

*Report on the CIWMB
School District
Diversion Project*

April 2002

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I. Executive Summary

The California Integrated Waste Management Act of 1989 (Chapter 1095, Statutes of 1989, Sher, AB 939 [IWMA]) declared that the responsibility for solid waste management be shared between the State and local agencies. However, the IWMA placed the responsibility for diverting solid wastes from landfills on the State's municipal governments—cities and counties. The IWMA established ambitious mandates of 25 percent diversion by 1995 and 50 percent diversion by the year 2000, with serious penalties authorized for failure to meet the mandates.

By any objective standard, the IWMA has been a qualified success. In 2000, approximately 42 percent of the waste generated statewide was diverted from landfills. This compares with only 10 percent diverted from landfills in 1989. Further progress in diverting trash from landfills remains a challenge. If the State is to improve diversion performance, new strategies must be employed to exploit components of the waste generation community that provide the greatest opportunity for diversion in the shortest time feasible. The nonresidential sector, including schools and other institutions, provides that opportunity.

Tapping the Nonresidential Sector

The nonresidential segment of the community generates approximately 60 percent of the waste in California. While residents have largely embraced the environmental ethic of recycling, participating in curbside collection and other recycling programs in large numbers, the nonresidential sector has been slower to respond. As a result, schools, hospitals, prisons, hotels, large office complexes, office/light industrial parks, State, local, and federal government agencies, and other similar institutions generate a largely untapped source of organic and other recyclable materials.

Tapping the nonresidential sector requires the development of an organized and focused approach. One of the principle objectives of the School District Diversion Project was to apply a waste assessment methodology to school districts on the assumption that school districts provide a good model for application to other institutions. For the several reasons outlined in the following section, school districts are excellent models for the institutional segment of the nonresidential sector.

School Districts as a Pilot Project

The California Integrated Waste Management Board (CIWMB, Board when referring to the six-member Board of the CIWMB) determined that a pilot project to explore ways to effectively initiate and sustain waste reduction practices in institutional settings would be the best approach to test hypotheses and explore methods before attempting to implement them on a large scale. School districts provided an excellent laboratory for this exploration. Among the reasons for selecting school districts for the pilot project were:

- School districts are distributed throughout the state.
- School districts are under central management.
- School districts have the same organizational components as other institutions and businesses.

In addition, the use of school districts provided secondary benefits as a pilot project. Among these were:

- School districts are an integral part of the community they serve.
- The majority of the State's population is involved with schools in some way, as students, parents, professionals or volunteers.
- School district waste management programs provide a positive role model for students and an opportunity to educate students in the methodology, value and ethic of waste reduction.
- A partnership between school districts, local jurisdictions, and the CIWMB provides significant benefits for all three partners.
- The CIWMB has an ongoing, statutory commitment to schools.

The School District Diversion Project, to be conducted over a 12- to 18-month period, was approved by the Board at its May 2000 meeting.

Project Vision

The vision of the project was to discover how waste reduction policies and practices in the educational and institutional sectors could be *institutionalized* and the support to the nonresidential sector from local jurisdictions and the CIWMB strengthened.

Project Objectives

The objectives of the project were to:

- Secure participation of six school districts representative of the districts statewide as pilots to aid in the design of a model waste management system assessment methodology that evaluates the entire materials management and waste practices of the districts.
- Identify those factors and benefits essential to institutionalizing waste reduction programs.
- Develop an implementation guide for school districts and institutions.
- Develop and conduct a training program for CIWMB personnel for implementing the model developed by the pilot project statewide.
- Develop a strategic outreach plan to educate and motivate educational professionals and elected officials (e.g., school boards) throughout the State.
- Develop a strategy to strengthen the relationships and support provided to school districts by local jurisdictions and the CIWMB.

Project Team

A project team composed of the CIWMB's Office of Local Assistance staff and a team of consultants conducted the work of the project. In addition, a resource committee, consisting of

personnel from other CIWMB organizational program areas and staff from the Departments of Conservation, Pesticide Regulation, Toxic Substances Control, and Education was created to provide expertise and assistance to the project team on school-related programs.

Methodology

Six pilot school districts of differing size, demographics, geographic locations, and type were selected as subjects of waste assessment analyses focusing on current practices and opportunities for waste prevention, reuse, recycling, environmentally preferable procurement practices, composting, and “green building” design.

The six school districts selected to participate as pilots in the project were:

- Visalia Unified School District, Visalia, California
- Long Beach Unified School District, Long Beach, California
- Santee School District, Santee, California
- Barstow Unified School District, Barstow, California
- Ravenswood City Elementary School District, East Palo Alto, California
- Placer Union High School District, Auburn, California

Waste assessments were conducted at each of the pilot districts by teams of Office of Local Assistance staff, the local jurisdiction recycling coordinator, consultant personnel and, in four of the six districts, the contract waste hauler. The waste assessments consisted of two parts—interviews and “walk-through” tours of school facilities. The interviews were conducted with superintendents, chief business officials, and department heads representing the various business functions of each district. The interviews were followed by walk-throughs of the selected school campuses, including food preparation areas, cafeterias, maintenance and custodial service areas, transportation facilities, food and supply warehouses, print shops, and administrative areas. Walk-throughs of the offices and grounds of each school type—high school, middle school, and elementary school—were also conducted.

Pilot District Findings

The following observations were drawn from the assessment process in the six pilot districts.

- Although the six pilot districts have achieved substantial waste diversion, each school district has the opportunity to improve its existing waste reduction activities and to increase its diversion rates.
- The districts engage in waste prevention and recycling practices, but the level of implementation and performance varies from facility to facility.
- Management personnel interviewed in the districts are generally unaware of the local and State resources available to them for implementing waste prevention and recycling programs.

- Local jurisdiction recycling coordinators need assistance “getting in the door” to develop strong working relationships and partnerships with school districts.
- None of the pilot school districts had adopted formal waste reduction or environmentally preferable purchasing policies.
- The majority of landscape wastes are diverted in each of the pilot school districts.
- Food service operations generate the largest volume of waste destined for disposal in the pilot districts.
- The vast majority of redemption value aluminum cans and plastic beverage containers are recycled in the pilot school districts.
- Although the pilot school districts do not generate significant revenue from recycling programs, they often realize savings through avoided disposal costs.
- The pilot school districts do not designate staff to implement or coordinate waste prevention programs.
- The success of waste reduction programs in school districts is frequently hindered by a decentralized decision-making process.

Lessons Learned

During the course of the project, several important lessons were learned that should guide the initiation of waste reduction programs in school districts and other institutions:

- It is important to understand the business of schools.
- School officials are fully challenged to perform the duties of the education mission of schools, and as such, are not focused on waste management issues.
- School board and management policy provide the foundation for the institutionalization of waste reduction programs.
- Once apprised of the value and benefits of a comprehensive waste and materials management program, school officials are likely to support the development of such programs.
- Local jurisdiction assistance is fundamental to the success of waste reduction programs.
- The CIWMB provides a wealth of waste reduction resources to school districts, other institutions, local jurisdictions, and businesses.
- Identifying cost-effective opportunities for waste reduction and recycling does not require extensive analysis of the waste stream.
- School district management is more likely to implement waste reduction programs that are inexpensive and convenient.

- Waste management service providers are an important resource to school districts, institutions, and businesses.

Recommended Strategy for Waste Reduction in School Districts Statewide

The challenge for the CIWMB is to develop a cohesive program to apply what was learned from the project to other school districts and institutions and businesses statewide.

The foundation for such a program is an organization-wide plan that provides for a clear understanding of desired outcomes, organizational coordination, focused outreach, partnerships (e.g., local jurisdictions, school related professional organizations), training, information management, and technical support. The following components comprise a strategy to realize this objective. These strategic components are inseparable. Failure to implement one of the components jeopardizes the whole of the strategy. Therefore it is recommended that the components be implemented as a program package.

Component 1: Develop a Comprehensive Plan for School Districts

The CIWMB should prepare a comprehensive plan that describes clear goals and desired outcomes in school districts. The plan should address both waste reduction and educational curriculum goals and be linked to the relevant school programs internal and external to the CIWMB through the Office of Integrated Education.

Component 2: Partner with Local Jurisdictions to Achieve Waste Reduction Objectives in School Districts

The CIWMB does not have the resources to work directly with all school districts. The CIWMB can extend its resources significantly by creating an effective partnership with cities and counties by providing them with resources they can use to assist school districts in increasing waste reduction and recycling program implementation. As the agencies responsible for implementing the IWMA, local jurisdictions have a vested interest in the implementation of successful waste reduction programs in their school districts along with other institutions and businesses. The waste management practices of school districts can, in smaller communities, have a significant impact on a local jurisdiction's ability to meet these mandates.

To prepare local jurisdictions for carrying the primary responsibility of increasing waste reduction in school districts, the Office of Local Assistance should provide local jurisdictions with the training and tools necessary to do the job. The Office of Local Assistance should:

- Appoint full-time staff to design and conduct training of applicable CIWMB, local jurisdiction, and school district personnel and to conduct the outreach program described in Component 3.
- Conduct a comprehensive training program for:
- CIWMB staff engaged in school related programs and activities.

- Local recycling coordinators and other local jurisdiction staff engaged in waste reduction activity related to school districts.
- School district personnel, in conjunction with local jurisdictions.
- Continue to increase its presence in the field.
- Develop, improve, and maintain information and technical support tools for use by local jurisdictions, CIWMB staff, other State agencies, schools, businesses, and the public.

Component 3: Conduct a Comprehensive Outreach Program to Educate School District Decision-makers

To “open the doors” of school districts to local jurisdictions, school officials should be pre-conditioned to receive the assistance local jurisdictions can offer them. The OLA should educate school boards, superintendents, principals, and other school district decision-makers about the value of waste reduction and the steps they can take to initiate programs by engaging and developing continuing relationships with educational associations and professional organizations.

Apply the School Strategy to Other Institutional Settings Statewide

The waste reduction strategy for school districts recommended in the previous section can be equally effective with other institutions and businesses statewide.

The analytical methodology employed by the project team in the pilot school districts proved successful in determining the primary and secondary opportunities for waste reduction strategies in the districts. This methodology can also be applied successfully to the other institutional and business components of the nonresidential waste stream.

The recommended strategy coupled with the model analytical methodology employed successfully in the project can be equally applicable to school districts throughout the State and in other institutional settings.

Monitoring Implementation Progress

After securing the Board’s approval to proceed, the Office of Integrated Education and the Office of Local Assistance should initiate a program to implement the planning, training, outreach, and informational components of the strategy described herein, and the Office of Integrated Education should make a progress report to the Board annually.

II. Background

The IWMA declared that the responsibility for solid waste management be shared between the State and local agencies. However, the IWMA placed the responsibility for diverting solid wastes from landfills on the State's municipal governments—cities and counties. It established ambitious mandates of 25 percent diversion by the year 1995 and 50 percent diversion by the year 2000, with serious penalties authorized for failure to meet the mandates.¹ The IWMA also created the CIWMB to, among other duties, review and approve municipal diversion strategies and plans for meeting the diversion mandates, provide technical assistance and information, monitor progress toward the goals of the IWMA, and take appropriate enforcement action as necessary.

By any objective standard, the IWMA has been a qualified success. In 2000, approximately 42 percent of the waste generated statewide was diverted from landfills. This compares with only 10 percent diverted from landfills in 1989. Remarkably, this level of diversion was accomplished as Californians *generated* almost 35 percent more waste during the decade of the 1990's—from 49 million tons in 1989 to just over 66 million tons in 2000—while tons of waste *disposed* in landfills decreased by over 13 percent.²

While the trend is a net positive, there is no escaping the conclusion that the last 8 percent diversion required by law will likely be more difficult to achieve relative to the progress to date. If the state is to improve diversion performance, new strategies must be employed to exploit components of the waste generation community that provide the greatest opportunity for diversion in the shortest time feasible. The nonresidential sector, including schools and other institutions, provides that opportunity.

Tapping the Nonresidential Sector

While residents have largely embraced the environmental ethic of recycling and participating in curbside collection and other recycling programs in large numbers, the nonresidential sector has been slower to respond. The reasons for this include:

- Businesses and institutions are not required by law to divert waste from landfills, as are municipalities.³
- Businesses and institutions face no threat of sanctions if they do not initiate or participate in waste prevention and recycling programs.
- Solid waste management programs require initial investments of time and resources that may divert resources from core business functions.
- Businesses and institutional managers do not readily see a return on investment of improved waste management practices.
- Regional or community waste prevention and recycling infrastructure may not be in place, or readily accessible, making it more difficult, expensive, and time consuming to achieve the benefits of a waste reduction program.

¹ SB 1066 (Sher, Chapter 672, Statutes of 1997) permits the CIWMB to grant extensions of the 2000 deadline for specified reasons.

² California Integrated Waste Management Board, www.ciwmb.ca.gov/LGCentral/Rates/Diversion/RateTab1.htm

³ AB 75 (Strom-Martin, Chapter 764, Statutes of 1999) requires large State agencies to prepare waste management plans and meet waste diversion goals of 25 percent by 2002 and 50 percent by 2004.

School districts, hospitals, prisons, hotels, large office complexes, office/light industrial parks, State, local and federal government agencies, other similar institutions, and many business enterprises generate a largely untapped source of organic and other recyclable materials. This nonresidential segment of the community generates approximately 60 percent of the wastes in California.⁴

Such institutions use materials and engage in waste management practices that offer prime opportunities for achieving high-volume waste prevention, reuse, and recycling programs. Also, because these institutions purchase large quantities of materials, supplies, and food services, they can contribute significantly to developing markets for postconsumer recycled content products (RCP), thereby “closing the loop” of the recycling process.

Tapping the nonresidential sector requires the development of an organized and focused approach. One of the principle objectives of the School District Diversion Project was to apply an assessment methodology to school districts on the assumption that school districts provide a good model for application to other institutions. For the several reasons outlined below, school districts are excellent models for the nonresidential community at large.

School Districts as a Pilot Project

In May 2000, the CIWMB determined that a pilot project to explore ways to effectively initiate and sustain waste reduction practices in institutional settings would be the best approach to test hypotheses and explore methods before attempting to implement them on a large scale.

School districts provided an excellent laboratory for exploring new or enhanced strategies for waste reduction that could be used as a model for developing programs in other institutions and businesses that share many similar characteristics. School districts consist of the same business organizational units (e.g., administrative services, transportation, maintenance, personnel, business services) as other institutions such as hospitals, prisons, and universities. In this respect, the lessons learned in the pilot school project will be transferable to other institutional settings, thus enabling school districts to serve as models for other institutions and businesses.

The goal of the project was to explore and document factors important to institutionalizing waste prevention, reuse, and recycling programs in school districts and then utilizing lessons learned in developing programs for other nonresidential settings.

⁴ California Integrated Waste Management Board, www.ciwmb.ca.gov/WasteChar/Study1999/.

The primary reasons for selecting school districts for this project are as follows:

- **Schools are distributed throughout the state.**

The 8,000-plus California schools, like other institutions, provide an opportunity to affect the municipal waste diversion rates of virtually every community in the state. In some medium-size to smaller communities, schools may contribute a large portion of the waste generated in the community. In these communities, waste reduction in schools may be an important factor in the municipality's ability to achieve IWMA mandates.

- **School districts are under central management.**

Schools are organized throughout the state by districts predominantly consisting of several schools. Thus, the district board and school district administrators make decisions affecting waste management practices in multiple schools. This characteristic is common among other institutions and businesses with multiple facilities. Working with approximately 1,000 school districts instead of approximately 8,300 individual schools greatly simplifies and leverages the effort to develop and implement waste reduction and recycling programs in the schools.

- **School districts have the same organizational components as other institutions and businesses.**

School districts are essentially business enterprises that deliver an education product. As such, school districts have many of the same organizational components as other businesses and institutions, such as administration, purchasing, transportation, operations and maintenance, food service, printing and duplication services, finance, and personnel. Therefore, school districts provide an opportunity to address waste reduction opportunities that will be transferable to other institutions.

There are also several secondary reasons for selecting school districts as pilots for the project. These reasons are equally important to achieving the programmatic, educational, and outreach objectives of the IWMA.

- **Schools are an integral part of the community(ies) they serve.**

By developing effective waste prevention, reuse, and recycling programs in schools, municipalities will have a model that can be used to develop like programs in hospitals, prisons, universities, and business settings.

- **The majority of the state's population is involved with schools in some way, as students, parents, professionals, or volunteers.**

The learning experience in schools has great potential for influencing large numbers of our population to reduce waste and conserve resources. To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into their homes and the community.

- **School district waste management programs provide a positive role model for students and an opportunity to educate students in the methodology, value, and ethic of waste reduction.**

The long-term success of waste management programs depends on the personal commitment and participation of our citizens. Educating students to incorporate environmental values and resource conservation practices in their lives and communities will enhance and sustain a resource conservation ethic for future generations.

- **A partnership between school districts, local jurisdictions, and the CIWMB provides significant benefits for all three partners.**

School officials and managers are not experts in the management of wastes or necessarily mindful of the opportunities that materials and the waste management system provide for cost savings and other benefits. Local jurisdictions need the participation of school districts to enhance the opportunity to meet State mandates for diverting waste from landfills. Similarly, the CIWMB needs the relationship between schools and local jurisdictions to be successful in contributing to statewide diversion success.

- **CIWMB's commitment to schools.**

The CIWMB has a rich history working with schools since the passage of the IWMA. The Legislature has directed and authorized the CIWMB on several occasions to take a leadership role in assisting schools and school districts in achieving waste reduction objectives. The CIWMB has prepared instructional materials, conducted workshops, provided technical support, and provided a variety of grants to schools for environmental education and waste reduction activities and programs for over a decade.

The School District Diversion Project as approved by the Board at its May 2000 CIWMB meeting was expected to be conducted over a 12- to 18-month period.

III. Project Description

A more organized and focused approach to institutional materials and waste management practices is needed to fully make use of the institutional segment of the waste stream in meeting IWMA goals. To this end, the project envisions that California school districts can reduce waste, lower operating costs, and improve and sustain waste reduction programs over time, and by doing so can serve as a business model for other institutions and businesses statewide.

The Vision

At the start of the project, the project team developed a vision statement.⁵ The vision of the project was to discover how waste reduction policies and practices in the educational and institutional sectors can be *institutionalized* and the support to the nonresidential sector from local jurisdictions and the CIWMB strengthened. While the vision statement is crafted specifically for school districts, its components are applicable to other institutional settings as well.

Project Objectives

The project has the following principle objectives that will contribute to the accomplishment of the vision:

- Secure participation of six school districts representative of the districts statewide as pilots to aid in the design of a model waste management system assessment methodology that evaluates the entire materials management and waste practices of the districts.
- Identify those factors and benefits essential to institutionalizing waste reduction programs.
- Develop an implementation guide for school districts and other institutions.
- Develop and conduct a training program for CIWMB personnel to partner with local jurisdictions to implement the model developed by the project statewide.
- Develop a strategic outreach plan to educate and motivate educational professionals and elected officials throughout the state.
- Develop a strategy to strengthen the relationships and support provided to school districts by local jurisdictions and the CIWMB.

Project Team

The CIWMB's Office of Local Assistance staff and consultants conducted the work of the project.⁶ In addition, a resource committee consisting of personnel from other CIWMB program areas and staff from the Departments of Conservation, Pesticide Regulation, Toxic Substances Control, and Education was created to provide expertise and assistance to the project team on school-related programs.⁷

⁵ See Appendix A: "School District Diversion Project Vision Statement"

⁶ See Appendix B: "School District Diversion Project Team"

⁷ See Appendix C: "School District Diversion Project Resource Committee"

This approach provided several advantages:

- OLA staff provided a broad knowledge of CIWMB school-related programs and resources.
- The resource committee provided an extended understanding of other programs that are applicable to school districts and expertise in those program areas.
- The consultant provided school administration and waste industry expertise.
- The knowledge gained from the pilot project can be seamlessly carried forward by project staff and transferred to other CIWMB staff, resource committee members, local jurisdictions, and school district officials and personnel in the form of training and outreach activities.

Methodology

Six pilot school districts of differing size, geographic location, type, and demographics were selected to be the subject of waste assessment analyses focusing on current practices and opportunities for waste prevention, reuse, and recycling.

Among the business elements included in the analysis were:

- Procurement practices including environmentally preferable product selection and cooperative purchasing.
- Waste prevention, reuse, recycling, and composting opportunities.
- Waste handling processes.
- Waste hauling, recycling, and disposal services.
- Cafeteria and noncafeteria waste materials management.
- “Green building” design opportunities.⁸
- Reduction of hazardous waste.

Upon completion of the school district waste assessments, each pilot district received a report outlining recommendations for increased waste reduction⁹ opportunities. The project team also conducted a follow-up meeting with each pilot school district to verify the waste assessment findings and to discuss the project team’s recommendations for waste reduction program implementation. The OLA staff continues to provide technical assistance to the local jurisdiction recycling coordinators and school district officials in their collaborative efforts to implement the recommended waste reduction programs.

⁸ “Green building” design is a term that describes a building constructed to provide a healthy indoor environment and is energy, water and resource efficient. In this context it also means building construction that recycles construction and demolition waste and utilizes recycled-content products.

