Sewage sludge: residual solids and semi-solids resulting from the treatment of waste water, but does not include waste water effluent discharged from such treatment processes.

Short-term planning period: a period beginning in the year 1991 and ending in the year 1995.


Sludge: residual solids and semi-solids resulting from the treatment of water, waste water, and/or other liquids. Sludge includes sewage sludge and sludge derived from industrial processes, but does not include waste water effluent discharged from such treatment processes.

Solid Waste Generation Study: the study undertaken by a jurisdiction to characterize its solid waste stream and comply with all the requirements of section 18722, Chapter 9, Title 14.

Solid waste facility: includes a disposal facility, a disposal site, and a solid waste transfer or processing station.
Solid waste handling: the collection, transportation, storage, transfer, or processing of solid wastes.

Source reduction: any action which causes a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, reducing the use of nonrecyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, reducing the amount of yard wastes generated, establishing garbage rate structures with incentives to reduce the amount of wastes that generators produce, and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic, and other materials in the manufacturing process. Source reduction does not include steps taken after the material becomes solid waste or actions which would impact air or water resources in lieu of land, including, but not limited to, transformation.

Source Reduction and Recycling Element (SRRE): the source reduction and recycling element required pursuant to Public Resource Code section 41000 and 41300.

Source separated: the segregation, by the generator, of materials designated for separate collection for some form of materials recovery or special handling.

Special waste: any hazardous waste listed in section 66740 of Title 22 of the California Code of Regulations, or any waste which has been classified as a special waste pursuant to section 66744 of Title 22 of the California Code of Regulations, or which has been granted a variance for the purpose of storage, transportation, treatment, or disposal by the department of Health Services pursuant to section 65310 of Title 22 of the California Code of Regulations. Special waste also includes any solid waste which, because of its source of generation, physical, chemical or biological characteristics, or unique disposal practices, is specifically conditioned in a solid waste facilities permit for handling and/or disposal.

State water board: the State Water Resources Control Board.

Statistically representative: those representative and random samples of units that are taken from a population sample, pursuant to the procedures given in Appendix 1 of Article 6.1, Chapter 9, Title 14. For the purposes of this definition, population sample includes, but is not limited to, a sample from a population of solid waste generation sites, solid waste facilities and recycling facilities, or a population of items of
materials and solid wastes in a refuse vehicle load of solid waste.

Tin can or tin container: any food or beverage container that is composed of steel with a tin coating.

Ton: a unit of weight in the U.S. Customary System of Measurement, an avoirdupois unit equal to 2,000 pounds. Also called short ton or net ton.

Transfer or processing station: those facilities utilized to receive solid wastes, temporarily store, separate, covert, or otherwise process the materials in the solid wastes, or to transfer the solid wastes directly from smaller to larger vehicles for transport, and those facilities utilized for transformation.

Transformation facility: a facility whose principal function is to convert, combust, or otherwise process solid waste by incineration, pyrolysis, destructive distillation, or gasification, or to chemically or biologically process solid wastes, for the purpose of volume reduction, synthetic fuel production, or energy recovery. Transformation facility does not include a composting facility.

Volume: a three dimensional measurement of the capacity of a region of space or a container. Volume is commonly expressed in terms of cubic yards or cubic meters. Volume is not expressed in terms of mass or weight.

Waste categories: the grouping of solid wastes with similar properties into major solid waste classes, such as grouping together office, corrugated and newspaper as a paper waste category, as identified by the solid waste classification system contained in section 18722 of Article 6.1, Chapter 9, Title 14, except where a component-specific requirement provides alternative means of classification.

Waste generator: any person, as defined by section 40170 of the Public Resources Code, whose act or process produces solid waste as defined in Public Resources Code section 40191, or whose act first cause solid waste to become subject to regulations.

Waste type: identified wastes having the features of a group or class of wastes which are distinguishable from any other waste type, as identified by the waste classification system contained in section 18722 of Article 6.1, Chapter 9, Title 14, except
where a component-specific requirement provides alternative means of classification.

White goods: discarded, enamel-coated major appliances, such as washing machines, clothes dryers, hot water heaters, stoves and refrigerators.

Wood waste: solid waste consisting of wood pieces or particles which are generated from the manufacturing or production of wood products, harvesting, processing or storage of raw wood materials, or construction and demolition activities.

Yard waste: any wastes generated from the maintenance or alteration of public, commercial or residential landscapes including, but not limited to, yard clippings, leaves, tree trimmings, prunings, brush, and weeds.

APPENDIX B:
COUNTY OF SANTA BARBARA
EDUCATION AND PUBLIC
INFORMATION COMPONENT
8: EDUCATION AND PUBLIC INFORMATION COMPONENT

Component Summary

This component includes a description of objectives, existing conditions, selection of program alternatives, program implementation, and monitoring and evaluation methods for the County of Santa Barbara Education and Public Information campaign.

Introduction

The County of Santa Barbara has supported education and public information programs related to various solid waste projects and goals for several years, including the promotion of buyback centers, curbside recycling, and school programs. Future plans call for continuation and development of current promotion and public information efforts as well as the creation of new, more far-reaching efforts that will include consumer education and business and institutional recycling.

A general media campaign will be developed that will establish a slogan and concept. This concept will be visualized and the design and slogan will be used in all educational and promotional material produced by and for the County. In this way, a synergistic approach will unite all recycling, composting and source reduction efforts under one promotional image and promotional activities will support and reflect each other.

8.1 COMPONENT OBJECTIVES

The following solid waste generators will be targeted in the educational and public information programs:

1. general public,
2. schools,
3. businesses and institutions, and
4. consumers.
The short and medium term component objectives are:

1. to increase the awareness of and participation in recycling by County residents, which will result in an increase in the number of people recycling in the County;

2. to increase the number of commodities residents recycle as well as the overall amount of commodities recycled to result in an increased level of recycling in the County; and

3. to increase the awareness of and participation in source reduction and composting methods among County residents, which will result in an increase in the number of people practicing source reduction and composting methods in the County.