⁹ For editorial brevity, the term “waste reduction” is used throughout this report as analogous with the terms “waste prevention,” “source reduction,” “diversion,” “reuse” and “recycle”. The IWMA uses the terms reduce, reuse, and recycle.

Selection of the Pilot Districts

The six school districts selected to participate as pilots in the project were:

- Visalia Unified School District, Visalia, California
- Long Beach Unified School District, Long Beach, California
- Santee School District, Santee, California
- Barstow Unified School District, Barstow, California
- Ravenswood City Elementary School District, East Palo Alto, California
- Placer Union High School District, Auburn, California

The pilot school districts were selected from an initial list of 21 candidate districts derived from recommendations of OLA staff, resource committee members, and local jurisdiction recycling coordinators. Selection was made pursuant to criteria designed to reasonably reflect a cross-section of school districts across the state as a whole. Table 1 lists the selection criteria and the weights given for each criterion.

Table 1: Pilot School District Selection Criteria

Criteria	Evaluation Ranking
Willingness to participate	1
Geographical location	2
Political (local) considerations	3
Jurisdiction not meeting IWMA mandates	1
Good relationship with employee unions	3
District serving multiple jurisdictions	2
Abundant community resources (haulers, facilities)	2
Rural, suburban, urban	1
High, middle, elementary	1
Large, medium, small	1
Potential for JPA	3
Some experience vs. no experience	2
Status and influence in the community	1
Demographics	1

The result was the selection of one high school district, two elementary school districts, and three unified school districts.

Table 2 describes the demographic characteristics of the selected pilot school districts.

Table 2: Pilot District Demographic Profiles¹⁰

	District	Type	No. of Schools	Enrollment	Amer. Indian	Asian	Pacific Islander	Filipino	Hispanic	Afr. Amer.	White	Other	Free & Reduced Meals	AFDC
<i>State Averages</i>					<i>0.9%</i>	<i>8.1%</i>	<i>0.6%</i>	<i>2.4%</i>	<i>41.3%</i>	<i>8.7%</i>	<i>37.8%</i>	<i>0.3%</i>	<i>47.6%</i>	<i>16.1%</i>
	Ravenswood	Elementary	11	5,370	0.0%	0.5%	9.9%	0.5%	64.5%	23.7%	0.7%	0.2%	81.1%	19.6%
	Visalia	Unified	33	24,273	1.0%	7.0%	0.1%	0.4%	44.2%	2.2%	45.0%	0.1%	51.8%	22.7%
	Placer Union	High	6	4,687	1.9%	1.9%	0.2%	0.3%	4.9%	0.4%	90.3%	0.1%	13.4%	3.4%
	Long Beach	Unified	87	89,214	0.4%	13.2%	2.1%	3.1%	42.0%	20.3%	18.9%	0.0%	68.1%	31.6%
	Barstow	Unified	12	6825	2.3%	1.1%	0.5%	0.8%	38.5%	12.6%	44.2%	0.0%	50.7%	20.7%
	Santee	Elementary	11	8,432	0.3%	1.5%	0.3%	0.8%	9.8%	1.9%	85.4%	0.0%	23.0%	6.4%
<i>Project Averages</i>					<i>0.6%</i>	<i>9.9%</i>	<i>1.8%</i>	<i>2.2%</i>	<i>37.9%</i>	<i>14.5%</i>	<i>27.9%</i>	<i>0.1%</i>	<i>62.7%</i>	<i>25.5%</i>

Definitions:

Free & Reduced Meals = U.S. Department of Agriculture nutritional meal subsidy program
 AFDC = Aid to Families with Dependent Children

Pilot District Waste Assessments

Waste assessments were conducted at each pilot district between November 2000 and February 2001. Teams consisting of OLA staff, the local jurisdiction recycling coordinator, consultant personnel, and, in four of the six districts, the contract waste hauler conducted the assessments. The waste assessments consisted of two parts—interviews and “walk-through” tours of school district facilities. The interviews were conducted with superintendents, chief business officials, and department heads representing the various business functions of each school district. The interviews were followed by walk-throughs of the various school campuses, including kitchens, cafeterias, maintenance, custodial service, and transportation facilities, food and supply warehouses, print shops, and administrative offices. Walk-throughs of the offices and grounds of each school type—high school, middle school, and elementary school—were also conducted. The management interviews and tours of facilities and activities that generate waste were conducted in one day in four of the pilot school districts and two days in the largest two school districts.

The focus of the interviews and walk-throughs was to identify, document, and evaluate each component of the pilot school districts’ waste management system and develop cost-effective recommendations for improvement. A separate but related area of interest in the waste assessments was to identify and document opportunities to incorporate environmentally preferable products and waste reduction practices into the pilot school districts’ purchasing process.

The project team prepared waste assessment reports¹¹ for each of the pilot school districts that:

- Explained the purpose of the waste assessment.
- Detailed the waste assessment methodology.

¹⁰ Source: www.ed-data.k12.ca.us/dev/District.asp

¹¹ See Appendix D: “Pilot District Waste Assessment Reports”

- Described the pilot school district's existing waste management system.
- Provided estimated waste characterization data.
- Identified opportunities for waste reduction.
- Recommended the adoption of waste reduction policies and operating procedures.
- Recommended implementation of an initial set of waste reduction strategies.
- Described other opportunities for implementation as time and resources permit.
- Provided contact information regarding local and State resources.

A draft copy of the waste assessment report was reviewed by each pilot school district and a final report submitted to each district superintendent for implementation consideration. The project team also conducted a follow-up meeting with each pilot school district and its local jurisdiction recycling coordinator to discuss the proposed recommendations and implementation of the recommendations. The OLA staff continues to provide technical assistance to each pilot school district and its local jurisdiction's(s') recycling coordinator(s) in the district's efforts to implement the recommended waste reduction programs.

IV. Pilot District Findings

The following observations are drawn from the waste assessment process in the six pilot school districts:

- **The six pilot districts have achieved substantial waste diversion.**

All six pilot districts have achieved significant waste diversion as a matter of routine business practices. The pilot school districts are to be commended for remarkable success in reducing waste in their respective organizations. Table 3 illustrates the waste diversion rate for each district as of the date of each assessment.

Table 3: Estimated Waste Diversion Rates for the Pilot Districts

District	Waste Generated (Pounds)	Waste Diverted (Pounds)	Estimated Diversion Rate (Percent)
Ravenswood	2,261,126	593,210	26
Santee	2,716,831	1,069,300	39
Visalia	7,842,159	2,210,000	28
Placer	2,392,832	1,033,500	43
Barstow	1,696,390	506,610	30
Long Beach	24,481,682	8,586,702	35

- **The districts appear to have the capacity in place, or available from their service provider, to divert at least 50 percent of their waste stream from disposal.**

Notwithstanding the success of current waste reduction activities, the pilot school districts have the capacity to achieve a great deal more benefits from waste reduction with minimal effort and expense.

Recycling bin capacity is often under-utilized due to lack of district policy, operating procedures, training, and performance monitoring. Without exception, department heads or individual employees initiated waste reduction and recycling programs in the pilot districts. In two of the pilot districts, students initiated components of the recycling programs as part of class projects. These programs, however, are not supported by district policy or procedures and therefore are dependent on students and teachers, who come and go.

This ad hoc approach to waste management practices results in inconsistent utilization of recycling containers and contributes to contamination of recyclable materials. In all of the pilot school districts, communications to employees in the appropriate procedures or use of recycling facilities at the school campuses and administrative offices are neither clear nor adequately disseminated. In most cases the contract waste hauler has placed recycling bins in strategic locations, but school employees are inconsistent in using them due to a lack of communication and program supervision. The opportunity for school districts to reach their potential for full waste reduction program implementation lies with addressing and overcoming these issues.

- **The pilot school districts engage in waste prevention and recycling practices but performance varies from facility to facility.**

All of the pilot school districts reported that various teachers, principles, students, or custodial staff had initiated recycling programs in the past, but most of these programs gradually diminished or disappeared when the sponsoring employees changed jobs or students matriculated.

In several pilot school districts, the waste assessment team observed consistent recycling practices at one school or facility, but virtually no recycling activity at other sites within the same district.

One of the pilot school districts has already, as a result of this project, reevaluated one component of its waste management system, specifically its school-site recycling program. By using the same service provider throughout the district, they were able to resolve previous issues related to the program's service level, participation, and contamination. This is just one example of how school districts, even those with strong existing programs, can make changes to increase their ability to divert waste and conserve resources.

- **Management personnel interviewed in the pilot school districts are generally unaware of the State and local resources available to them for implementing waste prevention and recycling programs.**

With one exception, the district management personnel interviewed were only vaguely, if at all, familiar with the types and location of local and regional waste processing facilities available. They were also generally unaware of the technical and information resources available from the municipalities in which they operate, the CIWMB's Office of Local Assistance, or local, regional, and State agencies that can provide support and resources.

Without exception, the pilot school districts rely heavily on the contract waste hauler for advice on and implementation of waste reduction programs.

- **Environmentally preferable purchasing is not practiced in the pilot school districts.**

Only one of the pilot districts consistently purchases recycled-content paper and a select number of other environmentally preferable products. In this case, the purchasing officer was unaware of the recycled content of the products until the project team brought it to her attention.

The pilot school district participates in a purchasing cooperative with over 80 other districts in the region. Upon inquiry of the cooperative, it was learned that it purchases certain recycled and other environmentally preferable products as a matter of its own policy. As a result, postconsumer recycled-content paper products and other environmentally preferable products are shipped to member districts as "default" products.

In the other five pilot school districts, paper and other supplies are purchased directly from suppliers or through smaller cooperatives without a request or preference for postconsumer recycled or other environmentally preferable products. These cooperatives supply little, if any, postconsumer recycled or other environmentally preferable products.

- **The majority of landscape waste is diverted in all the pilot school districts.**

Interviews with pilot school district grounds managers disclosed a keen awareness of the cost implications of landscape waste disposal. Every pilot district reported the practice of diverting landscape waste on site, through community drop-off or local diversion facilities.

Tree and shrub trimmings are chipped, used on site, or taken to community recycling facilities. Even in the urban school districts, most of the green waste is being diverted for use on school campuses or sent to community green waste or transformation facilities for energy production.

The exception to the above practice is grass clippings from football and soccer fields. During the season of play, the athletic fields are vacuumed, and clippings not convenient for transport to recycling areas are sent to a disposal site. For the rest of the year, clippings are left in place on the athletic fields.

The pilot district grounds managers also report sparse use of fertilizer and herbicides on school grounds. Fertilizers are used only on sports playing fields in preparation for the playing season. Herbicides are used sparingly if at all for regulatory and student safety reasons.

- **Food service operations generate the largest volume of waste destined for disposal in the pilot school districts.**

There are two components to the food service waste stream—food waste and serving debris.

The first component of the food waste stream is unused food, food scraps from food preparation, and waste food that has been served but not eaten. The waste assessments revealed very little food scrap kitchen waste from food preparation areas. Most often food scraps are put down a garbage disposal leaving virtually no waste.¹² Food preparation does generate modest amounts of unused food that is not served to students. Many of the districts participating in the pilot have local charity food distributors utilize this leftover food in community nutrition programs.

There are generally two types of food serving methods in school cafeterias.¹³ The first is the traditional “serve” method in which all students are served the same meal. Only one of the pilot districts utilizes this method of food service. The other five pilot districts utilize the “offer” method of food service, wherein students are offered a variety of foods from which to select. The offer method of food service is generally accepted as reducing food waste, since students have a choice of food and will select only those food items they intend to eat. However, the offer method may have the potential of creating more food service debris, since food is served in individual disposable containers rather than on a single disposable or reusable tray.¹⁴

¹² In at least one pilot district, the wastewater treatment authority imposed limits on the amount disposed by this method.

¹³ See Appendix E (“Food Service Alternatives in School Districts”) for a summary discussion of the food service types.

¹⁴ Food service debris includes plastics packaging, wax-covered individual serving trays, and contaminated food wrappers that cannot be recycled.

However, all six pilot district food service directors reported that approximately 20 percent of the food purchased and/or served is not consumed and must be disposed or contributed to charity.¹⁵

Food preparation generates large quantities of cardboard, pallets, and food containers (e.g., steel cans, plastics) received from the food warehouse and opened in the kitchens. In addition, polystyrene food trays, milk cartons, plastic pouches, beverage containers, and utensil debris are generated in the cafeteria and disposed. With one exception, all the elementary school districts used plastic beverage pouches rather than cartons. The middle schools and high schools varied in their use of pouches and cartons.

In all but one pilot school district, polystyrene food serving trays are used in the cafeterias. There appears to be limited opportunity for recycling these trays. However, there are several alternatives to polystyrene trays as well as opportunities for recycling and composting serving trays.

A recent analysis conducted by a consultant for the Ravenswood City Elementary School District¹⁶ revealed that while reusable trays may be a preferred method of serving food from a waste reduction perspective, the low cost of the polystyrene trays and the high initial cost of purchasing dishwashers coupled with increased labor, energy and water costs make converting to reusable trays problematic.

However, the Santee Elementary School District has re-instituted reusable trays and claims the initial capital and ongoing operational and maintenance costs are modest.¹⁷ This conclusion may or may not be valid in other school or institutional settings depending on the variability in equipment selection, energy, water supply, and wastewater disposal costs. Therefore, each application must be analyzed based on local factors.

When reuse, recycling, or composting options are not feasible, the most effective method to dispose of serving trays is to stack or nest the used trays before depositing them in the dumpster. This procedure conserves space in the dumpster and significantly reduces the cost of disposal, which is generally based on volume.

- **The vast majority of redemption value aluminum cans and plastic beverage containers are recycled in the pilot school districts**

If these materials are not collected and redeemed by organized student groups or teachers, they are collected and redeemed by janitorial staff.

- **Pilot school districts derive little revenue from recycling programs.**

During the early part of the last decade many school districts that initiated recycling programs obtained some revenue from the sale of recyclable materials. The market in recyclable materials has changed over time so that an expectation of any revenue from recycling programs is presently unrealistic. Consequently, there is a shift in the incentive

¹⁵ These reports were not validated. Food waste characterization was not within the scope of the project.

¹⁶ Environmental Science Associates, *Analysis of Cafeteria Waste Disposal and Recycling Options for the Ravenswood Elementary School District*, April 20, 2000.

¹⁷ Analysis to verify this report is not within the scope of the project.

to implement waste reduction programs from a revenue-based incentive to one of disposal cost avoidance.

In all but one of the pilot school districts, the contract waste hauler provides recycling bins at no additional charge; the recycling costs are incorporated into the disposal service fees. Therefore, the more recyclable material a district removes from the trash bins and deposits in recycling bins, the lower the cost of disposal service. This is a more subtle measure of the return on the investment in recycling, but nonetheless an important contribution to the bottom line of school districts.

- **The pilot school districts do not designate staff to implement or coordinate waste prevention and recycling programs.**

None of the pilot school districts employs personnel for the sole purpose of managing the solid waste management system of the district. To the extent waste reduction practices are in place, they are instituted and managed by management and supervisory personnel as part of their overall responsibilities.

The project team interviews with pilot school district officials and staff disclosed that they do not readily see a positive return on investment that would justify a full-time or even a part-time position dedicated to managing the solid waste cost component of the district's business. Moreover, the pilot school districts report they have other higher priority unfunded needs related to the educational mission of schools.

- **The success of waste reduction programs in school districts is frequently hindered by a decentralized decision making process.**

It is apparent from the pilot experience that there is a delineation of decision-making responsibilities between the district superintendent, chief business official, and the principals of the school campuses. To varying degrees, principals are delegated discretion to manage district educational and business objectives at their school sites. For example, it is typical among the pilot school districts that on-site custodial services personnel report directly to the school site principal rather than the chief custodian, who supervises the night cleaning crews at all sites. Principals and school site personnel are frequently given considerable latitude in the purchasing of school supplies and classroom materials. Food service purchasing is a separate function from district central purchasing. Likewise, warehousing of food and food service supplies is a separate facility from the general supplies warehouse.

The fractionated and discretionary authority at different school district facilities hinders many recycling programs. Initiation, communication, monitoring, and performance evaluation are fragmented and inconsistent among the various facilities. Recycling programs thought to be performing routinely many times are not performing well or consistently due to poor or inconsistent communications and monitoring of performance.

V. Lessons Learned From the Pilot Districts

During the course of the project, several important lessons were learned that should guide the initiation of waste reductions programs in school districts and other institutions statewide.

- **It is important to understand the business of schools.**

Fundamental to working successfully with school districts is the recognition that schools are in the business of education, not waste management. As such, school administrators are not routinely focused on, nor necessarily interested in, the business of waste management. On the other hand, school districts are essentially business enterprises that provide an educational service; and as with their business counterparts, waste management is an overhead function of the core activity. Therefore, it is critical when marketing waste reduction strategies for school districts to demonstrate how school districts, by embracing the resource conservation philosophy and supporting a comprehensive waste management program, can be more efficient educational “businesses.”

Schools are under no legal mandate to engage in waste reduction or recycling programs. School administrators typically view waste collection service as another utility service for which the district pays a monthly fee and over which it has little or no control. However, California’s current energy challenge has been a reminder that the efficient use and management of utilities can have a significant impact on the financial health of the organization.

School districts, like business enterprises, public or private, have an inherent interest in improving the efficiency of the business functions of the district so that the core business of educating students is not distracted or disrupted by poor service support or diversion of scarce resources. Money saved or expenditures avoided by reducing and recycling waste will increase the funds available for the district’s core educational programs.

The approach of the project was to focus on the **business** of schools rather than the classroom or education component of schools. The project also focused on **school districts** rather than individual schools, with an objective of institutionalizing waste reduction practices in schools by the adoption of policy and administrative procedures at the district level that will impact multiple schools. The project focused on working with policy makers and administrators to demonstrate that activities related to waste reduction constitute good business practices and should be a routine element of the business of managing the district.

Overall responsibility for policy, academic, and financial performance of a school district lies with the elected Boards of Trustees. Management of school districts consists of two components: (1) Superintendents, principals, and teachers, or “certificated” personnel, are responsible for and focused primarily on the academic performance of students. (2) Responsibility for the business of schools rests with “classified” personnel, typically headed by a chief business official (CBO). The CBO is typically of deputy superintendent rank. This person’s subordinates are typically the heads of the administrative, purchasing, food service, maintenance, operations, grounds, custodial services, business services, and transportation departments. It is the objective of the CBO and the CBO’s management

team to efficiently prepare and manage the budget and provide all the support services necessary to achieve the educational goals of the district.

School districts consist of the same business organizational units (e.g., administrative services, transportation, maintenance, personnel, accounting) as most other institutions and business enterprises. In this respect, the lessons learned in the pilot school district project will be transferable to other institutional settings and the broader non-residential sector.

- **School officials are fully challenged to perform the duties of the education mission of schools; waste management issues are, at best, a distraction.**

Over the past several years, pressure has mounted for public schools to improve student performance. An abundance of reform proposals have become formal mandates that challenge administrators and teachers to stay abreast of the changes, improve performance, meet deadlines and achieve results.

It is apparent from the project experience that waste management issues are at best a distraction from the education focus of school district administrations. It will be a challenge for the CIWMB and local jurisdictions to make a compelling case for the investment of time and resources for the benefits of waste management.

However, the assessment activities of the project were well received in the pilot districts. Several of the districts have already begun implementing the assessment report recommendations. It is thus reasonable to expect that the methodology employed by the project team will be accepted and effective in other school districts and institutions statewide. The combination of methodology, resource tools, and focused support of local jurisdictions and the CIWMB will greatly increase the likelihood of diversion performance in schools.

- **School board and management policy provide the foundation for the institutionalization of waste reduction programs.**

The CIWMB has developed model strategies for initiating and implementing waste reduction programs in virtually every segment of the waste generation community, including school districts. The question has become how best to gain access to decision-makers and convince them of the value of these resources relative to their enterprises. Consequently, the issue for the CIWMB in schools is no longer what wastes to recycle, or how to reduce or recycle waste, but rather, how to reach decision-makers and motivate them to initiate and sustain waste reduction programs over time.

With some notable exceptions, most of the school waste reduction initiatives of the CIWMB and local jurisdictions in the past have focused on implementing recycling programs in individual schools, businesses, and institutions. This strategy relies on motivated individuals—typically managers, supervisors, and individual employees—taking a personal interest in and responsibility for initiating projects, energizing others to participate, obtaining the required resources and technical assistance, and managing the process. These individuals and groups are motivated not by personal reward, but by the idea that such efforts are “the right thing to do for the environment” and contribute in a valuable way to the students’ education.

Unfortunately, when the individuals who are committed to the projects are promoted or transferred, or graduate, the programs and projects begin to atrophy and eventually disappear. The efforts fail largely because they are not institutionalized by policy and operating procedures of the school district or institution. Without the official, formal recognition and support of management, the programs are not integrated into the culture or business practices of the organization and cannot be sustained.

To underscore the importance of formal policy, communication, and performance evaluation, a model waste reduction resolution, an environmentally preferable purchasing policy, and a sample letter to vendors were included in the assessment report for each pilot district.¹⁸ As a result of the project activities, two of the pilot districts are pursuing implementation of such districtwide policies.

- **Local jurisdictions are a key component to school district waste reduction program success.**

Local jurisdictions are the CIWMB's best link to school districts and other institutions. Local jurisdictions have the responsibility for meeting IWMA mandates. As such, they have a self interest in school district participation in community waste reduction programs as an important element in meeting the IWMA diversion mandates. Given proximity and motivation, local jurisdictions are in the best position to provide hands-on technical and other forms of support to school districts.

During the course of the project, it became apparent that not all local jurisdictions are adequately equipped to play this important role. In every case, the local jurisdiction personnel were enthusiastic about working with school districts, but several had not done so due to conflicting workload priorities, inadequate understanding of how to approach or market services to school districts, or uncertainties about the network of information and resources available.

The project experience is instructive. As a result of the approach taken by the project team to include local recycling coordinators in the assessment activities, several of the coordinators were able to establish important contacts in the pilot districts with which to continue implementation of assessment recommendations. For example, the Visalia recycling coordinator has successfully initiated a partnership with the district to implement several of the project team recommendations, and the City of Long Beach is planning a pilot curbside collection program at selected schools as a result of the project's waste assessment recommendations.

- **The CIWMB provides a wealth of waste reduction resources to local jurisdictions and school districts.**

The Office of Local Assistance has the lead role in monitoring and assisting local jurisdictions in implementing waste reduction programs to meet IWMA mandates. Other CIWMB program areas also have programs or activities directly related to school districts. There are programs for introducing environmental education that include classroom recycling, school gardens, and on-site composting. Other programs within the CIWMB offer grants and loans to schools for a variety of purposes. Finally there are

¹⁸ To avoid repetition, the model resolution and policy and the sample letter were eliminated from the assessments and provided instead in Appendices F and G of this document.

specialty programs such as used oil, tires, organics, and green school building that engage schools at one level or another.

The CIWMB has sufficient information resources to provide valuable support to local jurisdictions, school districts, and other institutions. The challenge is to compile and keep this information current and in easily accessible, useful formats for use by CIWMB staff, school districts, local jurisdictions, and other stakeholders. The project met this challenge by designing a resource guide, “Tools for Schools: Resource Guide for School District Waste Reduction,” for CIWMB’s Web site (www.ciwmb.ca.gov/Schools/WasteReduce/). The site provides information on waste reduction and recycling and links to related sites.

- **Identifying cost effective opportunities for waste reduction and recycling does not require extensive analysis of the waste stream but rather a review of the statewide waste characterization data. However, design of effective and sustainable programs does require careful and thorough analysis.**

The statewide waste characterization data for educational services and other business sectors of the waste stream compiled by the CIWMB and available on its Web site¹⁹ is sufficient to identify primary opportunities for waste reduction programs in school districts. A combination of interviews with school district management and department heads and “walk-around” tours of facilities and school sites is adequate to identify waste reduction and recycling opportunities in a particular organizational setting.

Once the primary opportunities for waste reduction are understood, designing a sustainable waste reduction and recycling program requires considerably more time and analysis. Factors such as district policy, training, and performance monitoring must be considered, as well as equipment needs, source separation methods, collection, storage, transportation, available processing facilities, and other logistical factors. Fortunately, school districts and businesses can obtain considerable assistance, including free consultation from waste haulers, local jurisdictions, and the Office of Local Assistance, making the analysis and design of a program easier.

- **School district management is more likely to implement waste reduction programs that are inexpensive and convenient.**

The comment by a pilot school district director during a waste assessment interview that waste reduction programs in schools must be “cheap, easy and convenient epitomizes reality for school districts and expresses an important lesson for those who work with the districts. This lesson is also applicable in other institutional settings. As stated previously, school districts are essentially business enterprises that provide an educational service. Waste management is an overhead activity that supports the core business. As such, administrators and business managers are not routinely focused on, nor necessarily interested in, the business of waste management.

Local jurisdictions and CIWMB staff should be mindful of the relative importance of waste reduction programs in the overall scheme of school administration. Initial waste reduction programs recommended to school districts by local jurisdictions and others should be modest and easy to implement and provide relatively important benefits to the school district at little or no cost. Modest success will enhance a feeling of goodwill and

¹⁹www.ciwmb.ca.gov/LGCentral/

confidence on the part of the school district and open the door for further development in the future. “Too much too soon” will provide a disincentive for continued participation.

The recommendations included in the assessment reports²⁰ are presented in order of least cost and effort to implement. As a result, several of the pilot districts have already begun working with their respective local jurisdictions to implement report recommendations.

- **Waste management service providers are an important resource to school districts, other institutions, and businesses.**

Waste management service providers, including recyclers²¹, waste haulers, transfer stations, and composting and materials recovery facilities (MRF) play a critical role in providing school districts the means by which to implement waste reduction strategies. In fact, the waste hauler is typically the primary source of solid waste management and recycling information to the pilot school districts, and perhaps the community at large. As previously stated, with one exception, waste haulers in this study provide recycling bins and collection at no additional cost over the waste collection and disposal service. School districts should be encouraged to evaluate waste service contracts to ascertain whether recycling services can be improved or enhanced.

The waste assessments revealed that the infrastructure available in a community or region is also a critical element in designing effective waste reduction programs. For example, it is of little benefit to recommend a food waste composting strategy to a school district if there is no food waste composting facility available in the region. It would likewise be of no help to the school district to recommend that the district recycle its polystyrene food trays when there is no facility which recycles the trays.

VI. Recommended Strategy for Waste Reduction in School Districts Statewide

One of the primary objectives of this project is for the CWIMB to apply what was learned from the project to other school districts statewide. The CIWMB can accomplish this by developing a plan that includes a clear understanding of desired outcomes, organizational coordination, focused outreach, partnering with local jurisdictions, training, information management, and technical support. The following inseparable components comprise a strategy to realize this objective. Failure to implement one of the components jeopardizes the entire strategy. Therefore, it is recommended that all components discussed below be given equal importance and implemented as a program package.

Component 1: Develop a Comprehensive Plan for School Districts

The CIWMB should prepare a comprehensive plan that describes clear goals and desired outcomes in school districts. The plan should address both waste reduction and educational curriculum goals and be linked through the CIWMB’s Office of Integrated Education to relevant school programs internal and external to the CIWMB..

²⁰ See Appendix D: “Pilot District Waste Assessment Reports”

²¹ Operators of recycling services or facilities.

The plan will provide an appropriate context within which to set policy and work with other boards and departments of Cal/EPA and other organizations of State government. The plan will assist the CIWMB in establishing priorities, allocating resources, and evaluating program performance. The planning process will serve to identify those CIWMB programs, units, and functions that should be coordinated for maximum effectiveness in achieving strategic plan goals.

A planning group consisting of the Assistant Director of the Office of Integrated Education and branch managers of the CIWMB's Diversion, Planning, and Local Assistance Division, Waste Prevention and Market Development Division, and Special Waste Division should convene to prepare the plan. The Assistant Director of the Office of Integrated Education should chair the planning group.

The resource committee created for the project should be formalized and expanded with additional membership from the other boards, departments, and offices of Cal/EPA and from other State agencies as applicable. The committee's role is to serve as a resource to the planning group, provide communication between program units, and offer technical expertise in all aspects of waste reduction and curriculum programs.

Component 2: Partner With Local Jurisdictions to Achieve Waste Reduction Objectives in School Districts

The CIWMB does not have the resources to work directly with all schools districts, let alone the entirety of the nonresidential sector throughout the state. The CIWMB can extend its resources significantly by creating an effective partnership with cities and counties by providing them with resources they can use to assist school districts in increasing waste reduction and recycling program implementation. As the agencies responsible for implementing the IWMA, local jurisdictions have a vested interest in the implementation of successful waste reduction programs in their school districts along with other institutions and businesses. The waste management practices of school districts can, in smaller communities, have a significant impact on a local jurisdiction's ability to meet these mandates.

This is not to say that the staff from the Office of Local Assistance or other CIWMB program areas should not work directly with school districts, but that such work should always be done in the context of support to the respective local jurisdictions.

To prepare local jurisdictions for carrying the primary responsibility of increasing waste reduction in school districts, the Office of Local Assistance should provide the training, technical support, and informational tools and resources necessary to do the job.

The Office of Local Assistance should:

- **Conduct a comprehensive training program for local jurisdiction recycling coordinators and other local jurisdiction staff engaged in waste reduction activities related to schools.**

The training for local jurisdictions should include who, when and how to initiate contact with school officials, as well as who should do it and when, insight into school organization structure and decision processes, the language of schools, information and financial sources, and model methods for assessing and institutionalizing waste reduction opportunities.

- **Conduct a training program for CIWMB staff.**

The training should include the same elements noted above as well as training in the informational and technical resources available to provide support to local jurisdictions.

- **Conduct training for school district personnel in partnership with local jurisdictions.**

To the extent that local jurisdictions need or want assistance in training school personnel in the techniques of waste stream analysis and design of waste reduction programs, the Office of Local Assistance should assist in the conduct of such training. It is important to recognize that the primary objective of the Office of Local Assistance in such activities is to “train the trainer” in order to leverage its presence in the field through local jurisdictions.

- **Appoint a full-time staff to design and conduct training of applicable CIWMB and local jurisdiction personnel and to conduct the outreach program described in Component 3.**

Training of applicable CIWMB staff and local jurisdictions is critical to extending the reach of the CIWMB into the field. Well-trained local recycling coordinators and CIWMB support staff provide an opportunity for engaging every school district and other institutions in the state on a continuous basis. A training program must be designed and conducted to reach every jurisdiction in the state and relevant CIWMB staff. To accomplish this, a full-time staff must be dedicated to carry out the program.²² The same staff could conduct both the training and outreach programs.

- **Increase its presence in the field.**

Staff should build networks in their assigned regions to maintain a good understanding of all aspects of the assets and constraints of the assigned community with which to meet IWMA mandates. Maintaining consistent field presence facilitates Office of Local Assistance staff members’ ability to identify and promote waste reduction opportunities within the jurisdiction to which they are assigned. Staff needs to have an in-depth understanding of available diversion facilities, local haulers, regional RCP vendors and resources, opportunities for cooperative purchasing, and other devices by which school districts can increase purchasing power or influence waste service levels.

- **Continue to develop, improve, and maintain informational and technical support tools for use by local jurisdictions, CIWMB staff, other State agencies, school districts, business, and the public.**

During the course of the pilot project, it was determined that there is a tremendous amount of information available about school waste reduction and diversion programs and other school-related environmental information on the Internet, in libraries within the CIWMB, and other California State agencies.

The project team therefore worked to create a Web-based resource guide (“Tools for Schools: Resource Guide for School District Waste Reduction,”

²² See Appendix H: “Training Plan”

www.ciwmb.ca.gov/Schools/WasteReduce/) with the assistance of the resource committee. The guide is posted on the CIWMB's Web site and contains a waste reduction strategies section organized by school district function (for example, administration, food services, purchasing). Linked to each of these functions are a variety of waste reduction strategies with information and references from which the researcher can learn about the implementation benefits, model programs, funding opportunities, and other resources available for education and assistance.

It will be the role of the Office of Local Assistance to maintain and improve this resource for use by staff, local jurisdictions, waste management professionals, school districts, other institutions, and the public at large. The guide will be used for training and will be an invaluable tool for local jurisdictions in their consultation with school districts.

Component 3: Conduct a Comprehensive Outreach Program to Educate School District Decision-Makers

To “open the doors” of school districts to local jurisdictions, school officials should be pre-conditioned to receive the assistance local jurisdictions can offer them. The Office of Local Assistance should educate school boards, superintendents, principals, and other school district decision-makers about the value of waste reduction and steps they can take to initiate programs.

The outreach plan developed by the project team is essentially a “marketing” strategy.²³ It is designed to educate the customer (e.g., school district officials) utilizing forums offered by regional and statewide school-related organizations. Once the benefits of waste reduction and diversion are communicated, the “educated” customer is open to receive assistance from the well-trained and equipped local jurisdiction. If school districts are aware of the apparent benefits of waste reduction to the bottom line and that local jurisdiction consulting services are provided at no cost, they should be more open to a dialogue with their local jurisdiction.

The outreach plan identifies the following school-related associations as primary target audiences for outreach:

- **California School Boards Association**
- **Association of California School Administrators**
- **California Association of School Business Officials**
- **California Parent Teacher Association**

The plan applies a top-down approach, communicating with school officials that have the authority to adopt, implement, and advocate waste reduction policies and operating procedures. Many of the associations have regional or local chapters or work groups. Opportunities should be created to work with these groups as well as the statewide membership.

Presentations made to each of the school related associations should be tailored for that particular membership. For example, an outreach presentation to the California School

²³ See Appendix I: “Outreach Plan.”

Boards Association should have the primary objective of educating the audience on the value of adopting districtwide policies for waste reduction and environmentally preferable purchasing. The model resolution and policy in Appendix F might be the focus of the presentation. Likewise, a presentation to the Association of California School Administrators or the California Association of School Business Officials might focus on how to develop operating procedures for waste reduction.

Model waste reduction and procurement policies should be included in the policy publication of the California School Boards Association. Articles should be placed in newsletters and other publications directed at school officials about model programs in schools, feature articles about projects, and articles about suppliers of products that contribute to waste reduction and cost savings.

In addition to the primary target associations listed above, other organization and professional associations have been identified in the outreach plan, and outreach efforts toward these additional target audiences are recommended as personnel, resources, and budget permit. For example, a presentation to the California School Food Service Association might focus on how to initiate a food composting program, how to reduce food-packaging waste, or reuse and recycling alternatives for serving trays.

The outreach strategy outlined above is comprehensive and complex. It is a critical element in the strategy to improve waste reduction performance in school districts, institutions, and businesses. The Office of Local Assistance should provide the leadership for the outreach plan.

To be successful, the CIWMB must develop long-term working relationships with the target associations, learning more about the education industry and developing and shaping opportunities. This effort will require the full attention of at least one mid-level manager or technical specialist to lead the program and adequate staff to conduct the outreach program in addition to the training assignments noted above in Component 2. The outreach and training programs should also include participation of other CIWMB specialist staff in the execution of the outreach program on a subject matter basis. Adequate staffing will be even more critical if, as recommended below, the strategy developed by the project is to be applied to other institutions in addition to school districts statewide.

VII. Applying the School District Model to Other Institutional Settings Statewide

The strategy recommended for school districts above is equally applicable to other institutions and businesses statewide. The multi-facility organizational structure and support functions of school districts are similar if not identical to many other organizational types in the nonresidential sector. It can be reasonably presumed that the components of the schools district strategy—easily applied analytical methodology, strong partnerships with local jurisdictions, and targeted outreach—will prove successful in the other nonresidential sectors of the state.

No additional staff resource should be required to implement the schools strategy in other institutional settings and in the business sector. The key to the efficient deployment of

CIWMB staff is the degree of success in training local jurisdictions to work in the field with school districts as well as other institutions and the commercial sector.

The analytical methodology employed by the project team in the pilot districts proved successful in determining the primary and secondary opportunities for waste reduction strategies in the pilot school districts. The model methodology has also already proved successful with respect to the implementation of some of these opportunities. This model can be used as the basis for training Office of Local Assistance and other CIWMB staff and local jurisdiction staff; it can also be used for waste assessments of other institutions statewide. The methodology used by the project and recommended for future use is discussed more fully in Appendix J.

VIII. Monitoring Implementation Progress

After securing approval of the Board to proceed, the Office of Integrated Education and the Office of Local Assistance should initiate a program to implement the planning, training, outreach, and informational components of the strategy described herein. The Office of Integrated Education should report to the Board in one year the progress and achievements of the program in engaging school districts and the nonresidential sector.

Appendix A: School District Diversion Project Vision Statement

I. Vision

That California school districts reduce waste, lower operating costs, improve and sustain waste reduction programs over time, and benefit from effective and sustained support from local government and the California Integrated Waste Management Board.

II. Objectives

The School District Diversion Project has three principle objectives that will serve to accomplish the Vision:

1. To develop a model methodology by which school districts can achieve maximum waste prevention, reuse, and recycling.
2. To identify those factors and benefits essential to institutionalizing waste prevention, reuse, and recycling in school districts.
3. To strengthen the relationships and support provided to school districts by local government and the California Integrated Waste Management Board.

III. Desired Outcomes

(What will it look like when the objectives are met?)

In School Districts

Each of the pilot districts will have:

- Adopted waste reduction as a priority of the Board of Trustees, the district superintendent, and principals.
- Applied the analytical tools developed by the project to evaluate and implement optimal waste reduction strategies and practices for its particular circumstances.
- Adopted policies and administrative regulations that will formalize waste reduction programs in the district.
- Assigned a staff person the primary responsibility for managing waste reduction programs and included waste reduction criteria in performance goals.
- Made appropriate investments in equipment and other resources with an expectation of a reasonable return in cost savings or other benefits.
- Included waste reduction policies and practices in its employee orientation and training programs.

- Developed an effective partnership at the executive and working levels with its local government(s) and the California Integrated Waste Management Board's Office of Local Assistance.

In Local Government

Local government responsible for achieving the waste diversion mandates of the Integrated Waste Management Act (IWMA) will have:

- Considered school districts important partners in achieving waste reduction objectives.
- Developed an understanding of school district culture, operating objectives and constraints, and the potential districts have for contributing to the achievement of waste reduction/diversion goals.
- Developed an effective partnership at the executive and working levels with its school districts and the Office of Local Assistance.
- Assigned a staff person the primary responsibility for working with and providing technical support to school districts and included school district waste reduction criteria in employee performance goals.
- Included school district waste reduction policies, programs and practices in employee orientation and training programs.
- Facilitated school district understanding and use of community resources needed to effectuate waste reduction programs in schools.

In the Office of Local Assistance

The California Integrated Waste Management Board's Office of Local Assistance (OLA) will have:

- Considered school districts important partners in achieving waste reduction objectives.
- Developed an understanding of school district culture, operating objectives and constraints, and the potential of school districts for contributing to the achievement of waste reduction/diversion goals.
- Developed effective relationships with local governments and school districts at the executive and working levels.
- Identified and organized for easy accessibility (Web-based links) information in OLA and other units of the CIWMB, local government, U. S. Government, nongovernmental organizations, and the private sector for use by OLA staff, other CIWMB program areas, local governments, school districts, and the public.
- Included school district waste reduction program assistance (policies, programs, and practices) in employee orientation and training programs.

- Included school district waste reduction program assistance in employee duty statements and job performance criteria.
- Established OLA as the initial point of contact for school diversion matters within the CIWMB.
- Established OLA as an effective facilitator and coordinator of CIWMB activities for school district diversion matters.
- Established OLA as a technical resource for CIWMB staff working with school diversion matters.

Appendix B: School District Diversion Project Team

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Appendix C: School District Diversion Project Resource Committee

Name	Organization
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Kathy Frevert	Waste Prevention and Market Development (CIWMB)
Tricia Brodderick	Office of Integrated Education (CIWMB)
John Sitts	Office of Organizational Effectiveness (CIWMB)
Gary Arstein-Kerslake	Information Management Branch (CIWMB)
Dana Stokes	Used Oil Recycling Analysis (CIWMB)
Jesse Adams	Waste Tire Diversion (CIWMB)
Surjit Dhillon	Waste Analysis and Methods Section (CIWMB)
Bill Albert	Printed and Web Publications (CIWMB)
Darryl Petker	Management Reporting Systems (CIWMB)
Yvette DiCarlo	Organics Materials Management II (CIWMB)
Natalie Lee	Used Oil Recycling Analysis (CIWMB)
Jerry Hart	Buy Recycled (CIWMB)
Larry Stephens	Waste Analysis Branch (CIWMB)
Kimya Lambert	Buy Recycled (CIWMB)
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Natalie Marcanio	Department of Toxic Substances Control
Ken Payne	Department of Toxic Substances Control
Deake Marschall	Department of Conservation, Division of Recycling
Diane Dillard	Department of Conservation, Division of Recycling
Nita Davidson	Department of Pesticide Regulation
Ann Evans	Department of Education, Nutritional Services Division

Appendix D: Pilot District Waste Assessment Reports

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Waste Assessment Report: Barstow Unified School District

1.0 Executive Summary

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts can play an important role in their communities in achieving this mandate.

The Barstow Unified School District (BUSD) is located in the City of Barstow in San Bernardino County, California. BUSD consists of eight elementary schools, two middle schools, one high school, and one continuation school. Over 6,400 K–12 students are served by the BUSD’s 371 certificated and 317 classified staff. In addition to the school facilities, the BUSD operations include the administrative office, central food service operation, central purchasing and warehouse, printing services, as well as operations and maintenance facilities.

The California Integrated Waste Management Board (CIWMB) staff conducted a waste assessment of the BUSD operations to identify current waste management practices and recommend cost-effective waste management strategies the school district can implement to reduce the generation of solid waste and potentially save money. The information contained in this waste assessment report is based on interviews and a walk-through of BUSD facilities conducted on January 16-17, 2001.