8.2 EXISTING CONDITIONS

8.2.1 General Public Information

The following organizations play a role in recycling education and promotion in the County of Santa Barbara:

* County of Santa Barbara Public Works Department Solid Waste Management Division

* The Community Environmental Council (CEC)

* Valley Recycling, a subsidiary of Health Sanitation Services

* Vocational Training Center

The County of Santa Barbara

The education and public information elements of all programs administered by the County of Santa Barbara Public Works Department Solid Waste Management Division are coordinated by the division’s Public Information Specialist. County promotional efforts have supported the following projects in the last year:

Earth Day: In April 1990, the County, in association with the Community Environmental Council (CEC), coordinated an
exhibit for a day-long event held on the grounds of Santa Barbara City College that attracted a crowd of approximately 20,000 people. The exhibit featured "Trash-o-Rama," a maze of trash that was used to bring awareness to the waste crisis, its issues and potential solutions. It received local television and newspaper coverage. "Trash-o-Rama II—the Waste Game," an electronic quiz game, was the center of the County’s promotional activities for the 1991 Earth Day celebrations in Santa Barbara. The promotion targets the City of Santa Barbara and the surrounding unincorporated areas. Residents from the City of Carpinteria may have also attended the festivities.

Office Paper Recycling: The County’s Office Paper Recycling Program serves several County offices and is promoted through posters and educational handouts. The program description can be found in the existing conditions of the Recycling Component. The program targets County offices located in the City of Santa Barbara and the unincorporated area of Goleta.

Telephone Book Recycling: The County’s telephone book recycling program, established in 1988, featured an increased promotional campaign in 1990, which helped the program achieve a 60-percent increase over the previous years’ results. The campaign also received an Addy award in the category of Public Service Campaign. Promotional elements included in the campaign were: radio and print advertising; PSAs; press releases; a press conference; posters; and giveaways to recyclers (1,200 cactus plants were given away to participants). The program targets residences and businesses in the City of Santa Barbara, the City of Carpinteria, and the surrounding unincorporated areas. The 1991 program will also target the City of Solvang and its surrounding unincorporated areas.

County Recycling Line: An information line was established in the County’s Solid Waste Management Division in 1990 to address any questions that the public may have about its programs. The line provides general recycling information as well as current program information. The Recycling Line number is featured in County promotional efforts. Incoming calls are monitored to help gauge the effectiveness of promotions. The hotline is currently known to residents of the City of Santa Barbara, the City of Carpinteria and the surrounding unincorporated areas. Its existence will become more widely known as programs are expanded Countywide.
Christmas Tree Recycling: In its first year, 1990, promotion of the Christmas Tree Recycling resulted in the recycling of more than 6,000 trees, and the diversion of more than 45 tons from the landfill. Promotional campaign elements were: radio and print advertising; PSAs; press releases; a press conference; posters; point of purchase advertising; and a giveaway day (1,200 cactus). The trees were chipped and the resulting mulch was used as ground cover in the parks and at the Santa Barbara Zoo. This made for an interesting follow-up story, which was picked up by local television and radio stations. This program targets the City of Santa Barbara, the City of Carpinteria, the City of Solvang, and the surrounding unincorporated areas.

Toilet Recycling: This innovative program was established by the County of Santa Barbara Public Works Department Solid Waste Management Division in response to the number of toilets being replaced with water-saving models (due to local drought conditions). The program is promoted through press releases. It has received media coverage from The Santa Barbara News-Press, The Santa Barbara Independent, The Wall Street Journal, California Magazine, Governing Magazine, The New York Times, National Geographic, the Environmental Protection Agency’s Pollution Prevention News, and Associated Press International. The program targets residents of the City of Santa Barbara, the City of Carpinteria, and the surrounding unincorporated areas.

Backyard Composting Program: The County’s Backyard Composting Pilot Program was established in 1991. The program was organized through a CEC intern and is being promoted by the County’s Public Information Specialist. Promotional elements include: direct mail brochures to encourage participation; informational (how-to) brochures and flyers; and press releases. The pilot program targets two neighborhoods in the City of Santa Barbara and two neighborhoods in the unincorporated area of Goleta.

The Community Environmental Council

CEC established a recycling center in Santa Barbara in 1974 and has operated it and other centers in the South County continuously since that time providing recycling education and promotion in support of its programs. Most of the recycling promotion in the South County in the last few years has been
directed through the CEC staff, funded from the County of Santa Barbara Solid Waste Management Division and the State of California Department of Conservation, Division of Recycling.

General Promotion: CEC promotions have included:

* purchase of newspaper ads;
* direct mail coupons;
* radio ads and PSAs;
* an English/Spanish recycling brochure;
* various flyers promoting its many projects;
* development and placement of a 30-second television PSA on recycling; and
* press conferences and press releases.

General promotional activities target the City of Santa Barbara, the city of Carpinteria and the surrounding unincorporated areas.

Approximately 10 press releases have been issued by CEC on recycling issues each year since 1986; an average of three press conferences have been held per year since 1986.

These press conferences have varied in theme. One successful event, held in conjunction with a source reduction seminar at CEC’s Gildea Resource Center, was sited at the South Coast Transfer Station, where mounds of garbage were used to illustrate one person’s yearly generation of waste and the average family’s yearly waste generation.

In 1987 a 30-second PSA was developed by CEC to promote recycling. Funded by area waste haulers, the commercial was aired on County television stations and was adapted for use as a promotional “trailer” for several months at the Victoria Street movie theater in Santa Barbara.

Project Promotions: Promotion of the County of Santa Barbara’s curbside recycling program is coordinated through CEC using doorhangers, brochures, and direct mail. In 1990 a newsletter, POSTer, was developed and is being sent to all curbside recyclers on a quarterly basis. The curbside promotion targets those residents in the City of Santa Barbara, the City of Carpinteria, and the surrounding unincorporated areas serviced by the program.
CEC has received grants to promote recycling from the California Department of Conservation (DOC), Division of Recycling. Promotions funded through DOC have included:

* grocery store flyers to promote beverage container recycling;

* a radio and print campaign centered around Earth Day;

* an anti-litter/recycling campaign for the City of Santa Barbara, which included development of a slogan, "Come Clean, Santa Barbara," and a city-wide cleanup culminating in a recycling fair.