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the manner materials are purchased, used and discarded. There are several components to implementing this philosophy:

- Reduce—Waste Prevention
- Reuse
- Recycling
- Procurement Practices
- Composting/Vermicomposting
- Construction and Demolition Debris and “Green” Building Design

1.1 District Waste Information

- BUSD generates approximately 1,696,390 pounds of waste per year.¹
- Of this amount, it is estimated that 1,189,780 pounds are disposed of and 506,610 pounds are diverted from landfill.²

¹ Volume-to-weight conversion rate is 107 lbs. per cubic yard for disposal, the result of additional analysis done by Waste Analysis Branch staff using data obtained in the CIWMB’s 1999 Statewide Waste Disposal Characterization Study, and 100 lbs. per cubic yard for recyclables (uncompacted OCC), United States Environmental Protection Agency, *Business Users Guide*.

- The 1,189,780 pounds per year that are disposed of consist mostly of green waste (27.3 percent), followed by paper (20.5 percent), food waste (20.3 percent), aluminum, glass, plastic and tin (13.8 percent), and other materials.³
- Desert Disposal, the City of Barstow’s franchise waste hauler, provides the BUSD with refuse collection and disposal service, costing BUSD approximately \$92,392 annually (\$155 per ton). BUSD currently participates in a cardboard, paper, and beverage container recycling program provided by the waste hauler at no additional cost.
- BUSD participates in a number of reduce and reuse activities, including auctioning surplus items, obtaining surplus furniture and computers, double-sided copying, grasscycling, and requiring vendors to backhaul pallets and packaging.

1.2 Summary of Key Recommendations

A complete review of the BUSD’s current waste management practices and opportunities for waste reduction and savings is contained in Appendix B. Based on the waste assessment results, the following recommendations are provided to the BUSD for immediate consideration.

- **Recommendation 1:** Adopt a districtwide waste reduction policy.
- **Recommendation 2:** Establish a districtwide recycling program.
- **Recommendation 3:** Adopt a districtwide procurement policy that promotes the use of recycled-content products (RCP) and other environmentally preferable products.
- **Recommendation 4:** Establish a districtwide green waste management program.
- **Recommendation 5:** Establish paper waste prevention practices.

1.3 Estimated Savings

It is estimated that the BUSD will save approximately \$38,000 per year if the recommendations included in this report are implemented. There are minimal costs associated with these recommendations; however, it is believed that the estimated savings will cover such costs.

2.0 Introduction

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts are important to the achievement of this mandate for several reasons:

² This total reflects only the waste prevention and recycling efforts that the project team was able to quantify. The BUSD participates in other such efforts, but due to lack of specific data or accurate measurement tools, quantification of other efforts was not feasible

³ CIWMB, Solid Waste Characterization Database, www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

- It is estimated that school districts contribute approximately 764,000 million tons to the total volume of solid waste in California.⁴
- In some medium-sized and smaller communities, schools contribute as much as 15 percent of the waste generated in the community.⁵
- Visible and active waste prevention and recycling programs in schools provide excellent role models that support environmental curricula in the classroom.
- To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into adulthood.
- School districts are an integral part of every community and are important participants in civic leadership.
- The majority of the state's population is involved with schools in some way—as students, parents, professionals or volunteers. Schools serve as positive role models for environmental stewardship.

Staff of the CIWMB's Office of Local Assistance (OLA), and a consulting firm conducted a waste assessment of BUSD operations January 16–17, 2001. The assessment consisted of interviews with BUSD personnel and a guided walk-through of school district facilities. Staff from the local jurisdiction also participated in the assessment. The objective of the assessment was to identify current waste management practices and recommendations for cost-effective waste management strategies the BUSD can implement to reduce the generation of solid waste and potentially save money. The results of the waste assessment are discussed in this report.

This report consists of six sections:

- 1.0 Executive Summary
- 2.0 Introduction
- 3.0 School District Information
- 4.0 Reduce, Reuse, Recycle
- 5.0 Waste Assessment Findings
- 6.0 Analysis and Recommendations

3.0 School District Information

BUSD is located in the City of Barstow, San Bernardino County, in California and consists of eight elementary schools, two middle schools, one high school, and one continuation school.

⁴ CIWMB, *Statewide Waste Characterization Study: Results and Final Report*, CIWMB pub. #340-00-009, December 1999, p. 36.

⁵ CIWMB, *op.cit.*

Over 6,400 K–12 students are served by the BUSD’s 371 certificated and 317 classified staff.⁶

In addition to the school facilities, the BUSD operations include the administrative office, central food service operation, central purchasing and warehouse, printing service, as well as operations and maintenance facilities. A private contractor provides transportation services.

4.0 Reduce, Reuse, Recycle

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the way materials are purchased, used and discarded. This section summarizes how this approach applies to the waste management system within a typical school district.

4.1 Reduce—Waste Prevention

Very often, managers look to recycling first when pursuing waste reduction. Recycling can divert large volumes of material from the waste stream and reduce disposal costs. However, preventing waste from occurring (also called source reduction) is an even more important part of a waste management program, reducing both waste and cost.

Everything that goes into the trash bin is something that was purchased. Throwing the item in the trash bin adds the cost of disposal to the original price of the item. Whatever can be diverted from the trash bin by waste prevention, reuse or recycling will result in disposal cost savings.

Waste prevention strategies include:

- Copying on both sides of a sheet of paper (double-sided copying).
- Ordering bulk supplies to reduce excess packaging.
- Grasscycling.
- Xeriscaping.

4.2 Reuse

Reusing materials can save money and contribute to resource conservation. Material exchange centers serve as clearinghouses for new and used material, supplies and equipment. These materials are available at little or no cost to institutions such as school districts.

Reuse strategies include:

- Using reusable rather than disposable food serving trays and eating utensils.
- Reusing packing boxes or sending them back to the vendor/manufacturer.

⁶ California Department of Education, www.ed-data.k12.ca.us/

- Donating excess and leftover food to food banks and food rescue programs;
- Donating used items to local charities or other nonprofit organizations.
- Participating in local and global book exchanges.
- Securing or exchanging materials through material exchange centers such as KidMAX and CalMAX.
- Utilizing federal, State, and local surplus programs.

4.3 Recycling

A recycling program is more than collecting beverage containers such as aluminum cans, glass, and some plastic containers. White paper, mixed paper, newspaper, corrugated cardboard, tin cans, and scrap metal all have recycle value as well. Every municipality and region has a different waste management infrastructure, so it is important for school districts to work closely with the local jurisdiction solid waste management and recycling coordinator and waste haulers to maximize opportunities to recover recyclables from the waste stream.

There are five essential elements to a good recycling program:

- A written districtwide waste reduction policy.
- Guidelines, education and training for students, teachers, administrators, custodians, and staff within each district department.
- Review and negotiation of recycling and disposal contracts, taking into account the variety of materials, collection schedules, cost/revenue, training, education, resources (e.g., storage containers), and degree of contaminants, etc.
- A reliable collection system consisting of a sufficient number of strategically placed, well-labeled collection containers.
- Monitoring and evaluation of program compliance and performance.

4.4 Procurement Practices

Collecting recyclable material and reusing material are only part of the resource conservation process. For recycling to work in the marketplace, it is equally important to “close the loop” by purchasing products that contain postconsumer recycled-content material. Consumer demand for goods manufactured with recycled content will ensure a market for the materials collected in recycling programs.

School districts can increase demand for recycled content products, lower costs of materials, and increase purchasing power by participating in purchasing cooperatives. Many school districts already participate in purchasing cooperatives, purchasing a variety of products and services from insurance to school supplies and food. Cooperatives increase the purchasing power of a single district. By participating in cooperatives, school districts can expect to negotiate prices that are more

competitive, reduce packaging, and secure a greater supply and variety of recycled content products.

4.5 Composting/Vermicomposting

Organic waste includes “green waste” (e.g., grass clippings and tree and shrub clippings) and food waste. Using the Reduce, Reuse and Recycle approach, a school district should first consider ways of reducing organic waste by examining the sources. To reduce green waste, for example, a district should select landscaping plants that do not require frequent trimming (xeriscaping) and leave grass clippings in place (grasscycling) whenever possible. Vermicomposting of food scraps on school sites is an excellent student educational activity. Additionally, leftover food should be reused or donated whenever feasible. Finally, organic waste can be collected separately and composted either off- or on-site. Many municipalities recycle green waste by using it as mulch and compost for landscaping in city parks and median strips and for community beautification projects.

4.6 Construction and Demolition Debris and “Green” Building Design

School districts throughout California are engaged in major school renovations and new school building projects. These projects present excellent opportunities to divert construction and demolition debris (C&D) into other uses. Concrete and asphalt waste can be used as road base; wood materials can be reused or used as raw material for the manufacture of particleboard or mulch or as a bulking agent in the composting process. Additionally, reinforcement bar (re-bar), dry wall, carpet, and asphalt roofing shingles can be recycled.

Specifying the reuse and recycling of demolition debris in construction contracts can accomplish the diversion of C&D waste. Districts should partner with the local solid waste management and recycling coordinator and local waste haulers for assistance in developing the most resource-efficient approach.

For school districts engaged in new construction, there are several ways green building design principles can be used to increase student performance, increase the use of recycled content products, reduce green waste with proper landscaping plans, and reduce energy costs. Architects and contractors knowledgeable and experienced in green building design should be selected for new school construction projects.

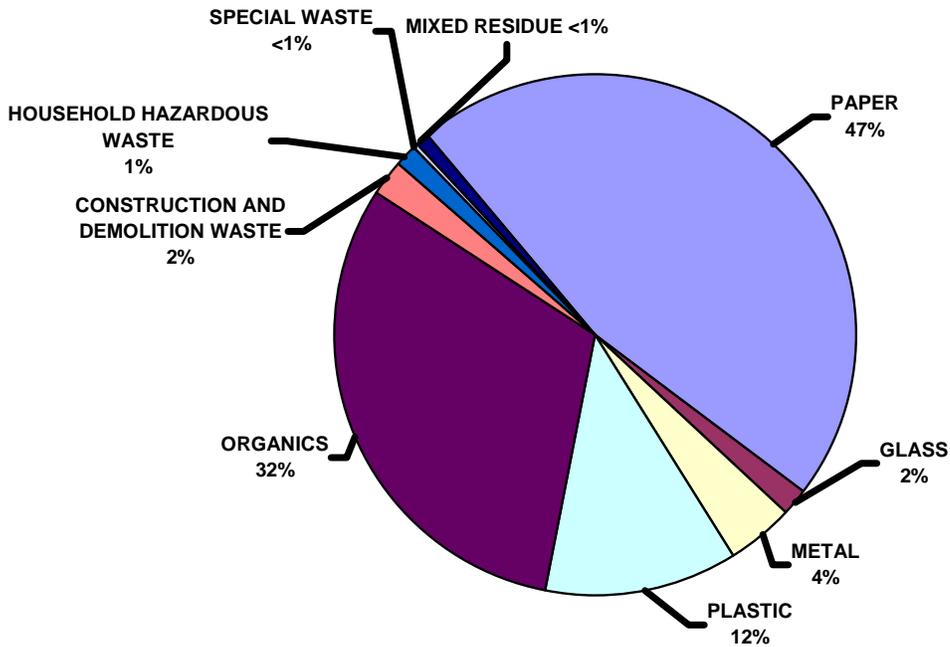
5.0 Waste Assessment Findings

5.1 Waste Generation

The total amount of waste generated equals the amount of material disposed of plus the amount of material diverted from disposal (e.g. reduced, reused and recycled). Annually, the BUSD generates approximately 1,696,390 pounds of material, of which approximately 506,610 pounds are diverted from disposal through waste prevention and recycling efforts.

Figure 1 illustrates the estimated composition of BUSD’s solid waste stream.⁷ These data, combined with information collected from the waste assessment walk-through, enabled the waste assessment team to identify the largest components of the BUSD waste stream to target for potential waste reduction program development.

Figure 1
Estimated Waste Composition for Barstow Unified School District



5.2 Disposal

Desert Disposal, the City of Barstow’s franchise hauler, provides the BUSD with refuse collection and disposal service. This service includes 30 three cubic yard refuse containers serviced between one and five times a week and costs BUSD approximately \$92,392 annually.

Table 1 illustrates the disposal service level for each facility for non-summer months. An additional 208 cubic yards are collected during the summer months at the BUSD’s maintenance, transportation, administration and warehouse facilities.

⁷ CIWMB, Data from Solid Waste Characterization Database, www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

Table 1: BUSD Disposal Service

Facility	Quantity	Volume (cubic yards)	Service Days/Week	Volume/Month (cubic yards)
Barstow High School Cafeteria	1	3	5	65
Cameron Elementary	1	3	5	65
Crestline Elementary	1	3	5	65
Henderson School	1	3	5	65
Montara School	1	3	5	65
Barstow High School	3	3	4	156
Barstow Middle School	3	3	3	117
Kennedy Middle School	3	3	3	117
Lenwood School	1	3	3	39
Thomson School	1	3	2	26
Central High School	2	3	2	52
Hinkley School	3	3	2	78
Skyline North School	1	3	2	26
Barstow High School (Shop)	1	3	2	26
Maintenance Dept.	2	3	2	52
Transportation Dept.	1	3	2	26
Administration Office	1	3	1	13
District Warehouse	1	3	1	13
Langworthy Field	2	3	1	26
Totals	30	57		1,092

5.3 Recycling

BUSD currently participates in the cardboard, paper, and beverage container recycling program provided by the waste hauler, Desert Disposal, at no additional cost. In addition to these recycling services, Avalon Metal provides BUSD with scrap metal recycling. It is estimated that the BUSD recycles 506,610 pounds of material annually. Table 2 summarizes the recycling service level for each facility.

Table 2: BUSD Recycling Service

Facility	Quantity	Volume (cubic yards)	Service Days/Week	Volume/Month (cubic yards)
Administrative Offices	1	3	1	13
District Warehouse	1	3	1	13
Barstow High School	3	3	3	117
Cameron School	1	3	2	26
Central High School	2	3	5	130
Henderson School	1	3	2	26
Kennedy School	2	3	5	130
Skyline North School	1	3	2	26
Thomson School	1	3	2	26
Total	13	27		507

5.4 Reduce and Reuse

BUSD participates in a number of reduce and reuse activities including auctioning surplus items, obtaining surplus furniture and computers, double-sided copying, grasscycling, and requiring vendors to backhaul pallets and packaging. However, due to lack of specific data or accurate measurement tools, quantification of other efforts was not feasible.

6.0 Analysis and Recommendations

The waste assessment team observed many effective waste reduction practices in the BUSD and identified several opportunities for further waste reduction and cost savings. A comprehensive list of opportunities for action, listed by BUSD functional area, is included in Appendix B. These opportunities have been divided into tiers and summarized in Table 3.

- Tier 1 options are those opportunities that will provide maximum waste reduction and financial benefit to the BUSD.
- Tier 2 options are those activities that are currently in place and should be supported, formalized or strengthened.
- Tier 3 options are those opportunities that will provide substantial waste reduction benefit, but they may take longer to implement or involve additional cost to implement.

The strategies discussed in this section are the Tier 1 options that the waste assessment team identified as the actions that will provide maximum waste reduction and financial benefit to BUSD. Implementing these recommendations will generate immediate, cost-effective benefits to the BUSD.

Table 3: Barstow Unified School District Summary of Options

Tier One	
1.A.	Adopt a districtwide waste reduction policy.
1.B.	Establish a districtwide recycling program. Implement a formal recycling program and train students and staff. Obtain more recycling bins and label them clearly. Continue recycling cardboard and scrap metal. Support beverage container recycling throughout the BUSD.
1.C.	Establish a Procurement Policy That Promotes the Use Of RCPs and Other Environmentally Preferable Products. Adopt policy to purchase RCPs and consider establishing price preference for RCPs. Provide staff with updates on RCP quality improvements. Consider joining a purchasing cooperative. Continue to recycle toner cartridges and purchase recycled cartridges.
1.D.	Establish districtwide green waste management program. Compost any collected green waste or send to city program. Use xeriscaping and grasscycling strategies when possible.
1.E.	Establish paper waste prevention practices. Continue double-sided copying; provide incentives. Promote paper reuse. Continue electronic ordering, more use of e-mail, elimination of duplicate forms. Continue to request fewer catalogs, removal from mailing lists.
Tier Two	
2.A.	Promote and expand reuse practices. Continue to use surplus/exchange programs. Continue pallet reuse and take-back. Continue cardboard box reuse. Offer leftover paint through materials exchange. Launder and reuse cleaning rags.
2.B.	Establish food waste prevention practices. Continue Offer vs. Serve (OVS) at high schools; expand to elementary and middle schools. Evaluate menu items for waste reduction. Improve system for counting number of students buying lunch. Continue practice of stacking trays. Continue donating extra food to charity. Consider using reusable trays or implementing a tray recycling program.
Tier Three	
3.A.	Recycle used fluorescent tubes.
3.B.	Investigate donating food scraps to farmers.
3.C.	Contact local tallow company to collect grease.
3.D.	Consider purchase of cardboard baler.
3.E.	Compare cost-effectiveness of reusable air filters.

Recommendation 1: Adopt a districtwide waste reduction policy.

Benefit

With some notable exceptions, most school waste reduction initiatives fail over time because the programs are not “institutionalized” by the adoption of formal policies and operating procedures by the Board of Trustees and the superintendent. Programs initiated by well-meaning teachers, principals, students, and other individuals generally disappear when these motivated individuals graduate, are promoted, or leave the school district.

The most effective way to institutionalize waste reduction practices is for the Board of Trustees to adopt clear statements of district policy and for the superintendent to adopt operating procedures and training plans with which to implement the Board of Trustees’ policy (see Appendix D for model waste reduction resolution and environmental purchasing policy).

Implementation Steps

1. Adopt a school board resolution endorsing and supporting integrated waste management principles of Reduce, Reuse and Recycle.
2. Each department (e.g., food service, maintenance, purchasing) should develop policies or operating procedures that support waste reduction principles and institutionalize the good practices.
3. Department directors and school principals should monitor the amount reused or recycled, cost savings, or other measures of success and periodically report back to the superintendent.

Recommendation 2: Establish a districtwide recycling program.

Benefit

The BUSD’s waste hauler provides recycling collection bins for mixed paper, corrugated cardboard, plastic, aluminum, glass, plastic and metal cans; but the utilization of the bins varies between school sites. Because recycling services are provided at no additional cost to BUSD, any material that can be taken out of the waste stream and recycled saves the BUSD disposal costs. The savings are potentially substantial. It is estimated that on an annual basis, BUSD currently diverts approximately 30 percent of its waste from landfills. If another 10 percent of the waste stream can be diverted by recyclable collection, the annual cost savings would be approximately \$13,000.

Implementation Steps

Appoint a BUSD Recycling Coordinator to:

1. Create a waste reduction or “green” team or committee (representing administration, district departments, faculty, students, PTA, etc.).
2. Obtain more recycling bins from the waste hauler to distribute throughout the offices and school sites.

3. See that collection containers are marked clearly in both Spanish and English and placed strategically at the school sites to ensure proper utilization.
4. Work with the teachers to develop the education and outreach program to inform students, teaching and administrative staff about the recycling program.
5. Work with the operations and maintenance manager to see that computer equipment, furniture and other equipment are reused and/or recycled properly.
6. Monitor the recycling program to identify the types and quantity of materials being recycled.
7. Make periodic reports to the superintendent and school board on system performance and cost savings.

Recommendation 3: Establish a districtwide procurement policy that promotes the use of recycled content products (RCP) and other environmentally preferable products.

Benefit

The waste assessment team noted several good procurement practices. Procurement of supplies is centralized in the BUSD's Purchasing Office. Custodial supplies are purchased in bulk, thus saving money and reducing unnecessary packaging. It also appears that teachers, principals, and administrators are utilizing the resources of surplus centers and material exchanges.

Three elements can contribute to an optimized procurement policy:

- Using materials exchanges when possible.
- Joining purchasing cooperatives to leverage purchasing, and.
- Purchasing recycled content products (e.g., copy paper, bath tissue, and paper towels).

The BUSD should continue bulk purchasing and using material exchanges. The BUSD belongs to one purchasing cooperative; unfortunately, it does not appear that this particular coop offers a wide range of RCP supplies. The team noted that some of the supplies are RCP, but most are not, and there is no districtwide policy for RCP purchase.

The El Dorado County Office of Education Stockless Purchase Program is an example of a purchasing cooperative that saves school districts time and money while providing low-cost office, school, custodial, computer, and athletic RCPs and supplies (see Appendix C). A similar approach to leveraged buying power is the formation of joint powers authorities or agreements (JPAs). Many school districts and other public entities form JPAs to leverage their collective buying power for supplies, food, and a variety of services.

The collection of recyclable material is only one part of recycling. In order for a market to exist for recycled material—aluminum, steel, paper, cardboard, etc.—there needs to be a demand for this material by manufacturers. If consumers demand products containing recycled content, then the market for recyclables will be created and maintained. Thus, the

purchase of RCPs is a crucial element of the recycling process, the closing of the loop between waste and new products.

There may be some initial resistance to the use of RCPs, in particular RCP copy paper. In 1998, the U.S. government and several copy machine manufacturers (Canon, Hewlett-Packard, Lexmark) conducted tests of 30 percent recycled-content paper and determined that the RCP paper performed as well as virgin material copy paper. This kind of information should be passed on to the staff.

Implementation Steps

1. Adopt districtwide policies that require reduced packaging, the reuse of materials, and the purchase of RCP and other environmentally preferable products whenever possible (see Appendix D).
2. Distribute information on materials exchanges and surplus programs to purchasing staff, school principals, and teachers.
3. Distribute information on the quality of RCP supplies and the importance of using RCP supplies.
4. The BUSD should explore forming JPAs or joining purchasing cooperatives that offer RCP supplies at competitive prices.
5. Request bids on items containing recycled content (see Appendix D).

Recommendation 4: Establish districtwide green waste management program.

Benefit

Based on the waste assessment and the waste composition analysis (Figure 1), organic landscaping waste accounts for 28 percent of BUSD's waste, or approximately 474,000 pounds. It appears that some of this is diverted from landfills by grasscycling and chipping practices. However, grasscycling was not consistently practiced throughout the BUSD. Tree and shrub clippings were reused for firewood or chipped, but the chipped material was not mulched or composted. The City of Barstow has an existing mulching program that mixes mulch with sewage sludge for application to alfalfa fields. This program would probably accept the landscaping waste (including grass clippings, leaves and tree and shrub trimmings). If all of the landscaping waste were kept out of the trash bins, the estimated annual disposal cost saving is approximately \$37,000. The exact figures were not available, but assuming that the BUSD is only diverting half of the landscaping waste, the potential savings to the BUSD would be \$18,500 in disposal cost.

Additional benefits of grasscycling include the cost savings from using less fertilizer, less water, and less labor time. Grasscycling allows rapid decomposition of the clippings, returning nutrients to the soil. Shredding the tree and shrub trimmings with a chipper and using this material as mulch helps conserve moisture and suppress weeds, thus saving on water and herbicide use. If local weather conditions make grasscycling and mulching difficult, the BUSD should adopt changes in landscaping, using more drought-tolerant and slow-growing plants (xeriscaping).

Implementation Steps

1. Adopt a school board resolution committing the BUSD to a policy of waste reduction and recycling.
2. Formalize green waste recycling procedures in the custodial/grounds department, including these key elements: xeriscaping, grasscycling, and chipping tree/shrub trimmings for mulch or compost.
3. Work with the city to arrange for the transfer of organic waste to the city mulching facility.
4. Train the custodians at the schools to separate any green waste from the regular waste.
5. Purchase additional equipment if needed (e.g., mulching mower and chipper).

Recommendation 5: Establish paper waste prevention practices.

Benefit

In most school districts, office paper (white and colored copy paper) is a commodity that is purchased and used in large quantity. There are several strategies to reduce the use and the cost of this commodity. The first strategy involves eliminating the paper use that is not necessary (by electronic purchasing, e-mails, form/document reduction, etc.) and eliminating the sources of incoming paper (extra catalogs and magazines, junk mail). The second strategy is to make maximum use of the paper (by double-sided copying, reusing paper). Using both sides of a sheet of paper is a sensible conservation measure. If a ream of paper costs \$2.50, and if both sides of each sheet of paper are used, the cost per page of that ream of paper has been reduced significantly (to \$.0025 per page rather than \$.005 per page). For every 500 cases of paper, the savings would be \$6,250.

Implementation Steps

1. Establish a formal BUSD policy requiring double-sided copying (see Appendix D).
2. Check all copiers and printers to ensure that they are capable of double-sided copying. Reset all copiers and printers to automatically make double-sided copies.
3. Acquaint administrative staff and teachers with the policy and its cost benefits.
4. Create incentives for teachers and staff to use double-sided copying. For example, if teachers or departments are “charged” by the number of sheets used, a system of discounting or credit could be awarded for double-side copying.
5. Promote the reuse of paper (using the blank sides for homework, scratch pads).
6. Continue electronic ordering and the elimination of duplicate forms, and encourage the use of e-mail (to replace paper copies).
7. Continue to request fewer catalogs and removal from junk mailing lists.

Appendix A [BUSD]: Waste Assessment Team

This listing includes the CIWMB and consultant staff working on this project as well as the local jurisdiction and Barstow Unified School District staff providing information for this project.

Name	Organization/Affiliation	Phone Number	E-Mail Address
Keir Furey	CIWMB	(916) 341-6247	kfurey@ciwmb.ca.gov
Carolyn Sullivan	CIWMB	(916) 341-6683	csulliva@ciwmb.ca.gov
Susan Sakakihara	CIWMB	(916) 341-6249	ssakakih@ciwmb.ca.gov
Clint Whitney	R&G Consultants	(916) 730-4204	clintwhitney@accessbee.net
Belinda Barbour	City of Barstow	(760) 256-3531	bbarbour@barstow.ca.org
Kathleen Bingham	San Bernardino County	(909) 386-8739	kbingham@wsd.co.san-bernardino.ca.us
Gail Wickstrom	BUSD Business Officer	(760) 255-6010	gail_wickstrom@barstow.k12.ca.us
Angel DeJesus	BUSD Food Services Director	(760) 255-6070	angel_dejesus@barstow.k12.ca.us
Tony Wardell	BUSD Purchasing Agent	(760) 255-6272	Tony_wardell@barstow.k12.ca.us
Joe Fink	BUSD Maintenance Director	(760) 252-5191	joe_fink@barstow.k12.ca.us
Jan Rhoads	Henderson School Principal	(760) 255-6250	Jan_rhoads@barstow.k12.ca.us
Dave Grohosky	Barstow Middle School Principal	(760) 255-6304	Dave_grohosky@barstow.k12.ca.us
Dr. Shirley Lester	Barstow High Assistant Principal	(760) 255-6105	Shirley_lester@barstow.k12.ca.us
Rex Richardson	NorCal Waste	(760) 386-8701	N/A
Cathy Caldwell	Laidlaw Representative	(760) 256-2333	N/A

Appendix B [BUSD]: Waste Reduction Practices and Opportunities

This appendix includes the findings of the waste assessment team: observations on current waste management practices and suggested opportunities for waste reduction. The opportunities are grouped by school district functional areas within the BUSD.

- Administrative Offices
- Operations and Maintenance
- Food Service
- Procurement
- Transportation
- School Sites

Administrative Offices

Current Practices	Opportunities for Waste Reduction
<p>Some paper reduction strategies (e.g., double-sided copies, paper reuse, electronic memos) are employed, but not consistently.</p>	<ul style="list-style-type: none"> • Continue paper reduction strategies already in place. • Establish a districtwide waste reduction policy to reduce paper waste and include the following activities. <ul style="list-style-type: none"> • Require double-sided copies for certain size jobs (including the stewardship to foster the use of double-sided copies by the contractors and vendors who provide reports to the BUSD) and/or setting the copiers to make double-sided copies as the default. • Develop incentives for staff to comply with the policy (e.g., reduced cost for double-sided copies). • Support the BUSD’s paper reuse activities, (e.g., scratch pads made from used paper). • Provide e-mail access to all employees so memos and notices can be distributed electronically (without paper copies). • Continue to evaluate BUSD forms for reduction opportunities (e.g., smaller font, double-sided, electronic). • Use educational and promotional materials provided by CIWMB (www.ciwmb.ca.gov/BizWaste/OfficePaper/Promote.htm). • Include in this policy a districtwide recycling program. • Continue to reduce junk mail. • Formalize the BUSD’s paper recycling efforts (see details below).
<p>No uniform recycling program exists throughout the BUSD. Some school sites recycle (e.g., paper, beverage containers), but this activity is not consistent districtwide.</p>	<ul style="list-style-type: none"> • Continue existing recycling programs. • Establish a districtwide waste reduction policy and include a recycling program and training for employees on what materials are accepted. • Investigate opportunities to obtain recycling bins from the hauler, local California Conservation Corps, or through grant opportunities.

Current Practices	Opportunities for Waste Reduction
<p>Very few products purchased for the BUSD contain recycled-content (e.g. paper, toner cartridges). There is no formal policy for such action.</p>	<ul style="list-style-type: none"> • Adopt a districtwide policy to purchase RCPs. • Adopt a price preference for RCPs. • Join a recycled products purchasing cooperative for paper products. • Utilize the State's existing procurement contracts for other RCPs.

Operations and Maintenance

Current Practices	Opportunities for Waste Reduction
<p>Grass clippings are left in place in some locations, but high local winds can spread clippings. Some areas are vacuumed after mowing and the clippings are disposed of. (All lawns are Bermuda grass and get very little water.)</p>	<ul style="list-style-type: none"> • Use xeriscaping strategies when possible. • Continue grasscycling practice. • Compost any collected green waste.
<p>Some tree trimming branches are chipped and thicker branches are given to employees for firewood. Chipped material is generally not used as mulch due to high wind conditions.</p>	<ul style="list-style-type: none"> • Continue this practice. • Send chipped material to the city program (water districts mix mulch with sewage sludge and apply to alfalfa fields). • Consider offering chips through a materials exchange program.
<p>Leaves are burned at individual school sites.</p>	<ul style="list-style-type: none"> • Send leaves and other landscaping material to the city mulching/composting program.
<p>Scrap metal is collected at corporate yard and recycled when there is enough to fill a roll off bin.</p>	<p>Continue this practice.</p>
<p>Old equipment and furniture is taken and stored at the corporate yard. Surplus materials are auctioned off.</p>	<p>Continue this practice.</p>
<p>Pallets are reused by local business. Broken pallets are used as firewood.</p>	<p>Continue this practice.</p>
<p>Left over paint is spread out on a metal sheet, dried, and then thrown out with regular trash. This practice is only applicable to residual paint in can – very small quantity.</p>	<ul style="list-style-type: none"> • Dispose of paint through small quantity generator hazardous waste disposal procedures. • Mix paint and use for touch up paint, graffiti cover. • Offer paint through a materials exchange program.
<p>Old/used equipment, such as air conditioning units, is stored in the corporate yard for use as parts.</p>	<ul style="list-style-type: none"> • Ensure that the items are stored safely so that coolant doesn't leak. • Evaluate market for items through auction or materials exchange.

Current Practices	Opportunities for Waste Reduction
Corporate yard has two 3-yard bins for cardboard collected twice a week when fairly full.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include a recycling program and training for employees on what materials are accepted.
Disposable air filters are used.	<ul style="list-style-type: none"> • Compare cost effectiveness of reusable air filters.
Fluorescent tubes are disposed of with regular trash.	<ul style="list-style-type: none"> • Recycle used fluorescent tubes.
Cleaning solutions that are used in large quantities are purchased in bulk and dispensed from a "command center." Many items are purchased in concentrated form, thus reducing unnecessary packaging.	Continue this practice.
Cloth rags are used but disposed of at most sites. Some sites have laundry facilities where bigger rags are washed and reused.	Launder rags and reuse instead of disposing them.
No waste reduction or recycling is taking place at lunch or special events.	Establish a districtwide waste reduction policy and include a recycling program and training for employees on what materials are accepted. Include procedures for lunch and special events (e.g., evaluate waste reduction strategies prior to special events).
Recycling bins are not available at all BUSD locations. When available, most custodians use them.	<ul style="list-style-type: none"> • Provide adequate number of recycling bins • Implement a districtwide recycling program and train employees on what materials are accepted.

Food Service

Current Practices	Opportunities for Waste Reduction
"Offer vs. Serve" food service method is not used in elementary or middle schools. Much of the food served is thrown away.	Implement Offer vs. Serve method at elementary and middle schools.
Central kitchen will only alter menu if three or more schools complain about a menu item. Some items are unpopular at a single school and produce waste.	<ul style="list-style-type: none"> • Develop evaluation process to track menu items that create significant waste. • Select menu alternatives that produce the least amount of waste districtwide.
Milk is optional and students have a choice of regular or chocolate milk.	Continue this practice.
Condiments are supplied in bulk dispensers.	Continue this practice.
Styrofoam trays are used four days a week and paper trays are used one day a week. Paper trays are discarded; used Styrofoam trays are stacked in the original boxes. BUSD believed that Desert Disposal was recycling these trays, but they are being landfilled.	<ul style="list-style-type: none"> • Continue practice of stacking trays to reduce the space taken in garbage bins. • Consider using other (non-Styrofoam) trays that can be recycled. • Consider using reusable trays. • Investigate tray recycling opportunities.
Central kitchen recycles large quantities of cardboard boxes.	<ul style="list-style-type: none"> • Continue this practice. • Consider purchase of a baler.
The central kitchen produces a 20 percent overage (approximately 400–600 extra servings) daily.	Improve system for determining number of students who will purchase lunches.
Usable extra food is donated to a charity.	Continue this practice.
There is a lot of food waste at the schools. No food waste is composted or donated to pig farmers.	Work with the city recycling contact to investigate donating food scraps to local farmers.
No.10 cans are not consistently recycled throughout BUSD.	Establish a districtwide waste reduction policy and include a recycling program and training for employees on what materials are accepted (e.g., place #10 cans in recycling bins).
Five-gallon buckets are used to collect grease, which is then disposed of.	<ul style="list-style-type: none"> • Contact local tallow company to collect grease. • Reuse buckets on-site or through a materials exchange listing.
Special education students collect recyclable beverage containers at the high school. Money is used for their classes.	<ul style="list-style-type: none"> • Continue this practice. • BUSD management should support these programs to ensure their continued operation.

Procurement

Current Practices	Opportunities for Waste Reduction
There is no districtwide policy to purchase recycled content products (RCP). Some RCPs were tried in the past (paper, toner cartridges), but complaints about quality lead to the discontinuation of these items.	<ul style="list-style-type: none"> • Provide staff with updates on RCP quality improvements. • Establish a districtwide purchasing policy to support the purchase of recycled content and environmentally preferable products. • Purchase recycled-content products when comparable in quality and price. • Consider joining a recycled products purchasing cooperative or other purchasing co-ops.
The BUSD belongs to High Desert Purchasing Association—a purchasing cooperative.	Use purchasing power of co-op to secure the best pricing on recycled-content products.
Purchasing office has electronic ordering and has identified duplicate forms.	Continue this practice.
Frequently used cleaning products are purchased in bulk and used with a dispensing system or in concentrated forms.	<ul style="list-style-type: none"> • Continue this practice. • Evaluate the toxicity of existing products and the availability of less toxic alternatives.
BUSD frequently secures surplus items through the State process, other districts' surplus item lists, and prison authority. Donations are also received from private organizations.	<ul style="list-style-type: none"> • Continue this practice. • Continue the use of materials exchange and other reuse opportunities (e.g., federal and State surplus property program and CalMAX/KidMAX).
Surplus equipment, books, and supplies are sold via auction or donated to surplus organizations.	Continue this practice.
BUSD requires vendors to take back packaging such as pallets. (This is requested in the bid process, but not a written policy.)	Continue this practice.
Warehouse keeps most boxes for reuse. The rest are recycled. Packing peanuts are occasionally picked up for reuse by a mailing business.	Continue this practice.
Warehouse tracks usage of items so that excess ordering does not occur. This also ensures that items such as batteries do not expire.	Continue this practice.

Transportation

Current Practices	Opportunities for Waste Reduction
Most of the department's vehicles were purchased through surplus programs.	Continue this practice.
When buses are 7 years old, they are removed from the fleet (as specified in the BUSD contract). Buses are moved to another district that allows for 10-year bus leases and then the buses are sold—often to Guatemala.	Continue this practice.
Rebuilt parts are used in vehicle repair when appropriate and available.	Continue this practice.
Retread tires are used as back tires.	Continue this practice.
A private environmental service collects used oil, antifreeze, and other hazardous materials.	Continue this practice.
Cardboard boxes that parts and supplies are received in are reused as storage containers.	Continue this practice.

School Sites

Current Practices	Opportunities for Waste Reduction
Not all schools had recycling bins.	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy and include a recycling program and training for employees on what materials are accepted. • Request recycling bins from Desert Disposal. (These are provided and serviced for no additional charge.)
Not all classrooms and offices have access to recycling.	<ul style="list-style-type: none"> • Order standard recycling containers for classrooms and offices to get a bulk price. Standard containers will assist custodians recognize which bins are for recycling which are for waste. • Label containers clearly and consistently. (Contact CIWMB staff for assistance in getting labels.)
End-of-the-year classroom purges require extra waste bin pick up. Most of the material is paper.	Educate staff on the recycling efforts for this annual event and provide appropriate recycling bins and training to increase recycling of paper, containers, clothing, etc.
Not all schools recycle beverage containers.	Obtain containers for collecting beverage containers. Consider asking a club or sports team to monitor and service the bins in exchange for the redemption value of the beverage containers.
School sites receive a lot of unwanted junk mail, faxes, and duplicate catalogs.	Continue to reduce junk mail.
Most school employees used double-sided copies when available.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy to reduce paper waste and include this reduce activity.
Although most school sites recycle toner cartridges, they do not purchase recycled cartridges in return.	<ul style="list-style-type: none"> • Continue to recycle cartridges. • Purchase recycled toner cartridges.

Appendix C [BUSD]: Resources

This resource listing is designed to offer the school district contact information for local recycling contacts, CIWMB contacts, local vendors, and other resources. It is not a comprehensive directory, nor does a vendor listing imply a recommendation.

Local Jurisdiction Solid Waste and Recycling Contacts

City

Belinda Barbour

Phone: (760) 256-3531

E-Mail: <mailto:bbarbour@barstowca.org>

Information regarding school district recycling activities in the City of Barstow.

County

Kathleen Bingham

Phone: (909) 386-8739

E-Mail: kbingham@wsd.co.san-bernardino.ca.us

Information regarding school district recycling activities in San Bernardino County.

California Integrated Waste Management Board (CIWMB) Contacts

Office of Local Assistance

Rebecca Brown

Phone: (916) 341-6680

E-Mail: rbrown@ciwmb.ca.gov

General information on waste reduction throughout California. Assistance in setting up a waste prevention/recycling program.

Office of Integrated Education

Rachelle Steen

Phone: (916) 341- 6764

E-Mail: rsteen@ciwmb.ca.gov

Information on CIWMB's free workshops to California teachers on three classroom curricula (*Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* [CIWMB pub. #322-99-009]; *Earth Resources--A Case Study: Oil* [CIWMB pub. #333-98-010]; and *Exploring Environmental Issues: Municipal Solid Waste*, published by Project Learning Tree) and an activity guide (*The Worm Guide: A Vermicomposting Guide for Teachers* [CIWMB pub. #560-01-007]).

Local Vendors

Hauler

Desert Disposal Service Inc.
2340 W. Main Street
Barstow, CA 92311
Phone: (760) 256-2730

Earth's 911

Phone: 1-800-CLEANUP
www.cleanup.org/

Provides information pertaining to the following categories:

- Local recycling information
- Household hazardous waste collections
- Composting
- State and local information
- Environmental events

Purchasing Cooperatives

Recycled Products Purchasing Cooperative (RPPC)

Phone: 1-800-694-8355
www.recycledproducts.org/

RPPC is a nonprofit organization dedicated to increasing the use of recycled content paper. Membership is free and products include white and colored copy paper; they use their purchasing power to meet or beat prices for virgin material copy paper. With 90 warehouses throughout California, they serve private and public agencies. Their customers include: Pomona Unified School District, Pajaro School District, JFK University, UC San Diego, and UC Santa Barbara

Stockless Purchase Program

Sue Allen
Phone: (530) 622-7130, ext. 240
E-Mail: sueallen@edcoe.k12.ca.us

The El Dorado Department of Education administers this purchasing cooperative. Membership is \$100 a year. The co-op offers school supplies, custodial supplies, and computer supplies at highly competitive prices. Over 80 school districts are members. Membership is open statewide.

Materials Exchanges

CalMAX

Phone: 1-877-520-9703, toll-free

www.ciwmb.ca.gov/CalMAX/

CIWMB's materials exchange (free service) designed to help businesses find markets for materials they have traditionally discarded; school districts can find supplies and materials for free or low cost.

KidMAX

Phone: 1-877-520-9703, toll-free

www.ciwmb.ca.gov/CalMAX/KidMax.htm

CIWMB's free source of used materials to California's schools.

Appendix D [BUSD]: Model Board of Education Waste Reduction Resolution and Environmental Purchasing Policy

Contained in Appendix F of this document.

Appendix E [BUSD]: Sample Letter to Vendors

Contained in Appendix G of this document.

Appendix F [BUSD]: Glossary

Contained in Appendix K of this document.

Waste Assessment Report: Long Beach Unified School District

1.0 Executive Summary

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts can play an important role in their communities in achieving this mandate.

The Long Beach Unified School District (LBUSD), located in Los Angeles County, California, serves Long Beach, Signal Hill, most of Lakewood, Santa Catalina Island and a portion of unincorporated Los Angeles County. The LBUSD consists of 62 elementary schools, 16 middle schools, and 9 high schools. It also operates 12 child development centers and has 15 facilities for central services. In addition to the school facilities, the LBUSD operations include food service, administration, operations and maintenance, transportation, and facilities.

The California Integrated Waste Management Board (CIWMB) staff conducted a waste assessment of LBUSD operations to identify current waste management practices and recommend cost-effective waste management strategies the LBUSD can implement to reduce its solid waste generation and potentially save money. The information contained in this waste assessment report is based on interviews and a walk-through of LBUSD facilities conducted December 11–13, 2000.