Currently, the DOC is funding a recycling promotion project that includes placement of newspaper and radio ads in local media and a recycling outreach to the Spanish-speaking community. This promotion, co-sponsored by the County of Santa Barbara, will also include a poster contest and will culminate in a recycling fair held on Earth Day 1991 at Santa Barbara’s Casa de la Raza. The DOC funding promotions target the City of Santa Barbara, the City of Carpinteria, and the surrounding unincorporated areas.

Valley Recycling

Valley Recycling, a subsidiary of Health Sanitation Service, is centered in Santa Maria and serves the unincorporated areas of Orcutt, Tanglewood, Santa Ynez, Solvang, Los Olivos, Buellton, Los Alamos and Ballard, and the City of Solvang. Promotional activities have been directed mainly toward obtaining media coverage. Press releases and personal contact resulted in 26 stories in 1990, appearing in The Santa Barbara News-Press, The Santa Maria Times, The Santa Ynez Valley News, and The Los Padres Sun.

Valley Recycling’s Public Information Specialist (PIO) is available to give presentations to civic groups, governmental agencies and other organizations interested in recycling. The PIO presentations include a description of the mandates of AB 939. The PIO presentations were made in a nine-month period in 1990/91.

Valley Recycling operates the County of Santa Barbara residential curbside recycling program for all recipients of Health Sanitation Services’ refuse pickup. Initial promotion at the inception of the program (in 1988) included letters and brochures. Current
promotion of the curbside program is made primarily through word of mouth. Those interested in participating are sent a brochure and curbside buckets. Other promotional efforts include billing inserts and yard signs. More promotion is called for in future budgets.

**Vocational Training Center**

Centered in Santa Maria, the Vocational Training Center processes recyclables picked up through the County of Santa Barbara’s curbside program for the Santa Ynez Valley. The center also serves as a buyback recycling outlet and operates a commercial office paper recycling program. Promotion conducted through the center has mainly been in the form of solicitation of newspaper articles. It has received a matching grant from the County of Santa Barbara and the City of Santa Maria to promote recycling in the area. Promotional activities target the City of Santa Maria, the City of Solvang, and the surrounding unincorporated areas.

**8.2.2 School Education and Outreach**

Education and outreach to schools in the County of Santa Barbara is being provided by the following:

* The Community Environmental Council (CEC) through funds from the County of Santa Barbara Solid Waste Management Division
* Valley Recycling
* Vocational Training Center
* Project Public Service

**The Community Environmental Council**

The CEC has been providing educational outreach to schools in the City of Santa Barbara, the City of Carpinteria and the surrounding unincorporated areas since the 1970s. Currently an intern, supported through County funds, is assigned to devote at least half of his/her time to education and outreach to the schools. Outreach includes educational presentations, help in establishing office paper recycling, and ongoing communication with schools, including provision of educational videos and recycling curricula. CEC currently provides an average of 20 to 30 lectures a year. Educational videos, which CEC makes available to the schools, are requested on average about 5 times
a year. CEC also offers a list of various environmental curricula to schools.

CEC has encouraged the establishment of recycling programs at area schools and currently provides many schools with bins and pickup service. Since 1978 CEC has operated a monthly newspaper pick-up program at South County schools. In the past few years several schools have increased their recycling efforts; many are now recycling white and colored ledger paper, computer paper and aluminum. At the beginning of the 1990/91 school year, CEC had recycling accounts with approximately 30 schools.

Valley Recycling

Valley Recycling has established educational outreach to schools in that company’s service area, including unincorporated areas in the North County and the City of Solvang, in the last two to three years. The Valley Recycling PIO has organized a list of recycling-related exercises and activities by grade level, including materials from Oscar’s Options, 4-H Reuse, Recycle, and Ithaca Recycles. The PIO sends a sample of appropriate activities to school superintendents, who pass them on to teachers. Teachers interested in having a recycling presentation in their classroom respond by suggesting what activity might be most appropriate and the PIO leads the class in the chosen exercise or activity. In 1990, 10 classrooms participated in the program in four schools. Plans are to reach 40 to 50 classrooms in an additional six schools in 1991.

Vocational Training Center

The center provides recycling bags and stands for paper recycling programs and picks up the recyclables in approximately 10 schools in the North County, including schools in Santa Maria, Orcutt and other unincorporated areas. Plans are being made to include the entire Lompoc School District in the office paper recycling program.

8.2.3 Business and Institutional Education

Promotion and outreach to businesses and institutions have been conducted by the following:

* The County of Santa Barbara
* The Community Environmental Council (CEC)
* Vocational Training Center
The County of Santa Barbara

The County promotes its in-house office paper recycling program through posters and inter-office communication. An incentives program is being developed that will reward participating offices with promotional gifts.

The Community Environmental Council

CEC has developed a successful office paper recycling program over more than a decade. The organization provides help to South County businesses interested in establishing an office paper program as well as a how-to manual developed by the CEC Publications Program for those interested in setting up their own program. CEC recycling center staff estimates that office paper recycling has doubled in the greater Santa Barbara area in the last two years. They attribute this increase to promotions centered around Earth Day and articles on recycling that have appeared recently in the local newspaper, The Santa Barbara News-Press.

CEC also picks up office paper at the University of California at Santa Barbara (UCSB) campus. The current program was organized in 1989 by a CEC intern and is now coordinated by a campus recycling coordinator. The Associated Students promote recycling in the University Center through advertisements in the Daily Nexus, the college newspaper; the Residents Hall Association promotes recycling in the dormitories; and UCSB’s Facilities Management promotes office paper recycling on campus.

Vocational Training Center

The center established an office paper recycling program about two years ago. Initial promotion was through direct mail (using an area Chamber of Commerce list) and phone calls. Currently the center services approximately 170 accounts, including several schools, in the City of Santa Maria and surrounding unincorporated areas. In 1990 a mailing was sent to those participating in the office paper recycling program that contained an update on the program and a comprehensive paper identification list.
8.2.4 Consumer Education

Consumer education in Santa Barbara County has been conducted by the following:

* The Community Environmental Council (CEC)

The Community Environmental Council

Most of CEC's consumer education has centered on particular programs, including curbside recycling, buyback center locations, hours and special promotions, and beverage container recycling. CEC's source reduction specialist has been interviewed by local media on source reduction methods. Articles have appeared in The Santa Barbara News-Press and The Santa Barbara Independent on source reduction. In 1988 CEC produced a bumpersticker that includes the phrase "Reduce, Reuse, Recycle" that is seen throughout the County.

8.3 SELECTION OF PROGRAM ALTERNATIVES

8.3.1 General Public Information

A general media campaign will be the basis from which all other recycling promotions in the County will be launched. The campaign will center on the slogan "Recycle--It's Habitat Forming." This slogan was chosen because it ties recycling to environmental concerns while suggesting the importance of making recycling a habit. In this way, the County will be able to target:

1. those people who have never participated in recycling, source reduction, or composting practices; and

2. people currently participating in recycling, source reduction, or composting practices on a limited basis but who are receptive to expanding their participation to other commodities and other methods.

A creative concept will be developed that supports the slogan. The slogan and concept will then be used in all elements of the campaign for consistency. The slogan and concept will identify for County residents the wise choices of recycling, composting and source reduction.

The slogan and concept will be first established in a multi-media advertising campaign that will include 30-second television
commercials that will run as PSA’s, print, radio, outdoor, and point of purchase advertising, and informational brochures. The slogan and concept will be easily adapted to all elements of the campaign. The campaign will be launched in early fall 1991. A press conference will be held concurrently to announce the campaign and the County’s stepped-up waste reduction efforts.

The advertising campaign will establish waste reduction (source reduction, recycling, and composting) as a habit to be practiced throughout all aspects of residents’ daily lives—at the curb, at the office, in the backyard, and at the grocery store.

This synergistic media approach will help us to achieve saturation of public awareness. Children will see the slogan and concept in use in an office paper recycling program at school as well as at home on the television. A business person who recycles at home may see an ad in the newspaper about backyard composting and become interested in that; as this person’s awareness of and interest in recycling and source reduction grows, other methods and commodities may be added to this recycling “habit.”

Television was chosen as an information vehicle for several reasons, including:

* high visibility;
* high quality of visual message;
* ability to “blanket” the County;
* ability to achieve a synergistic media effect by using television to enhance print and radio promotions;
* current recycling promos are dependent entirely on radio and print advertising, leaving television wide open.

8.3.2 School Education and Outreach

Various approaches will be taken, including increasing the County’s educational effort at schools through development of motivational presentations for various grade levels; provision of curricula and videos to teachers on request; and help in either establishing or bolstering office paper recycling projects in the schools. School education and outreach efforts will employ the use of the slogan and concept established in the general public media campaign whenever possible.
Recycling Education and Outreach Program

The County will provide educational outreach and promotion of office paper recycling in schools through a pilot program in area schools. The schools currently participating in the pilot program are:

1. San Marcos High School
2. Santa Barbara High School
3. Dos Pueblos High School
4. Santa Barbara Junior High School
5. La Cumbre Junior High School
6. La Colina Junior High School
7. Goleta Valley Junior High School
8. La Questa Elementary
9. Alternative School
10. Washington Elementary
11. Cleveland Elementary
12. Roosevelt Elementary

Of these schools, the following serve students from the unincorporated areas of the County of Santa Barbara:

1. San Marcos High School
2. Santa Barbara High School
3. Dos Pueblos High School
4. Santa Barbara Junior High School
5. La Cumbre Junior High School
6. Goleta Valley Junior High School
7. Washington Elementary School
8. Alternative School

As we all know, the best way to learn is by doing, and beginning recycling in the school at an early age is likely to set a pattern that will be carried into adulthood. When a student recycles at school, it is likely that those recycling habits will continue through college and/or work.

The program, which will serve 12 schools the first year, will include the provision of:

* classroom recycling bins,
* instructional bilingual bin labels,
* bilingual posters, and
* bilingual educational flyers.
All educational material will carry the slogan and visual concept of the general campaign. The posters and flyers will be developed to reach two main grade levels: elementary school and junior high/high school. The bin labels (one for white paper; one for colored paper, and one for mixed paper) will include brief instructions on what is recyclable and what is not (and should not be placed in the bins). The posters will serve as a sort of "masthead" of the program and will be artistic, colorful and motivational. A series of five flyers will be used to educate on source reduction and recycling methods and to encourage ongoing participation in the program.

A press conference will be held to announce the pilot school education and outreach program and to gain the interest of other schools. The program will be expanded each year to include more schools in the County. An informal task force of teachers, recycling coordinators, community recycling activists and program coordinators will meet two to three times a year to assist in developing and shaping the program as more schools are added.

CEC has received a grant from the California Department of Conservation, Division of Recycling that includes the purchase of several 32-gallon outdoor bins for Santa Barbara School District schools. The pilot program of the County’s educational outreach program will begin with those schools listed previously and will increase over the following four years to include all County schools interested in the program.

Presentations

Educational presentations will be offered as an element of the Recycling Education and Outreach Program. The presentations will be coordinated through the Recycling Coordinator at each of the participating schools. Pre-visit materials will be distributed to the teachers interested in participating. Presentations will then be given to the students by Outreach Program staff.

Information Library

The Outreach Program will feature an information library. The library will take advantage of the vast pool of educational resources available throughout the country. This resource center will feature an assortment of educational videos for classroom viewing, as well as curricula and activity alternatives and environmental contacts. Recycling coordinators at participating schools may request any variety of the materials for use in their schools.
8.3.3 Business and Institutional Education

An outreach program to businesses and institutions will be designed that will reach four sectors:

1. office-oriented businesses;
2. commercial;
3. restaurant, hotel and bars; and
4. industrial and construction.