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the manner materials are purchased, used and discarded. There are several components to implementing this philosophy:

- Reduce—Waste Prevention
- Reuse
- Recycling
- Procurement Practices
- Composting/Vermicomposting
- Construction and Demolition Debris and “Green” Building Design

1.1 District Waste Information

- Annually, the LBUSD generates approximately 24,481,682 pounds of material of which approximately 15,894,980 pounds are disposed of, and 8,586,702 pounds are diverted through waste prevention and recycling.¹

¹ Disposal tonnages were provided by the district during the waste assessment. Recycling estimates were provided by the recycling service providers (with the exception of grasscycling, which was estimated by CIWMB staff using a conversion of 350 pounds diverted per 1000 square feet grasscycled per year (www.ciwmb.ca.gov/Organics/GrassCycling/WhyGrass.htm)).

- The LBUSD Transportation Department hauls the District’s solid waste to a transfer station in North Long Beach or to the Southeast Resource Recovery Facility (SERRF), a transformation facility that uses refuse-derived fuel for conversion to electricity via incineration and steam generation.
- Approximately 11,920,600 pounds (75 percent) of waste are incinerated and 3,974,380 pounds are landfilled annually.
- The LBUSD-operated recycling program yields approximately 8,586,702 pounds of material (grass clippings, cardboard, paper and metal); in addition, there are other recycling programs at individual school sites.
- The solid waste consists mostly of green waste (27.3 percent), followed by food waste (20.3 percent), paper (17.6 percent), aluminum, glass, plastic and tin (13.7 percent), and other materials.²

1.2 Summary of Key Recommendations

A complete review of the LBUSD’s current waste management practices and opportunities for waste reduction and savings is contained in Appendix B. Based on the assessment results, the following recommendations are provided to the LBUSD for immediate consideration.

- **Recommendation 1:** Adopt a districtwide waste reduction policy.
- **Recommendation 2:** Participate in the city curbside pickup program.
- **Recommendation 3:** Adopt a districtwide procurement policy that promotes recycled-content products (RCP) and other environmentally preferable products.
- **Recommendation 4:** Adopt additional waste reduction strategies.
- **Recommendation 5:** Formalize and improve the districtwide recycling program.
- **Recommendation 6:** Consider “green building” architecture for new school construction.

1.3 Estimated Savings

It is estimated that the LBUSD will save more than \$310,000 per year if the recommendations of this report are implemented. There are minimal costs associated with these recommendations (e.g., stacking food service trays to conserve disposal volume, implementing double-sided copy policy); however, it is believed that the estimated savings would cover such costs.

² CIWMB, Data from Solid Waste Characterization Database, www.ciwmb.ca.gov/WasteChar/JurisSel.asp

2.0 Introduction

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts are important to the achievement of this mandate for several reasons:

- It is estimated that school districts contribute approximately 764,000 tons to the total volume of solid waste in California.³
- In some medium-sized and smaller communities, schools contribute as much as 15 percent of the wastes generated in the community.⁴
- Visible and active waste prevention and recycling programs in schools provide excellent role models that support environmental curricula in the classroom.
- To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into adulthood.
- School districts are an integral part of every community, and are important participants in civic leadership.
- The majority of the state's population is involved with schools in some way—as students, parents, professionals or volunteers. Schools serve as positive role models for environmental stewardship.

Staff of the CIWMB, Office of Local Assistance (OLA), and a consulting firm conducted a waste assessment of LBUSD operations on December 11–13, 2000. The assessment consisted of interviews of LBUSD personnel and a guided walk-through of LBUSD facilities. Staff of the cities of Long Beach and Lakewood also participated in the assessment. The objective of the assessment was to identify current waste management practices and develop recommendations for cost-effective strategies the LBUSD can implement to reduce the generation of solid waste and potentially save money. The results of the waste assessment are discussed in this report.

This report consists of six sections:

- 1.0 Executive Summary
- 2.0 Introduction
- 3.0 School District Information
- 4.0 Reduce, Reuse, Recycle
- 5.0 Waste Assessment Findings
- 6.0 Analysis and Recommendations

³ CIWMB, *Statewide Waste Characterization Study: Results and Final Report*, CIWMB pub. #340-00-009, December 1999, page 36.

⁴ CIWMB, *op.cit.*

3.0 School District Information

The Long Beach Unified School District (LBUSD) serves Long Beach, Signal Hill, most of Lakewood, Santa Catalina Island, and some unincorporated areas of Los Angeles County. LBUSD is located in Los Angeles County, California, and consists of 62 elementary schools, 16 middle schools, and 9 high schools. It also operates 12 child development centers and has 15 facilities for central services. The LBUSD's 7,956 certificated and classified staff serves over 89,000 students.⁵ In addition to the school facilities, the LBUSD operations include food service, administration, operations and maintenance, and transportation facilities.

4.0 Reduce, Reuse, Recycle

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the way materials are purchased, used and discarded. This section summarizes how this approach applies to the waste management system within a typical school district.

4.1 Reduce—Waste Prevention

Very often, managers look to recycling first when pursuing waste reduction. Recycling can divert large volumes of material from the waste stream and reduce disposal costs. However, preventing waste from occurring (also called source reduction) is an even more important part of a waste management program, reducing both waste and cost.

Everything that goes into the trash bin is something that was purchased. Throwing the item in the trash bin adds the cost of disposal to the original price of the item. Whatever can be diverted from the trash bin by waste prevention, reuse or recycling will result in disposal cost savings.

Waste prevention strategies include:

- Copying on both sides of a sheet of paper (double-sided copying).
- Ordering bulk supplies to reduce excess packaging.
- Grasscycling.
- Xeriscaping.

4.2 Reuse

Reusing materials can save money and contribute to resource conservation. Material exchange centers serve as clearinghouses for new and used material, supplies and equipment. These materials are available at little or no cost to institutions such as school districts.

⁵ California Department of Education, www.ed-data.k12.ca.us/ and <http://data1.cde.ca.gov/dataquest/>.

Reuse strategies include:

- Using reusable rather than disposable food serving trays and eating utensils.
- Reusing packing boxes or sending them back to the vendor/manufacturer.
- Donating excess and leftover food to food banks and food rescue programs.
- Donating used items to local charities or other nonprofit organizations.
- Participating in local and global book exchanges.
- Securing or exchanging materials through material exchange centers such as KidMAX and CalMAX.
- Utilizing federal, State, and local surplus programs.

4.3 Recycling

A recycling program is more than collecting beverage containers such as aluminum cans, glass, and some plastic containers. White paper, mixed paper, newspaper, corrugated cardboard, tin cans, and scrap metal all have recycle value as well. Every municipality and region has a different waste management infrastructure, so it is important for school districts to work closely with the local jurisdiction solid waste management and recycling coordinator and waste haulers to maximize opportunities to recover recyclables from the waste stream.

There are five essential elements to a good recycling program:

- A written district-wide waste reduction policy.
- Guidelines, education and training for students, teachers, administrators, custodians, and staff within each district department.
- Review and negotiation of recycling and disposal contracts, taking into account the variety of materials, collection schedules, cost/revenue, training, education, resources (e.g., storage containers), and degree of contaminants, etc.
- A reliable collection system consisting of a sufficient number of strategically placed, well-labeled collection containers.
- Monitoring and evaluation of program compliance and performance.

4.4 Procurement Practices

Collecting recyclable material and reusing material are only part of the resource conservation process. For recycling to work in the marketplace, it is equally important to “close the loop” by purchasing products that contain postconsumer recycled-content material. Consumer demand for goods manufactured with recycled content will ensure a market for the materials collected in recycling programs.

School districts can increase demand for recycled content products, lower costs of materials, and increase purchasing power by participating in purchasing cooperatives. Many school districts already participate in purchasing cooperatives, purchasing a variety of products and services from insurance to school supplies and food. Cooperatives increase the purchasing power of a single district. By participating in cooperatives, school districts can expect to negotiate prices that are more competitive, reduce packaging, and secure a greater supply and variety of recycled content products.

4.5 Composting/Vermicomposting

Organic waste includes “green waste” (e.g., grass clippings and tree and shrub clippings) and food waste. Using the Reduce, Reuse and Recycle approach, a school district should first consider ways of reducing organic waste by examining the sources. To reduce green waste, for example, a district should select landscaping plants that do not require frequent trimming (xeriscaping) and leave grass clippings in place (grasscycling) whenever possible. Vermicomposting of food scraps on school sites is an excellent student educational activity. Additionally, leftover food should be reused or donated whenever feasible. Finally, organic waste can be collected separately and composted either off- or on-site. Many municipalities recycle green waste by using it as mulch and compost for landscaping in city parks and median strips and for community beautification projects.

4.6 Construction and Demolition Debris and “Green” Building Design

School districts throughout California are engaged in major school renovations and new school building projects. These projects present excellent opportunities to divert construction and demolition debris (C&D) into other uses. Concrete and asphalt waste can be used as road base; wood materials can be reused or used as raw material for the manufacture of particleboard or mulch or as a bulking agent in the composting process. Additionally, reinforcement bar (re-bar), dry wall, carpet, and asphalt roofing shingles can be recycled.

Specifying the reuse and recycling of demolition debris in construction contracts can accomplish the diversion of C&D waste. Districts should partner with the local solid waste management and recycling coordinator and local waste haulers for assistance in developing the most resource-efficient approach.

For school districts engaged in new construction, there are several ways green building design principles can be used to increase student performance, increase the use of recycled content products, reduce green waste with proper landscaping plans, and reduce energy costs. Architects and contractors knowledgeable and experienced in green building design should be selected for new school construction projects.

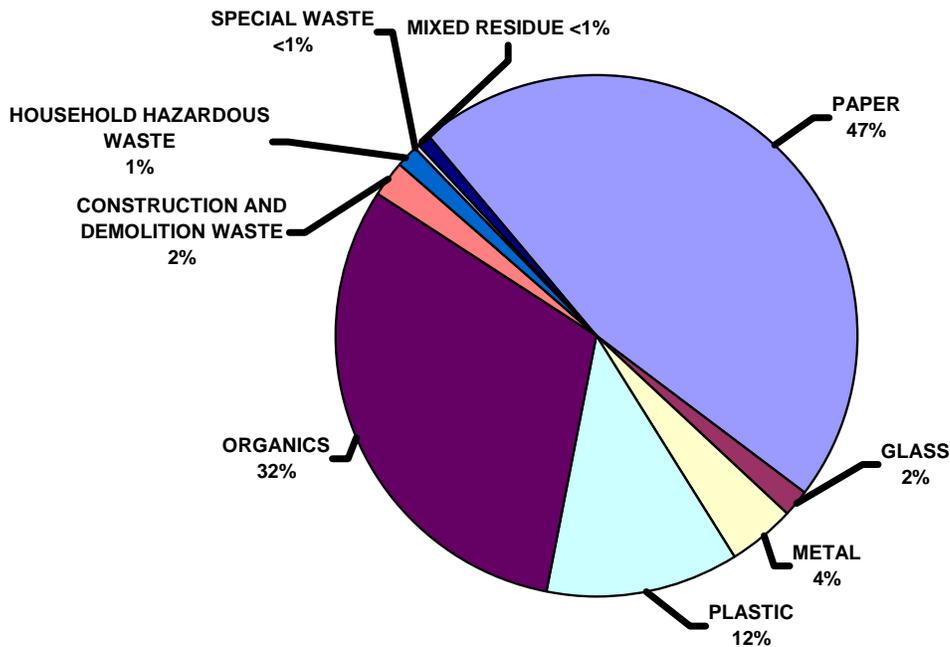
5.0 Waste Assessment Findings

5.1 Waste Generation

The total amount of waste generated equals the amount of material disposed of plus the amount of material diverted from disposal (i.e., reduced, reused, and recycled).

Annually, the LBUSD generates approximately 24,481,682 pounds of waste material, of which approximately 15,894,980 pounds are disposed of, and 8,586,702 pounds are diverted from disposal through waste prevention and recycling efforts.⁶ Figure 1 illustrates the estimated composition of LBUSD’s solid waste stream. These data, combined with information collected from the waste assessment walk-through, enabled the waste assessment team to identify the largest components of the LBUSD waste stream to target for potential waste reduction program development.

Figure 1
Estimated Waste Composition for the Long Beach Unified School District



5.2 Disposal

LBUSD hauls its own waste, utilizing two trucks and two full-time drivers. Two routes (North and South) are serviced daily by the LBUSD Transportation Department. According to the LBUSD Transportation Department, one out of every four loads of waste picked up is transported to Bel Art, a transfer station in North Long Beach. From there, it is transported by packer truck to local landfills. The remaining tonnage, constituting 75 percent of the LBUSD’s waste, goes to the Southeast Resource Recovery Facility (SERRF) located in the Long Beach Harbor area. The SERRF is a transformation facility that uses refuse-derived fuel for conversion to electricity via incineration and steam generation.

⁶ This total reflects only the waste prevention and recycling efforts that the project team was able to quantify. The LBUSD may participate in efforts other than those noted in this report, however due to lack of specific data or accurate measurement tools; quantification of other efforts was not feasible.

In summary, approximately 11,920,600 pounds of waste are incinerated and 3,974,380 pounds are landfilled annually.

5.3 Recycling

LBUSD currently participates in some cardboard, paper, and scrap metal recycling. These recycling programs are offered primarily at the LBUSD’s administrative and purchasing departments. The paper and cardboard recycling service is provided by Dalton Enterprises, Inc. at no cost to the LBUSD, and metal recycling service is provided at no fee by another private vendor. This program yields over 200,000 pounds of materials annually (see Table 1).

Table 1: Long Beach Unified School District Recycling Programs

Material Type	Pounds Recycled Annually
Paper	47,400
Cardboard	22,000
Scrap metal	132,000
Total	201,400

These figures do not represent the total recycling picture. In addition to these LBUSD-sponsored programs, some school sites operate their own recycling programs. At least three different recycling vendors have collection programs with LBUSD schools.

5.4 Reduce and Reuse

There are a number of reduce and reuse activities in which LBUSD participates (e.g., food redistribution, pallet reuse, double-sided copies, grasscycling). However, only the grasscycling activities were quantifiable. It is estimated that approximately 8,385,300 pounds of grass clippings were diverted from landfill disposal through grasscycling activity.

6.0 Analysis and Recommendations

The waste assessment team observed several effective waste reduction practices in the LBUSD and identified several opportunities for further waste reduction and cost savings. A comprehensive list of opportunities for action, listed by school district functional area, is included in Appendix B. These opportunities have been divided into tiers and summarized in Table 2.

- Tier 1 options are those opportunities that will provide maximum waste reduction and financial benefit to the LBUSD.
- Tier 2 options are those activities that are currently in place and should be formalized or strengthened.

- Tier 3 options are those opportunities that will provide substantial waste reduction benefit, but they may take longer to implement or involve additional cost to implement.

The strategies discussed in this section are the Tier 1 options that the waste assessment team identified as the actions that will provide maximum waste reduction and financial benefit to LBUSD. Implementing these recommendations will generate immediate benefits to the LBUSD.

Table 2: Long Beach Unified School District Summary of Options

Tier One
1.A. Adopt a districtwide waste reduction policy.
1.B. Participate in the city curbside pickup program.
1.C. Adopt a districtwide procurement policy that promotes recycled-content products (RCP) and other environmentally preferable products. Purchase RCP paper in boxes without wrappers. Use materials exchange centers (CalMAX, KidMAX).
1. D. Adopt additional waste reduction strategies. Adopt policy for double-sided copying. Have custodians break down cardboard boxes.
1. E. Formalize and improve the districtwide recycling program. Designate a district recycling coordinator. Establish schedule for cardboard recycling collection. Use plastic bins (in Food Service) for recycling containers. Require recycling of construction and demolition (C&D) waste. Seek packaging and pallet take-back by vendors. Stack polystyrene trays before placing in disposal bins.
1.F. Consider “green building” architecture for new school construction.
Tier Two
2.A. Continue current diversion practices.
2.B. Continue existing waste reduction activities in transportation department.
Tier Three
3.A. Consider use of biodegradable/reusable food trays.
3.B. Require contractors to use rerefined oil.
3.C. Establish composting at schools.
3.D. Consider purchasing a can crusher.
3.E. Study cost of compactors.
3.F. Apply for recycling grants.

Recommendation 1: Adopt districtwide waste reduction policy.

Benefit

With some notable exceptions, most school waste reduction initiatives fail over time because the programs are not “institutionalized” by the adoption of formal policies and operating procedures by the Board of Trustees and the superintendent. Programs initiated by well-meaning teachers, principals, students, and other individuals generally disappear when these motivated individuals graduate, are promoted, or leave the school district.

The most effective way to institutionalize a waste reduction practice is for the Board of Trustees to adopt clear statements of district policy and for the superintendent to adopt operating procedures and to provide training when implementing the Board of Trustees’ policy (see Appendix D for model waste reduction resolution and environmental purchasing policy).

The adoption of a board policy on waste reduction will remind all LBUSD personnel of the importance of integrating waste reduction practices in their daily operations. The development of department procedures—in purchasing, maintenance and operations, food service, etc.—will ensure the continuity of the good practices and encourage workers to think of new ways to reduce waste. Outlining procedures in each department can lead to additional waste reduction and efficiencies. For example, establishing grasscycling as the standard practice throughout the LBUSD may result in decreased use of fertilizer. Double-sided copying will reduce by half the cost of paper used. Bulk purchasing of cleaning products will not only reduce the amount of solid waste (containers) generated, but will also generally result in cost savings.

Education about the waste management program is important because everyone (administrative personnel, teachers, and students) needs to be aware of his or her respective roles in the waste management system. It is particularly important to keep all of the recyclable materials out of the waste that is picked up for hauling to the SERRF. The transportation department reports that its staff and equipment are already operating at capacity, so any reduction in the waste load (by waste prevention, reuse, and recycling) will be beneficial to the operations.

Implementation Steps

1. Adopt school board resolution endorsing and supporting integrated waste management principles of Reduce, Reuse and Recycle.
2. Each LBUSD department (e.g., food service, maintenance, transportation, purchasing) should develop policies or operating procedures that support waste reduction principles and institutionalize the good practices.
3. Department directors and school principals should monitor the amount reused or recycled, cost savings or other measures of success, and periodically report back to the superintendent.

Recommendation 2: Participate in the city curbside pickup program.

Benefit

The City of Long Beach is offering the Long Beach Unified School District a curbside recycling collection program. The city will provide collection bins for mixed paper, cardboard, and beverage containers with CRV (California Redemption Value), and the city will pick up the collection containers on a weekly basis. This collection program will be available to 15 of the LBUSD schools at no cost. LBUSD participation in this pilot program will reduce the waste disposal volume.

Implementation Steps

1. Coordinate the implementation of the curbside pickup program with the City of Long Beach.
2. Plan and implement an educational program to instruct students, teachers, and administrative staff about separating the recyclables from the trash.
3. Monitor the recycling volumes and provide feedback to the schools and to the LBUSD superintendent.

Recommendation 3: Establish a districtwide procurement policy that promotes use of recycled-content products (RCP) and other environmentally preferable products.

Benefit

Three elements can contribute to an optimized procurement policy:

- Using materials exchanges when possible.
- Joining purchasing cooperatives to leverage purchasing.
- Purchasing recycled-content and other environmentally preferable products.

Within the limits of this waste assessment, it was not possible to confirm whether teachers, principals, and administrators were utilizing the resources of material exchange centers to full advantage. Materials exchange centers serve as clearinghouses for new and used material, supplies, and equipment available to institutions free or at low cost. A recent review of the items available through CalMAX revealed plastic buckets, paint, fabric scraps, and trees. Similar kinds of material are available through KidMAX, a materials exchange exclusively for teachers. There are also regional materials exchange centers, including the Los Angeles County Materials Exchange Program (see Appendix C).

Many school districts and other public entities form joint powers authorities (JPA) or join purchasing cooperatives to leverage their collective buying power for supplies, food, and a variety of services. The El Dorado County Office of Education Stockless Purchase Program is an example of a purchasing coop that saves school districts time and money while providing low cost office and school, custodial, computer and athletic RCPs and supplies (see Appendix C).

It appears that the LBUSD does buy some RCPs, products in bulk, and energy saving products, but there is no formal policy for purchasing recycled-content and other environmentally preferable products. The collection of recyclable material is only one part of recycling. In order for a market to exist for recycled material—aluminum, steel, paper, cardboard, etc.—there needs to be a demand for this material by manufacturers. If consumers demand products containing recycled content, then the market for recyclables will be created and maintained. Thus, the purchase of recycled-content products is a crucial element of the recycling process, the closing of the loop between waste and new products.

One convenient way to get started is to participate in the County and the City of Los Angeles' collective Recycled-Content Bond Paper Contract. This contract represents a joint powers agreement between the County and the City of Los Angeles and is extended to school districts within the County of Los Angeles. These two agencies have committed to purchase through this contract, thus bringing the price down through their combined purchasing power. This contract can save the LBUSD money and provides the added convenience of next-day delivery. In fact, in a recent presentation at the School Recycling and Waste Reduction Conference in Alhambra on May 29, 2001, Mr. Paul Alva, the Recycling Coordinator for Los Angeles County, Department of Public Works, indicated that, through this collaborative effort the city saved \$100,000 and the county saved \$45,000 in one year. The contact information for this contract is provided in Appendix C.