The slogan and concept will be used to bring attention to recycling, source reduction and composting methods. Direct mail and newspaper ads will be used to promote business and institutional recycling and enlist interest. Brochures featuring recycling and source reduction methods will be developed for each sector listed above. After-work open houses will be held for each sector, wherein experts will be available to answer questions and help those interested in establishing recycling and source reduction programs in their businesses. Information will be available on obtaining recycling bins, collection practices and in-house education on recycling.

A Countywide business recycling task force will be established that will help other businesses in setting up recycling and source reduction programs. Press releases and press conferences will be held throughout the year to bring attention to recycling approaches in businesses and institutions.

8.3.4 Consumer Education

The consumer education campaign will be directed toward raising awareness of the need for consumers to adopt recycling, source reduction and composting methods. Newspaper and radio ads will be developed, using the slogan and concept from the general media campaign, to promote various ways of reducing, reusing and recycling. In-store promotions will be used to promote source reduction methods. Sponsorship of radio programs will be sought for ongoing promotion of source reduction and recycling methods.

8.4 PROGRAM IMPLEMENTATION

This section identifies those responsible for implementation of the education and public information campaign, provides tasks and schedules associated with implementation of the programs, as well as program implementation costs and revenue sources.
8.4.1 General Public Information

The program will be implemented through the County of Santa Barbara Public Information Specialist. Subcontractors will assist in production of television, print and radio media when necessary.

Schedule for Tasks

The television commercial will air on stations throughout the County beginning in the fall of 1991 and will be used throughout the remainder of 1991 and 1992 and monitored for future use. A press conference will be held to launch the campaign in order to bring attention to the County’s "stepped up" efforts to increase source reduction and recycling awareness and participation. Newspaper ads will run in conjunction with the television spot in all major newspapers in the County and radio spots will be developed to run in 1991/92. Press conferences and press releases will be issued as appropriate. Continuing efforts in the short-term will include further development of the slogan and concept through local media programs and adaptation of the promotional campaign to reach the Spanish-speaking community.
### GENERAL PUBLIC INFORMATION CAMPAIGN
#### SHORT TERM IMPLEMENTATION SCHEDULE

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 1991</td>
<td>Obtain and develop 30 second television commercial.</td>
</tr>
<tr>
<td>2</td>
<td>July 1991 Ongoing</td>
<td>Develop media plan for television, print and radio.</td>
</tr>
<tr>
<td>3</td>
<td>July 1991 Ongoing</td>
<td>Develop newspaper campaign in support of general concept.</td>
</tr>
<tr>
<td>4</td>
<td>August 1991 Ongoing</td>
<td>Develop radio campaign in support of general concept.</td>
</tr>
<tr>
<td>5</td>
<td>September 1991 Ongoing</td>
<td>Begin placement of campaign in the media.</td>
</tr>
<tr>
<td>6</td>
<td>September 1991 Ongoing</td>
<td>Organize press conferences and disseminate press releases to promote campaign.</td>
</tr>
<tr>
<td>7</td>
<td>June 1995</td>
<td>Determine effectiveness of original campaign and decide whether to expand on it or develop a new approach.</td>
</tr>
</tbody>
</table>

### GENERAL PUBLIC INFORMATION CAMPAIGN
#### MEDIUM TERM IMPLEMENTATION SCHEDULE

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>September 1996</td>
<td>Begin implementing expanded campaign.</td>
</tr>
<tr>
<td>2</td>
<td>(January 1996)</td>
<td>(Begin implementing new approach.)</td>
</tr>
<tr>
<td>3</td>
<td>Ongoing</td>
<td>Placement of newspaper, radio and television ads and PSAs.</td>
</tr>
<tr>
<td>4</td>
<td>Ongoing</td>
<td>Organization of press conferences and dissemination of press releases</td>
</tr>
</tbody>
</table>

The media campaign will be expanded through development of a sequel to the original or a new media concept will be developed as a whole new campaign, depending on the success of the initial campaign. Newspaper ads will be used in support of the electronic media and as much "free" press will be obtained as
possible through press releases, press conferences and the placement of PSAs.

Costs

Costs for the program for the first year will be approximately $65,000, with the County of Santa Barbara contributing approximately $27,500 to reach residents of the unincorporated areas of the County. These costs are expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.1).

8.4.2 School Education and Outreach

The program will be implemented by the County of Santa Barbara Public Information Specialist.

Schedule for Tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>April 1991</td>
<td>Establish working relationship with the Santa Barbara School District for implementing the pilot outreach program.</td>
</tr>
<tr>
<td>2</td>
<td>May 1991</td>
<td>Establish an advisory task force and hold first meeting.</td>
</tr>
<tr>
<td>3</td>
<td>June 1991</td>
<td>Confirm schools that will be participating in the pilot outreach program.</td>
</tr>
<tr>
<td>4</td>
<td>June 1991</td>
<td>Order recycling bins for pilot outreach program.</td>
</tr>
<tr>
<td>5</td>
<td>June 1991</td>
<td>Identify and meet with recycling coordinators for schools in the pilot outreach program.</td>
</tr>
<tr>
<td>6</td>
<td>July 1991</td>
<td>Produce posters and bin labels for pilot outreach program.</td>
</tr>
<tr>
<td>7</td>
<td>August 1991</td>
<td>Develop source reduction and recycling presentations for schools.</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
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<td>----------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>August 1991</td>
<td>Produce lists of curricula and videos available to teachers.</td>
</tr>
<tr>
<td>9</td>
<td>August 1991</td>
<td>Develop and place first recycling and source reduction flyer for schools.</td>
</tr>
<tr>
<td>10</td>
<td>Ongoing</td>
<td>Provide for recycling and source reduction presentations in schools.</td>
</tr>
<tr>
<td>11</td>
<td>September 1991</td>
<td>Oversee placement of bins, posters and flyers in schools.</td>
</tr>
<tr>
<td>12</td>
<td>September 1991</td>
<td>Hold a press conference announcing the program.</td>
</tr>
<tr>
<td>13</td>
<td>November 1991</td>
<td>Develop and place second recycling and source reduction flyer.</td>
</tr>
<tr>
<td>14</td>
<td>January 1992</td>
<td>Organize a task force meeting to evaluate the program.</td>
</tr>
<tr>
<td>15</td>
<td>January 1992</td>
<td>Develop and place third recycling and source reduction flyer.</td>
</tr>
<tr>
<td>16</td>
<td>February 1992</td>
<td>Determine which schools will be added to the outreach program in the 1992/93 school year.</td>
</tr>
<tr>
<td>17</td>
<td>March 1992</td>
<td>Develop and place fourth recycling and source reduction flyer.</td>
</tr>
<tr>
<td>18</td>
<td>April 1992</td>
<td>Identify recycling coordinators for additional schools.</td>
</tr>
<tr>
<td>19</td>
<td>May 1992</td>
<td>Develop and place fifth recycling and source reduction flyer.</td>
</tr>
<tr>
<td>19</td>
<td>June 1995</td>
<td>Determine effectiveness of school program and chart course for the next five years.</td>
</tr>
</tbody>
</table>