Implementation Steps

1. Adopt districtwide policies that require the reuse of materials and the purchase of RCPs and other environmentally preferable products whenever possible (see Appendix D for model policies).
2. Purchase recycled-content paper products through the joint City and County of Los Angeles' Recycled-Content Bond Paper Contract.
3. Distribute information on materials exchanges to purchasing staff, school principals, and teachers.
4. Explore forming or joining purchasing and food service cooperatives or JPAs with other districts in the region.
5. Request bids for items containing recycled content and other environmentally preferable products (see Appendix D).

Recommendation 4: Adopt additional waste reduction strategies.

Double-Sided Copying

There are two key strategies for waste reduction that can be very effective for school operations. The first is to adopt and implement a policy of double-sided copying whenever feasible. Most copy machines have double-sided copying capabilities. Teachers and other LBUSD personnel need to be encouraged to use both sides of the paper. Using both sides of a sheet of paper is a sensible conservation measure. If a ream of paper costs \$2.50, and if both sides of each sheet of paper are used, the cost of that ream of paper has been reduced significantly (to \$.0025 per page rather than \$.005 per page). For every 100 cases of paper, this represents a potential savings of \$1,250.

Bale or Flatten Cardboard Boxes

The second waste reduction strategy involves cardboard boxes. Cardboard boxes are not the products but the containers in which the products are stored for shipping. Whenever possible, the purchasing department should require the vendors to take back packing boxes, thus removing those from the LBUSD's waste stream. Next, LBUSD personnel should be encouraged to reuse boxes. When the cardboard boxes are no longer usable, they should be recycled. The LBUSD already has a cardboard baler at the purchasing/warehouse facility, so much of the cardboard can be sent there for baling and recycling. At the individual school sites, custodians should be asked to flatten the cardboard boxes before placing them into the recycling bins. This practice could save a significant volume of waste in collection bins.

Stacking Food Trays

The LBUSD serves an average of 7,900 meals a day utilizing polystyrene serving trays. The LBUSD transportation director reports that the current capacity of LBUSD collection trucks is at a maximum and a new collection truck and an additional driver will be needed if the LBUSD is to continue its self-haul operations. A recent study in the San Francisco Bay Area demonstrated that stacking trays before placing them in the disposal bins yields significant disposal costs savings.⁷ A simple and effective way to reduce the waste volume demand on the LBUSD's collection system would be to stack the polystyrene trays before placing them in the collection bins. It is estimated that stacking trays can conserve 30,369 cubic yards of bin space per year.

The combined practices of flattening and baling cardboard boxes and stacking food trays would delay, if not avoid, the purchase of a new collection truck and hiring additional staff. This might save the LBUSD as much as \$150,000 in capital cost for the equipment and \$65,000 a year in labor and benefits costs. Moreover, if students stack trays and older students monitor the activity, important resource conservation lessons can be conveyed.

Implementation Steps

1. Establish a formal LBUSD policy requiring double-sided copying (see Appendix D).
2. Check all copiers and printers to ensure that they are capable of double-sided copying. Reset all copiers and printers to automatically make double-sided copies.
3. Create incentives for teachers and staff to use double-sided copying. For example, if teachers or departments are "charged" by the number of sheets used, a system of discounting or credit could be awarded for double-side copying.
4. Administrators and teachers should assess the way in which books, supplies and other materials are delivered to the school site, and, as appropriate, they should request that suppliers reduce excessive packaging or take back the packaging.
5. The LBUSD procurement officer should seek packaging and pallet take-back from its suppliers.

⁷ ESA Environmental Science Associates, *Analysis of Cafeteria Waste and Recycling Options for the Ravenswood Elementary School District*, for the South Bayside Solid Waste Authority, April 20, 2000.

6. Custodians and other maintenance personnel should be reminded that cardboard is recyclable and be instructed to flatten cardboard boxes before placing them into recycling bins.
7. Polystyrene serving trays should be stacked before being placed in disposal bins.

Recommendation 5: Formalize and improve the districtwide recycling program.

Benefit

Other than cardboard and paper recycling collection at the administrative office facilities, there are no formalized and systematic recycling collection programs at the 87 school sites throughout the LBUSD. Currently, the LBUSD recycles 69,000 pounds (35 tons) a year of cardboard and paper; however, based on the waste profile data (Figure 1 and Appendix F), the LBUSD generates approximately 5 million pounds (2,500 tons) of cardboard and mixed paper (including computer paper, ledger paper, newspaper, and magazines) per year. The cost per ton for disposal is \$38. The disposal cost savings of capturing and diverting the remaining 2,465 tons of paper and cardboard from the waste stream would be approximately \$94,000 per year.

Another 160,000 pounds (80 tons) per year of beverage containers could be collected for recycling. It is likely that in several schools beverage container recycling is currently being accomplished by student organizations. This practice should be encouraged and supported by the LBUSD. At the same time, it is important that the programs are coordinated; in areas where curbside pickup is not available, recycling vendors may want to be assured of certain volumes of recyclables before they will agree to provide collection services. The revenue from the California Redemption Value (CRV) on the beverage containers should be adequate incentive for student organizations or schools to maintain recycling programs.

Implementation Steps

1. Adopt a districtwide policy that promotes and supports recycling of paper, cardboard, beverage containers, plastics, and metal (see Appendix D).
2. Implement recycling programs in schools where none currently exist.
3. Support existing school site recycling programs by providing them with containers, signs, and other promotional materials.
4. Work with local government recycling coordinators to obtain assistance with local recycling vendors.
5. Use city recycling services whenever possible (e.g., City of Long Beach curbside pickup program).
6. Appoint an LBUSD recycling coordinator who can oversee the implementation of the program, working with the teachers in developing the education and outreach program, and working with LBUSD departments to see that computer equipment, furniture, and other equipment are also recycled properly.

7. In construction and renovation contracts, specify the reuse and recycling of demolition debris; consult local solid waste management and recycling officials and local waste haulers to develop the most resource-efficient approach.
8. Monitor the recycling program and report to the superintendent and school board on system performance and cost savings.

Recommendation 6: Consider “green building” architecture for new school construction.

Benefit

Over the next three years, LBUSD plans to build several new schools. There are several ways green building design principles can be used to increase student performance, increase the use of recycled-content products, reduce green waste with proper landscaping plans, and reduce energy costs.

Implementation Steps

1. Adopt a districtwide policy for green building design.
2. Select architects and contractors knowledgeable and experienced in green building design for new school construction projects.

Appendix A [LBUSD]: LBUSD Waste Assessment Team

This listing includes the State and consultant staff working on this project as well as the local jurisdiction and Long Beach Unified School District staff providing information for this project.

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David Lawson	Fleet Maintenance Manager	(562) 997-8000, x 1535	NA
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Appendix B [LBUSD]: Waste Reduction Practices and Opportunities

This appendix includes the findings of the waste assessment team: observations on current waste management practices and suggested opportunities for waste reduction. The opportunities are grouped by functional areas within the LBUSD.

- Administration
- Maintenance
- Operations
- Food Service
- Transportation
- Procurement
- School Sites

Administration

Current Practices	Opportunities for Waste Reduction
There are no existing waste reduction policy or procedures.	Establish a districtwide waste reduction policy to institutionalize existing and new programs.
The transportation branch collects waste from all school sites and facilities. The transportation branch is very close to reaching waste hauling capacity with its existing fleet of two waste hauling trucks.	<ul style="list-style-type: none"> • Continue this practice of self-hauling. • Consider participating with the City of Long Beach in the city's curbside collection program. Collection of recyclable materials at school sites by the city could reduce the amount of waste hauling currently provided by LBUSD hauling services. The city has agreed to pilot this service for schools located in the City of Long Beach. • Consider placing compactors at high school locations. This would cut down on the frequency of pickup at these locations and increase the service capacity for other school sites serviced by the LBUSD's hauling vehicles. Space and noise issues would also be improved (10 or more three-cubic-yard bins are currently serviced at each high school).
Currently no recycling collection programs are administered through the transportation branch.	Establish a districtwide recycling collection program.

Maintenance

Current Practices	Opportunities for Waste Reduction
<p>The grounds crew utilizes mulching mowers and practices grasscycling (leaving clippings on the lawn).</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program.
<p>Chippers and grinders are utilized for small brush trimming projects and mulched materials are placed in vegetation beds.</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program.
<p>Tree trimming loads are kept free of contamination and taken to Bel-Art Transfer Station. The LBUSD pays a reduced tipping fee for clean loads of green waste. The clean green waste is taken to local landfills and used for daily cover.</p>	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
<p>Beverage containers are picked from receptacles by maintenance staff in an informal recycling effort.</p>	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
<p>The LBUSD and the City of Long Beach are participating in a pilot effort to institute the city's curbside collection program at LBUSD school sites. The program will accept cardboard boxes that are broken down and placed in 90-gallon recycling containers.</p>	<ul style="list-style-type: none"> • While LBUSD maintenance staff is currently requested to break down boxes to reduce the space they consume in waste bins, this practice will need to be carried over to the 90-gallon recycling containers. • Consider participating in the purchasing branch's program to backhaul cardboard from school sites.

Operations

Current Practices	Opportunities for Waste Reduction
<p>Recycled paper from offices is collected in a 3-cubic-yard bin serviced by a private vendor.</p>	<ul style="list-style-type: none"> • Continue paper recycling. • Consider participating with the City of Long Beach in the city’s curbside collection program. Collection of recyclable materials at school sites by the city could reduce the amount of waste hauling currently provided by LBUSD hauling services. The city has agreed to pilot this service for schools located in the City of Long Beach. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
<p>A 40-cubic yard roll-off bin is kept at the site for recycling metals.</p>	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
<p>Space is maintained at the operations yard to store salvaged wood, concrete, sand, piping and other materials. These materials are reused at other sites when needed.</p>	<ul style="list-style-type: none"> • Continue this reuse practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures to formalize this program.

Food Service

Current Practices	Opportunities for Waste Reduction
<p>In the elementary schools, the single-use polystyrene trays are scraped off before being placed in the trashcans. They are also stacked, cutting down on the volume of waste discarded.</p>	<ul style="list-style-type: none"> • Continue volume-reduction strategy (e.g., stacking) • Consider the purchase of biodegradable single-use trays for composting or, when space permits, the use of reusable/washable trays. • Establish a districtwide waste reduction policy and include such volume-reduction activity in the corresponding procedures to formalize this program.
<p>The LBUSD's Food Services Branch donates surplus food to local food banks whenever possible.</p>	<ul style="list-style-type: none"> • Continue this reuse practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures to formalize this program.
<p>The LBUSD utilizes the "Offer vs. Serve" program, which cuts down on wasted food.</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program.
<p>In the elementary schools, food waste and leftover milk is kept separate from plastic and paper waste.</p>	<ul style="list-style-type: none"> • Continue this practice.
<p>Food scraps and milk are put in garbage disposals thus cutting down on the volume of garbage.</p>	<ul style="list-style-type: none"> • Continue volume-reduction strategy.
<p>Cardboard generated at the food services branch is collected in a 40-foot roll-off bin located in the dock area of the facility. The boxes used to transport food to the schools are not backhauled in the same truck because it is considered "waste" and therefore cannot be transported in the same vehicles as food.</p>	<ul style="list-style-type: none"> • Consider setting up a comprehensive cardboard recycling program for the schools. • Some cardboard recycling is currently done (custodians sending boxes back to the warehouse when supplies are delivered). This recycling practice should be expanded; some training may be necessary. • The issue of backhauling used cardboard boxes to the food services branch should be investigated further (i.e., it is not clear that the boxes are "waste"). • Participate in the pilot effort to institute the city's curbside collection program at LBUSD school sites. The program will accept cardboard boxes that are broken down and placed in 90-gallon recycling containers.

Current Practices	Opportunities for Waste Reduction
<p>Based on production sheets from food services, approximately 83 tons of cans are used at the schools and at the central kitchen, and the cans are not currently recycled.</p>	<ul style="list-style-type: none"> • Consider purchasing a steel can crusher or the utilization of the vertical hydraulic baler to crush and bale clean cans. • This may not be required at school sites if the city's curbside can successfully be introduced. Steel cans may be placed in the 90-gallon recycling containers.
<p>Numerous three-gallon and some five-gallon PETE plastic containers are utilized. Most are discarded. Some had been cleaned and were in use as paper recycling containers in the food and nutrition service offices.</p>	<p>Continue the practice of cleaning and reusing the plastic containers. As recycling programs are established throughout the LBUSD, these containers can serve as recyclable collection bins.</p>
<p>Recycled paper is collected from offices located at the food services branch.</p>	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.

Transportation

Current Practices	Opportunities for Waste Reduction
Fleet Maintenance performs 50 percent of the LBUSD's oil changes and uses approximately 1500 gallons of re-refined oil per year. The LBUSD spent approximately \$9,500 to purchase re-refined oil for use in the LBUSD vehicles.	<ul style="list-style-type: none"> • Continue this buy-recycled activity • Establish a districtwide policy to procure re-refined motor oil • Specify that re-refined oil also be used when oil changes are contracted out.
Waste oil is collected and recycled by Asbury Oil.	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
Oil filters are disposed of as hazardous waste.	Investigate the possibility of recycling used oil filters.
Large metal parts such as rotors are taken to Purchasing and put in the metal recycling bins.	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
Fluids are purchased in bulk.	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program.
Used tires are returned to the tire supplier.	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
Fleet maintenance staff recycles beverage containers left in buses.	<ul style="list-style-type: none"> • Continue this recycling practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
The transportation branch uses shop rags made from remnant cloth. These products were purchased without additional cost in comparison to non-recycled products.	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.

Procurement

Current Practices	Opportunities for Waste Reduction
<p>There is no formal policy for purchasing recycled-content products (RCPs), but the LBUSD does buy some RCPs, buys products in bulk, and buys energy-saving products.</p>	<ul style="list-style-type: none"> • Consider adopting a district policy stipulating a preference for RCPs and other environmentally preferable products and ask suppliers for recycled products. • Consider purchasing recycled-content paper and purchasing paper in boxes without ream wrappers, thus further reducing waste. • Consider joining purchasing cooperatives to access better prices on recycled-content paper products (e.g., City and County of Los Angeles Recycled Bond Paper Contract).
<p>Used and surplus items such as furniture, computers, musical instruments, office equipment, and supplies are kept in a reuse area where teachers and other staff can "shop" and tag items to be delivered to their classrooms or schools. Surplus items that are not tagged are auctioned off to a company that sells or distributes these items.</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program. • Consider using materials exchange centers (CalMAX, KidMAX, LACoMAX) for donating, exchanging or obtaining goods and equipment.
<p>The purchasing branch has contracted for a private vendor to provide three-cubic-yard bins for mixed paper recycling at several of the LBUSD's major service centers.</p>	<ul style="list-style-type: none"> • Continue this recycling activity. • A pilot curbside collection program is being implemented by the City of Long Beach and is being made available to a number of LBUSD schools. As the pilot curbside program is introduced into schools, provide office paper collection bins in classrooms and school offices. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
<p>Cardboard generated from the warehouse and some that is backhauled from school supply deliveries is baled for recycling at the purchasing branch facility.</p>	<ul style="list-style-type: none"> • Continue this recycling activity • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program. • Consider strategies to increase the backhauling of cardboard from school sites to the warehouse for baling and recycling. • Develop a record-keeping procedure to track cardboard recycling tonnage.

Current Practices	Opportunities for Waste Reduction
<p>While there is no policy for double-sided copies, print shop employees estimate that 60 to 70 percent of all duplication from the print shop is double-sided.</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures to formalize this program.
<p>Pallets are regularly reused.</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program. • Establish a districtwide policy to formalize this program.
<p>Laser and ink jet cartridges are disposed of rather than recycled.</p>	<ul style="list-style-type: none"> • Provide for the recycling of laser and ink jet cartridges. • Investigate returning such cartridges to the vendor for recycling.

Facilities

Current Practices	Opportunities for Waste Reduction
<p>The facilities branch plans for the renovation of existing school sites and construction of new schools. Ten new schools are planned for construction in the next 10 years.</p>	<ul style="list-style-type: none"> • When working with construction and demolition (C&D) contractors, consider including contract language that requires the contractor to recycle C&D materials, including concrete, asphalt, and metals. • Look for opportunities to utilize RCPs and other environmentally preferable products in construction. • Consider adopting green building principles in renovation projects and in the design of new facilities.

School Sites

Current Practices	Opportunities for Waste Reduction
<p>The grounds crew utilizes mulching mowers and practices grasscycling (leaving clippings on the lawn).</p>	<ul style="list-style-type: none"> • Continue this waste prevention practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures to formalize this program.
<p>There is not a recycling program in place at each of the school sites.</p>	<ul style="list-style-type: none"> • Consider participating with the City of Long Beach in the city's curbside collection program. Collection of recyclable materials at school sites by the city could reduce the amount of waste hauling currently provided by LBUSD hauling services. The city has agreed to pilot this service for schools located in the City of Long Beach. • Establish a districtwide recycling collection program.

Appendix C [LBUSD]: Resources

This resource listing is designed to offer the school district contact information for local recycling contacts, CIWMB contacts, local vendors, and other resources. It is not a comprehensive directory, nor does a vendor listing imply a recommendation.

Local Jurisdiction Solid Waste and Recycling Contacts

City of Long Beach

James Kuhl

Phone: (562) 570-2850

E-Mail: jakuhl@ci.long-beach.ca.us

Information regarding recycling activities in the City of Long Beach.

City of Lakewood

Thomas Coates

Phone: (562) 866-9771

Information regarding recycling activities in the City of Lakewood.

California Integrated Waste Management Board (CIWMB) Contacts

Office of Local Assistance

Steve Uselton

Phone: (213) 576-5704

E-Mail: suselton@ciwmb.ca.gov

General information on waste reduction throughout California. Assistance in setting up a waste prevention/recycling program.

Office of Integrated Education

Valorie Shatynski

Phone: (714) 449-7077

E-Mail: vshatyns@ciwmb.ca.gov

Information on CIWMB's free workshops to California teachers on three classroom curricula (*Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* [CIWMB pub. #322-99-009]; *Earth Resources--A Case Study: Oil* [CIWMB pub. #333-98-010]; and *Exploring Environmental Issues: Municipal Solid Waste*, published by Project Learning Tree) and an activity guide (*The Worm Guide: A Vermicomposting Guide for Teachers* [CIWMB pub. #560-01-007]).

Local Vendors

City Hauler

James Kuhl

Phone: (562) 570-2850

E-Mail: jakuhl@ci.long-beach.ca.us

Information regarding waste paper recycling in the City of Long Beach.

Conservation Corps of Long Beach

340 Nieto Avenue
Long Beach, CA 90814
(562) 986-1249

The corps initiates innovative recycling programs through partnerships forged with a variety of schools, public agencies, and local organizations. These partnerships complement existing services, further State and county waste studies, and help establish conservation goals.

Corps members provide volunteer services and assist in reducing waste going to landfills. They educate the public about recycling (why, how, and where), they improve the environment, and they beautify and promote safe communities.

Earth's 911

www.cleanup.org/

Provides information pertaining to the following categories:

- Local recycling information.
- Household hazardous waste collections.
- Composting.
- State and local information.
- Environmental events.

Materials Exchange Centers

Los Angeles County Materials Exchange Program (LaCoMAX)

Jennifer Nguyen
Phone: (626) 458-3580
E-Mail: JENGUYEN@dpw.co.la.ca.us
www.lacomax.com

LACoMAX is a free service designed to help residents, businesses, institutions, and organizations in Los Angeles County find markets for their industrial by-products, surplus materials, and other discards.

CalMAX

Phone: 1-877-520-9703, toll-free
www.ciwmb.ca.gov/CalMAX/

CIWMB's material exchange (free service) designed to help businesses find markets for materials they have traditionally discarded; school districts can find supplies and materials for free or low cost.

KidMAX

Phone: 1-877-520-9703, toll-free

www.ciwmb.ca.gov/CalMAX/KidMax.htm

Information regarding the CIWMB's free source of used materials to California's schools.

Purchasing Cooperatives**Recycled Bond Paper Contract, City/County of Los Angeles**

Paul Alva, Recycling Coordinator

Dept. of Public Works

900 South Fremont Street

Alhambra, CA 91803

Phone: (626) 458-3573

Recycled Products Purchasing Cooperative (RPPC)

Phone: 1-800-694-8355

www.recycledproducts.org

RPPC is a nonprofit organization dedicated to increasing the use of recycled-content paper. Membership is free and products include white and colored copy paper; they use their purchasing power to meet or beat price for virgin material copy paper. With 90 warehouses throughout California, they serve private and public agencies. Their customers include Pomona Unified School District, Pajaro School District, JFK University, University of California San Diego, and University of California Santa Barbara.

Stockless Purchase Program

Contact: Sue Allen

Phone: (530) 622-7130, ext. 240

E-Mail: sueallen@edcoe.k12.ca.us

The El Dorado Department of Education runs this purchasing cooperative for any school district in Northern California. Any school district can join, for a membership fee of \$100 a year. The co-op offers school supplies, custodial supplies, and computer supplies at highly competitive prices. Over 80 school districts are members. Membership is open statewide.