The above set of tasks will be repeated each school year as more schools join the program. All County schools interested in participating in the program will be included by 1995.
<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ongoing</td>
<td>Produce educational flyers and other information material for schools.</td>
</tr>
<tr>
<td>2</td>
<td>Ongoing</td>
<td>Provide for source reduction and recycling presentations in schools.</td>
</tr>
<tr>
<td>3</td>
<td>Ongoing</td>
<td>Maintain curricula and video library for teachers.</td>
</tr>
</tbody>
</table>

Costs

Costs for the program for the first year will be approximately $15,000, with the County of Santa Barbara contributing approximately $6,620 to reach schools in the unincorporated areas of the County. The cost is expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.2).

8.4.3 Business and Institutional Education

The program will be implemented by the County of Santa Barbara Public Information Specialist.

An awards program has been selected as a way to increase awareness of source reduction activities in the unincorporated areas of the county, and to provide an incentive for individuals and businesses to become involved. Such an awards program will be publicized in the media and members of the general public, schools, and the commercial/industrial sector can apply by providing information on their source reduction activities. In this way, residents and businesses can be rewarded for their source reduction efforts, awareness of source reduction can be increased, and quantifiable data on source reduction activities can be gathered and counted toward the AB 939 mandates. The awards will be coordinated through the Countywide education and public information campaign led by County staff.
### Schedule of Tasks

#### BUSINESS AND INSTITUTIONAL EDUCATION CAMPAIGN SHORT-TERM IMPLEMENTATION SCHEDULE

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>October 1991</td>
<td>Develop brochures for the target groups.</td>
</tr>
<tr>
<td>2</td>
<td>October 1991</td>
<td>Develop and place first newspaper ad(s) to follow television commercial.</td>
</tr>
<tr>
<td>3</td>
<td>October 1991</td>
<td>Develop a plan to reach Spanish-speaking market.</td>
</tr>
<tr>
<td>4</td>
<td>December 1991</td>
<td>Develop radio spots.</td>
</tr>
<tr>
<td>5</td>
<td>December 1991</td>
<td>Develop promotional plan for increasing County in-house recycling, source reduction and composting.</td>
</tr>
<tr>
<td>6</td>
<td>Ongoing</td>
<td>Place newspaper ads as appropriate.</td>
</tr>
<tr>
<td>7</td>
<td>Ongoing</td>
<td>Place radio spots as appropriate.</td>
</tr>
<tr>
<td>8</td>
<td>March 1992</td>
<td>Organize and hold first open house in the South County.</td>
</tr>
<tr>
<td>9</td>
<td>March 1992</td>
<td>Begin organizing a business recycling task force.</td>
</tr>
<tr>
<td>10</td>
<td>June 1992</td>
<td>Organize and hold second open house in the South County.</td>
</tr>
<tr>
<td>11</td>
<td>July 1992</td>
<td>Hold first task force meeting.</td>
</tr>
<tr>
<td>12</td>
<td>July 1992</td>
<td>Organize and hold the first open house in the North County.</td>
</tr>
<tr>
<td>13</td>
<td>September 1992</td>
<td>Hold second task force meeting, including North County businesses.</td>
</tr>
</tbody>
</table>

Newspaper ads will be run following airing of the television commercial in late 1991 to establish the slogan and concept in the business and institutional promotion. Direct mail appeals and newspaper coupons will be used as appropriate to reach
various targeted audiences. Brochures will be developed prior to the scheduling of after-work open houses with each sector addressed by the end of the third year of the term. Press conferences and press releases will be used to bring attention to the open houses. The business and institutional task force will be established through contacts made at the open houses and through other means. The task force will meet on a regular basis determining the best means of awarding outstanding recyclers, source reducers and composters in the business and institutional areas. The task force also will be consulted in the development of plans to assist businesses catering to the Spanish-speaking market.

Medium-term implementation

The program will be broadened and expanded, considering diversion goals, past successes and failings.

Costs

Costs for the program for the first year will be approximately $24,500, with the County of Santa Barbara contributing approximately $10,500 to reach residents of the unincorporated areas of the County. The cost is expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.3).

8.4.4 Consumer Education

The program will be implemented by the County of Santa Barbara Public Information Specialist.
Schedule for Tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 1991 Ongoing</td>
<td>Placement of source reduction ads in County newspapers using the general campaign’s slogan and concept.</td>
</tr>
<tr>
<td>2</td>
<td>January 1992</td>
<td>Develop an in-store promotion campaign to increase awareness of source reduction among consumers.</td>
</tr>
<tr>
<td>3</td>
<td>February 1992 Ongoing</td>
<td>Develop radio ads.</td>
</tr>
<tr>
<td>4</td>
<td>February 1992 Ongoing</td>
<td>Arrange for sponsorship of programs in exchange for ongoing promotion of source reduction methods.</td>
</tr>
</tbody>
</table>

Medium-term implementation

The program will be broadened and expanded, considering diversion goals, past successes and failings.

Costs

Costs for the program for the first year will be approximately $24,500, with the County of Santa Barbara contributing approximately $10,500 to reach residents of the unincorporated areas of the County. The annual cost is expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.4).

8.4.5 Program Implementation Funding

Funding for the implementation of the education and public information component come from the County of Santa Barbara Solid Waste Enterprise Fund. Monies are generated through user based rates, revenue from recycled materials, state grant and financial incentives, commercial bank loans or lines of credit, and inter-jurisdictional funding. Contingency funding may include development impact fees and advanced disposal fees. All revenue sources are discussed in detail in the funding component.
8.5 MONITORING AND EVALUATION

8.5.1 General Public Information

Methods

A telephone number will be placed at the end of the 30-second television commercial, as well as other promotional material, to provide viewers with the opportunity to call the County’s recycling hotline for information on how to recycle. Newspaper ads will include coupons that may be redeemed at various County-based recycling centers to boost recycling levels of certain commodities and determine the effectiveness of the ads. A telephone survey will be used to determine the impact that the general campaign has had on the public and to gauge the effectiveness of various approaches.

The level of response to the various advertising elements will be gauged through calls to the recycling line. A "baseline" of recycling levels at recycling centers in both the North and South County will be determined prior to launching the campaign. Levels of recycling will be measured every six months following the inception of the general campaign.

The telephone survey will be used to set baseline data for the level of source reduction and recycling, the commodities recycled and the locations and methods of recyclers (i.e., recycling at curbside, at the office, at school) to determine the number of people who began recycling in response to the general campaign and also the number of people who increased their recycling levels and source reduction methods in response to the campaign.

Criteria

The following criteria will be used to evaluate the education and public information programs:

1. the level of participation in the SRRE programs,
2. the level of community (residents and businesses) awareness of the SRRE programs, and
3. the cost effectiveness of the education and public information programs.
Responsible Agencies

The County of Santa Barbara will work with the CEC Recycling Center manager in Santa Barbara and the Vocational Training Center (recycling center) manager in Santa Maria to set baseline data and determine levels of increase following newspaper and television advertising. A marketing firm will be subcontracted to conduct the telephone survey.

Funding Requirements

Funding requirements for the first year will be approximately $7,500, with the County of Santa Barbara contributing approximately $3,200 to reach residents of the unincorporated areas of the County. The cost is expected to remain at that level throughout the short- and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.5).

Contingency Measures

Should the previously cited monitoring efforts show a shortfall in the attainment of the solid waste diversion objectives, results from the telephone surveys will be used to determine the best way to redirect the general campaign.

Monitoring and Evaluation Schedule

The monitoring of response to the public information campaign will be accomplished by a regularly scheduled six-month review of telephone hotline inquiries, general recycling levels at CEC recycling centers and North County recycling centers, and participation rates of specific programs.

Review and evaluation of newspaper coupons and direct mail appeals will be made within a month of production (production schedule to be decided as appropriate during the campaign).

Six months following the baseline telephone survey, a follow-up survey (contacting different households in the same socioeconomic areas) will be conducted. Surveys will be held every six to twelve months to track the effectiveness of the general campaign and consumer education efforts.

All monitoring and evaluation data will be detailed as part of the annual report on the SRRE programs which will be submitted to the Board of Supervisors and the CIWMB.
8.5.2 School Education and Outreach

Methods

Students will be given pre-program and post-program quizzes about recycling and source reduction to determine their level of awareness. Records of each school’s recycling levels will be obtained from CEC prior to inception of the pilot program. After a period of operation, records will again be analyzed to determine the level of increase in recycling rates.

Criteria

The following criteria will be used to evaluate the school education and outreach programs:

1. the level of participation in the school education and outreach program;

2. the level of community (residents and businesses) awareness of the school education and outreach program, and

3. the cost effectiveness of the school education and outreach program.

Responsible Agencies

The County of Santa Barbara will be responsible for establishing monitoring methods and will enlist the help of CEC recycling staff to obtain records of school recycling levels. The County PIO will enlist the help of the school recycling coordinators to administer the pre-program and post-program quizzes to a sampling of classrooms in each school.

Funding Requirements

Funding requirements for the first year will be approximately $5,000, with the County of Santa Barbara contributing approximately $2,200 to reach schools in the unincorporated areas of the County. The cost is expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign. (Table 8.6).
Contingency Measures

Should the program not yield the expected results as determined in the written criteria, teachers and school administrators will be consulted as to how recycling levels and awareness can be increased at the school. Following analysis of their recommendations, County staff will either outline an intensified program for the schools, or determine another course of action as appropriate.

Monitoring and Evaluation Schedule

Pre-program quizzes will be given at the inception of the office paper and educational outreach program at each participating school. Post-program quizzes will be given after six months, or at the end of the school year, whichever comes first. A baseline of recycling levels will be determined prior to the inception of the outreach program and recycling levels will be monitored six months later (or at the end of the school year) to determine the level of increase in recycling in the schools and individual levels of commodities recycled.

All monitoring and evaluation data will be detailed as part of the annual report on the SRRE programs which will be submitted to the Board of Supervisors and the CIWMB.

8.5.3 Business and Institutional Education

Methods

A baseline of recycling levels among businesses and institutions in the County will be determined prior to inception of the program and levels will be monitored at regular intervals to determine success of promotional efforts. The names of people attending open houses will be gathered into a mailing list and follow-up surveys will be conducted to determine the number of commodities being recycled and levels of recycling among businesses and institutions.

Criteria

Success of the program will be determined by the number of new businesses who establish recycling programs, the addition of commodities recycled in existing programs and overall recycling levels.
Responsible Agencies

The County of Santa Barbara Public Works Department Solid Waste Management Division Public Information Specialist will be responsible for monitoring the program.

Funding Requirements

Funding requirements for the first year will be approximately $5,000, with the County of Santa Barbara contributing approximately $2,200 to reach residents of the unincorporated areas of the County. The cost is expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.7).

Contingency Measures

Should the program not reach targeted levels, a telephone survey will be conducted through a local advertising firm to determine the best way of restructuring the promotional effort. Baseline data will be gathered prior to the promotion and recycling levels will be monitored every six months. A newspaper ad and raffle promotion will be held prior to the open houses, as a means of advertising them. The survey will be conducted six months after the open houses and follow-up surveys of businesses recycling will be conducted as needed to determine if businesses are adding to the number of commodities they recycle and if they are aware of source reduction measures.

Monitoring and Evaluation Schedule

The monitoring of response to the business and institutional education campaign will be accomplished by a regularly scheduled six-month review of telephone hotline inquiries and general recycling levels of commercial recycling programs. Six months following the baseline telephone survey, a follow-up survey of businesses and institutions will be conducted. Surveys will be held every six to twelve months to trac the effectiveness of the business and institutional education efforts.

All monitoring and evaluation data will be detailed as part of the annual report on the SRRE programs which will be submitted to the Board of Supervisors and the CIWMB.
8.5.4 Consumer Education

Methods

A telephone survey will be conducted to establish a baseline of awareness of source reduction and recycling methods and follow-up surveys will be conducted to determine the effectiveness of promotional activities among consumers. Newspaper ads will be developed that include coupons that can be redeemed through the County for a source reduction brochure.

Criteria

The telephone surveys will determine the level of increase in recycling and source reduction practices among County residents and the effectiveness of the consumer education campaign.

Responsible Agencies

The County of Santa Barbara Public Works Department Solid Waste Management Division Public Information Specialist will be responsible for monitoring the success of this program.

Funding Requirements

Funding requirements for the first year will be approximately $5,000, with the County of Santa Barbara contributing approximately $2,200 to reach consumers in the unincorporated areas of the County. The cost is expected to remain at that level throughout the short and medium-term, with adjustments made according to successes and shortcomings of the campaign (Table 8.8).

Contingency Measures

The telephone campaign will be used to determine the effectiveness of promotional activities. Should the program not reach its component objectives, additional survey questions will be developed to determine the best way of reaching and educating County residents.

Monitoring and Evaluation Schedule

The telephone survey will be conducted prior to the placement of any media to establish a baseline level of awareness. Follow-up surveys will be conducted every six months to track the growing level of awareness and determine the promotion effectiveness.
All monitoring and evaluation data will be detailed as part of the annual report on the SRRE programs which will be submitted to the Board of Supervisors and the CIWMB.

8.5.5 Monitoring and Evaluation Program Funding

Funding for the monitoring and evaluation of the education and public information component come from the County of Santa Barbara Solid Waste Enterprise Fund. Monies are generated through user based rates, revenue from recovered materials, state grant and financial incentives, commercial bank loans or lines of credit, and inter-jurisdictional funding. Contingency funding may include development impact fees and advanced disposal fees. All revenue sources are discussed in detail in the funding component.
### Public Information and Education Campaign
#### County of Santa Barbara and Cities

**General Public Information Program**

**Annual Production and Implementation Budget**

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**($65,000) ($68,250) ($71,750) ($75,350) ($79,125)**

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### Public Information and Education Campaign
#### County of Santa Barbara and Cities

**School Education and Outreach Program**

**Annual Production and Implementation Budget**

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**($15,000) ($24,000) ($12,125) ($12,730) ($13,775)**

* Includes basic capitalization costs.

** The figures on the bottom lines of both charts represent the total from which percentages were derived for the County of Santa Barbara and cities within the County. Percentages of population areas as follows: unincorporated areas of the County of Santa Barbara, 42.3%; City of Santa Barbara, 22.8%; Carpinteria 35%; Solvang, 12%; Lompoc, 9.6%; Santa Maria 15.7%; Guadalupe, 1.6%; Vandenberg Air Force Base, 2.3% and the federal penitentiary, 5%. The difference between the figures represented in the TOTAL line and this line on both charts is the result of not including the federal penitentiaries in the calculations and a general rounding off of percentages.
### Table 8.3

#### Annual Production and Implementation Budget

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**($24,500) ($25,725) ($27,000) ($28,350) ($29,725)**

### Table 8.4

#### Annual Production and Implementation Budget

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<td>690</td>
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<td>$25455</td>
<td>$26730</td>
<td>$28065</td>
<td>$29725</td>
</tr>
</tbody>
</table>

**($24,500) ($25,725) ($27,000) ($28,350) ($29,725)**

**The figures on the bottom lines of both charts represent the total from which percentages were derived for the County of Santa Barbara and cities within the County. Percentages of population are as follows: unincorporated areas of the County of Santa Barbara, 42.3%; City of Santa Barbara, 22.8%; Carpinteria 35%; Solvang, 1.2%; Lompoc, 9.6%; Santa Maria 15.7%; Guadalupe, 1.6%; Vandenberg Air Force Base, 2.2% and the federal penitentiary, 5%. The difference between the figures represented in the TOTAL line and this line on both charts is the result of not including the federal penitentiaries in the calculations and a general rounding off of percentages.**
### Table 8.5

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**The figures on the bottom lines of both charts represent the total from which percentages were derived for the County of Santa Barbara and cities within the County. Percentages of population are as follows: unincorporated areas of the County of Santa Barbara, 42.3%; City of Santa Barbara, 22.8%; Carpinteria 35%; Solvang, 12%; Lompoc, 9.6%; Santa Maria 13.7%; Guadalupe, 1.6%; Vandenberg Air Force Base, 2.2% and the federal penitentiary, 5%. The difference between the figures represented in the TOTAL line and this line on both charts is the result of not including the federal penitentiaries in the calculations and a general rounding off of percentages.**

B-32
## County of Santa Barbara and Cities
### Business Education Program
### Annual Monitoring and Evaluation Budget

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### Consumer Education Program
### Annual Monitoring and Evaluation Budget

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