Spicers Paper, Inc.

12310 E. Slauson Ave.

Santa Fe Springs, CA 90670

Contact: Robert B. Krost, Jr.

Phone: (562) 698-1199, ext. 514

A public agency purchasing cooperative for paper sponsored by Los Angeles County Public Works.

Appendix D [LBUSD]: Model Board of Education Waste Reduction Resolution and Environmental Purchasing Policy

Contained in Appendix F of this document.

Appendix E [LBUSD]: Sample Letter to Vendors

Contained in Appendix G of this document.

Appendix F [LBUSD]: Glossary

Contained in Appendix K of this document.

Appendix F [LBUSD]: Disposal Characterization Table

Material Type	Estimated Percent	Estimated FY 99-00 Tons
Leaves and Grass	23.0	1828
Food	20.3	1613
Remainder/Composite Paper	10.4	826
Other Miscellaneous Paper	6.0	477
Prunings and Trimmings	4.3	342
Film Plastic	4.0	318
White Ledger	3.6	286
Remainder/Composite Organic	3.4	270
Uncoated Corrugated Cardboard	2.9	230
Durable Plastic Items	2.4	191
Other Office Paper	2.2	175
Other Ferrous	1.8	143
Computer Paper	1.5	119
Miscellaneous Plastic Containers	1.4	111
Newspaper	1.3	103
Tin/Steel Cans	1.2	95
Remainder/Composite Metal	1.2	95
Magazines and Catalogs	1.0	79
Clear Glass Bottles and Containers	1.0	79
Paper Bags	1.0	79
Remainder/Composite Plastic	1.0	79
Bulky Items	0.9	72
PETE Containers	0.8	64
Color Ledger	0.8	64
Major Appliances	0.4	32
HDPE Containers	0.3	24
Mixed Residue	0.3	24
Brown Glass Bottles and Containers	0.3	24
Lumber	0.3	24
Other Non-Ferrous	0.3	24
Textiles	0.2	16
Aluminum Cans	0.2	16
<u>Phone Books and Directory</u>	<u>0.2</u>	<u>16</u>
Total Tons Disposal		7947

Waste Assessment Report: Placer Union High School District

1.0 Executive Summary

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts can play an important role in their communities in achieving this mandate.

The Placer Union High School District (PUHSD) is located in Placer County, California. The PUHSD consists of three high schools, a continuing education/alternative school, and one adolescent day treatment center. In addition to the school sites, the PUHSD operations include administration, maintenance and operations, and three centralized food service facilities. Transportation services for the PUHSD are contracted out through a joint powers authority.

The California Integrated Waste Management Board (CIWMB) staff conducted a waste assessment of the PUHSD operations to identify current waste management practices and recommend cost-effective waste management strategies the PUHSD can implement to reduce its solid waste generation and potentially save money. This report is based on information gathered from interviews and a walk-through of PUHSD facilities conducted on November 28–29, 2000.

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the manner materials are purchased, used, and discarded. There are several components to implementing this philosophy:

- Reduce—Waste Prevention
- Reuse
- Recycling
- Procurement Practices
- Composting/Vermicomposting
- Construction and Demolition Debris and “Green” Building Design

1.1 District Waste Information

- PUHSD generates approximately 2,392,832 pounds of waste per year.¹

¹ CIWMB, Waste Analysis Branch, 1999 Statewide Waste Disposal Characterization Study, Volume to weight conversion rate is 107 lbs. per cubic yard for disposal and 100 lbs. per cubic yard for recyclables. Disposal estimate was provided by Mr. John Rowe.

- Of this amount, it is estimated that 1,033,500 pounds are recycled and the remaining 1,359,332 pounds are compacted and disposed of in a regional sanitary landfill.²
- The 1,359,332 pounds of waste that are disposed of consist mostly of paper waste (20.5 percent), followed by food waste (20.3 percent), aluminum, glass, plastic, and tin (13.7 percent) and other materials.³
- Annual disposal costs are approximately \$53,000.

1.2 Summary of Key Recommendations

A complete review of the PUHSD’s current waste management practices and opportunities for waste reduction and savings is contained in Appendix B.

The PUHSD has accomplished significant diversion of solid waste. Based on the waste assessment results and to ensure the continued success of the existing waste reduction programs, it is suggested that the PUHSD implement the following recommendations.

- **Recommendation 1:** Adopt districtwide waste reduction and procurement policies that promote the use of recycled-content products (RCP) and other environmentally preferable products.
- **Recommendation 2:** Formalize a districtwide recycling program.
- **Recommendation 3:** Consider “green building” architecture for new school construction.

2.0 Introduction

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts are important to the achievement of this mandate for several reasons:

- It is estimated that school districts contribute approximately 764,000 tons to the total volume of solid waste in California.⁴
- In some medium-sized and smaller communities, schools contribute as much as 15 percent of the waste generated in the community.⁵
- Visible and active waste prevention and recycling programs in schools provide excellent role models that support environmental curricula in the classroom.

² This total reflects only the waste prevention and recycling efforts that the project team was able to quantify. The PUHSD participates in other such efforts, but due to lack of specific data or accurate measurement tools, quantification of other efforts was not feasible.

³ CIWMB statewide waste characterization data from www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

⁴ CIWMB, *Statewide Waste Characterization Study, Results and Final Report*, CIWMB pub. #340-00-009, December 1999, p.36.

⁵ CIWMB, op.cit. <http://www.ciwmb.ca.gov/WasteChar/JurisSel.asp>

- To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into adulthood.
- School districts are an integral part of every community and are important participants in civic leadership.
- The majority of the state’s population is involved with schools in some way—as students, parents, professionals, or volunteers. Schools serve as positive role models for environmental stewardship.

Staff of the CIWMB's Office of Local Assistance (OLA) and a consulting firm conducted a waste assessment of the PUHSD operations. Interviews of PUHSD personnel and a guided walk-through of the PUHSD facilities were conducted November 28–29, 2000. Staff of the County of Placer and the Western Placer County Waste Management authority also participated in the assessment. The objective of the assessment was to identify current waste management practices and recommend cost-effective strategies the PUHSD can implement to reduce the generation of solid waste and potentially save money. The results of the waste assessment are discussed in this report.

This report consists of six sections:

- 1.0 Executive Summary
- 2.0 Introduction
- 3.0 School District Information
- 4.0 Reduce, Reuse, Recycle
- 5.0 Waste Assessment Findings
- 6.0 Analysis and Recommendations

3.0 School District Information

The PUHSD, located in Placer County, California, serves the cities of Auburn, Colfax, and Loomis and a portion of the unincorporated county. The PUHSD consists of three high schools, a continuing education/alternative school, and one adolescent day treatment center. Approximately 402 certificated and classified staff serve the PUHSD’s 4,687 high school students.⁶ In addition to the school facilities, the PUHSD’s operations include an administrative office, maintenance and operations, and three centralized food service facilities. Transportation services for the PUHSD are contracted out through a joint powers authority. Over the next three years, PUHSD plans to complete approximately 154,000 square feet of new school construction and 50,000 square feet of modernization /remodeling.

4.0 Reduce, Reuse, Recycle

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the way materials are purchased, used and discarded.

⁶ California Department of Education at <http://www.d-data.k12.ca.us/>

This section summarizes how this approach applies to the waste management system within a typical school district.

4.1 Reduce—Waste Prevention

Very often, managers look to recycling first when pursuing waste reduction. Recycling can divert large volumes of material from the waste stream and reduce disposal costs. However, preventing waste from occurring (also called source reduction) is an even more important part of a waste management program, reducing both waste and cost.

Everything that goes into the trash bin is something that was purchased. Throwing the item in the trash bin adds the cost of disposal to the original price of the item. Whatever can be diverted from the trash bin by waste prevention, reuse or recycling will result in disposal cost savings.

Waste prevention strategies include:

- Copying on both sides of a sheet of paper (double-sided copying).
- Ordering bulk supplies to reduce excess packaging.
- Grasscycling.
- Xeriscaping.

4.2 Reuse

Reusing materials can save money and contribute to resource conservation. Material exchange centers serve as clearinghouses for new and used material, supplies and equipment. These materials are available at little or no cost to institutions such as school districts.

Reuse strategies include:

- Using reusable rather than disposable food serving trays and eating utensils.
- Reusing packing boxes or sending them back to the vendor/manufacturer.
- Donating excess and leftover food to food banks and food rescue programs;.
- Donating used items to local charities or other nonprofit organizations.
- Participating in local and global book exchanges.
- Securing or exchanging materials through material exchange centers such as KidMAX and CalMAX.
- Utilizing federal, State, and local surplus programs.

4.3 Recycling

A recycling program is more than collecting beverage containers such as aluminum cans, glass, and some plastic containers. White paper, mixed paper, newspaper, corrugated cardboard, tin cans, and scrap metal all have recycle value as well. Every municipality and region has a different waste management infrastructure, so it is important for school districts to work closely with the local jurisdiction solid waste management and recycling coordinator and waste haulers to maximize opportunities to recover recyclables from the waste stream.

There are five essential elements to a good recycling program:

- A written district-wide waste reduction policy.
- Guidelines, education and training for students, teachers, administrators, custodians, and staff within each district department.
- Review and negotiation of recycling and disposal contracts, taking into account the variety of materials, collection schedules, cost/revenue, training, education, resources (e.g., storage containers), and degree of contaminants, etc.
- A reliable collection system consisting of a sufficient number of strategically placed, well-labeled collection containers.
- Monitoring and evaluation of program compliance and performance.

4.4 Procurement Practices

Collecting recyclable material and reusing material are only part of the resource conservation process. For recycling to work in the marketplace, it is equally important to “close the loop” by purchasing products that contain postconsumer recycled-content material. Consumer demand for goods manufactured with recycled content will ensure a market for the materials collected in recycling programs.

School districts can increase demand for recycled content products, lower costs of materials, and increase purchasing power by participating in purchasing cooperatives. Many school districts already participate in purchasing cooperatives, purchasing a variety of products and services from insurance to school supplies and food. Cooperatives increase the purchasing power of a single district. By participating in cooperatives, school districts can expect to negotiate prices that are more competitive, reduce packaging, and secure a greater supply and variety of recycled content products.

4.5 Composting/Vermicomposting

Organic waste includes “green waste” (e.g., grass clippings and tree and shrub clippings) and food waste. Using the Reduce, Reuse and Recycle approach, a school district should first consider ways of reducing organic waste by examining the sources. To reduce green waste, for example, a district should select landscaping

plants that do not require frequent trimming (xeriscaping) and leave grass clippings in place (grasscycling) whenever possible. Vermicomposting of food scraps on school sites is an excellent student educational activity. Additionally, leftover food should be reused or donated whenever feasible. Finally, organic waste can be collected separately and composted either off- or on-site. Many municipalities recycle green waste by using it as mulch and compost for landscaping in city parks and median strips and for community beautification projects.

4.6 Construction and Demolition Debris and “Green” Building Design

School districts throughout California are engaged in major school renovations and new school building projects. These projects present excellent opportunities to divert construction and demolition debris (C&D) into other uses. Concrete and asphalt waste can be used as road base; wood materials can be reused or used as raw material for the manufacture of particleboard or mulch or as a bulking agent in the composting process. Additionally, reinforcement bar (re-bar), dry wall, carpet, and asphalt roofing shingles can be recycled.

Specifying the reuse and recycling of demolition debris in construction contracts can accomplish the diversion of C&D waste. Districts should partner with the local solid waste management and recycling coordinator and local waste haulers for assistance in developing the most resource-efficient approach.

For school districts engaged in new construction, there are several ways green building design principles can be used to increase student performance, increase the use of recycled content products, reduce green waste with proper landscaping plans, and reduce energy costs. Architects and contractors knowledgeable and experienced in green building design should be selected for new school construction projects.

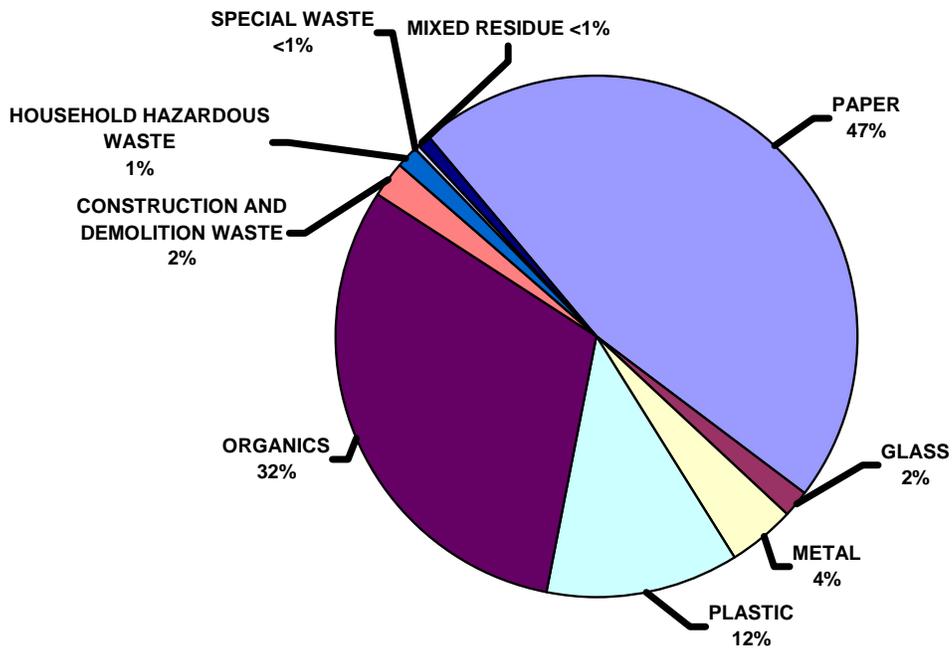
5.0 Waste Assessment Findings

5.1 Waste Generation

The total amount of waste generated equals the amount of material disposed of plus the amount of material diverted from disposal (e.g., reduced, reused, and recycled). Based on this formula, the PUHSD generates approximately 2,392,832 pounds of material annually. Of this amount, the PUHSD disposes of approximately 1,359,332 pounds and recycles 1,033,500 pounds.

Figure 1 illustrates the estimated composition of the PUHSD's solid waste stream. These data, combined with information collected from the waste assessment walk-through, enabled the waste assessment team to identify the largest components of the PUHSD waste stream to target for potential waste reduction program development.

Figure 1
Estimated Waste Composition for Placer Union High School District



5.2 Disposal

Auburn Placer Disposal Company provides the PUHSD with refuse collection and disposal service. This service includes on-call collection (approximately every two weeks) and disposal of refuse from the three 18-cubic yard trash compactors (with a 7-to-1 compaction ratio) at each of the PUHSD's high schools. This service costs the PUHSD approximately \$53,000 annually. The PUHSD owns the three trash compactors. The hauler charges the PUHSD a fee for each collection plus the tipping fee at the landfill or transfer station based on the refuse weight. Additionally, the PUHSD administrative offices and adult/continuing education facilities have standard 3-cubic-yard refuse bins. The three compactors, however, represent over 85 percent of the PUHSD's total solid waste disposal capacity.

It is important to note that although the area is serviced by a materials recovery facility (MRF) equipped to separate out the recyclable portions of the waste (i.e., "dirty MRF"), most of the PUHSD's waste is landfilled directly rather than sorted for recovery at the MRF. This is due to contamination from food service waste commingled with other trash in the compactors. It is unclear whether better source separation can remedy this, thus improving the diversion rate; however, it may be an area to be explored by the PUHSD.

5.3 Recycling

The PUHSD currently participates in source-separated cardboard and paper recycling programs, the materials of which are processed at the local MRF. Specifically, the PUHSD has cardboard recycling bins at all the high school sites that are used by PUHSD personnel. The high school site visited for this assessment has mixed-paper recycling bins in all the classrooms and offices. Materials from these bins are gathered by the students and deposited in a central recycling bin for collection. The hauler provides these recycling bins and programs for no additional cost. In addition to these recycling services, the hauler provides free consultation to school districts for recycling, and the Western Placer Waste Management Authority offers student and staff tours of the MRF.

Newspaper recycling occurs at two of the three high schools. These newspaper collection efforts serve the surrounding community in addition to these specific school sites. The California Conservation Corp picks up beverage container recycling bins in the cafeterias of each high school; however, the waste assessment team observed some beverage containers in the regular trash bins.

5.4 Reduce and Reuse

There are a number of reduce and reuse activities in which PUHSD participates (e.g., electronic purchasing and communications, grasscycling); however, only the grasscycling activities were quantifiable. Approximately 762,300 pounds of grass clippings are diverted from landfill disposal annually.

6.0 Analysis and Recommendations

The waste assessment team observed many effective waste reduction practices in the PUHSD and identified several opportunities for further waste reduction and cost savings. A comprehensive list of opportunities for action, listed by school district functional area, is included in Appendix B. These opportunities have been divided into tiers and summarized in Table 1.

- Tier 1 options are those opportunities that will provide maximum waste reduction and financial benefit to the PUHSD.
- Tier 2 options are those activities that are currently in place and should be formalized or strengthened.
- Tier 3 options are those opportunities that will provide substantial waste reduction benefit, but they may take longer to implement or involve additional cost to implement.

Table 1: Placer Union High School District Summary of Options

Tier One	
1.A.	Adopt a districtwide waste reduction policy and procurement policies that promote the use of recycled-content products and other environmentally preferable products.
1-B.	Establish and formalize a districtwide recycling program. Formalize districtwide white paper recycling. Develop recycling promotional campaign (including cardboard recycling information). Make the recycling bins more accessible. Increase beverage container recycling. Reuse plastic buckets. Require less packaging; buy in bulk.
1.C.	Adopt green building policy.
Tier Two	
2.A.	Continue Offer vs. Serve in cafeterias.
2.B.	Continue selling scrap metal .
2.C.	Continue use of reusable products. Continue and expand use of reusable filters. Continue using washable rags and hand towels.
2.D.	Continue and formalize green waste management program. Continue to spread green waste in "back 40." Continue sending trimmings to MRF. Continue use of sawdust for pottery kilns. Take wood shop waste to MRF.
2.E.	Recycle products containing hazardous materials. Set policy for recycling of toner cartridges. Recycle fluorescent light bulbs.
Tier Three	
3.A.	Expand use of electronic files, e-mails, electronic purchasing.

Recommendation 1: Adopt districtwide waste reduction and procurement policies that promote the use of recycled-content products (RCP) and other environmentally preferable products.

PUHSD should be commended for the practices and programs already in place. Some of the more notable good practices include grasscycling, purchase of recycled-content products (RCP), bulk purchasing, Offer vs. Serve food service, and mixed paper and cardboard recycling. Many of these practices were initiated by managers and conscientious individuals that took the initiative in reducing waste and cost.

With some notable exceptions, many school waste reduction initiatives fail over time because the programs are not “institutionalized” by the adoption of formal policies and operating procedures by the Board of Trustees and the superintendent. Programs initiated by well-meaning teachers, principals, students, and other individuals generally disappear when these motivated individuals graduate, are promoted, or leave the district.

The most effective way to institutionalize waste reduction practices is for the Board of Trustees to adopt clear statements of PUHSD policy and for the superintendent to adopt operating procedures and provide training when implementing the Board of Trustees' policy (see Appendix D for model waste reduction resolution and environmental purchasing policy).

Benefit

The adoption of a Board policy for waste reduction will remind all the PUHSD personnel of the importance of integrating waste reduction practices in their daily operations. The development of department procedures—in purchasing, maintenance and operations, food service, etc.—will ensure the continuity of the good practices and encourage workers to think of new ways to reduce waste.

Implementation Steps

1. Adopt board resolution endorsing and supporting integrated waste management principles of Reduce, Reuse, and Recycle (See Appendix D).
2. Ask each PUHSD department (e.g., food service, maintenance, transportation, purchasing) to develop policies and operating procedures that support waste reduction principles and institutionalize the waste reduction practices.
3. Ask the purchasing department to formalize its preference for recycled-content and other environmentally preferable products with the El Dorado Stockless Purchasing Cooperative.
4. Ask each department director to monitor the amount that is reused or recycled, cost savings, or other measures of success, and to provide periodic reports to the superintendent.

Recommendation 2: Formalize a Districtwide Recycling Program

Benefit

PUHSD currently diverts an estimated 43 percent of its solid waste from landfills. This is very commendable. As discussed in the previous section, formalizing policies and procedures will ensure the continued success of these programs. In addition, there remain some opportunities for an increased level of waste reduction.

- At one of the high schools, the waste assessment team noted that the 3-yard collection bin was located at a fairly remote part of the school campus. Adding more bins at convenient locations will stimulate more recycling.
- It appeared that some beverage container recycling was taking place in some of the high schools; however, how comprehensive and systematic these programs were was not clear. In addition to recyclable material value, these containers have a California Redemption Value (CRV). Either the PUHSD or a student organization could benefit from the revenue generated by beverage container recycling.
- The waste assessment team observed some recyclables in trash bins. It may be advisable to conduct a recycling promotional campaign to remind both students and PUHSD personnel about the importance of recycling.
- Computer equipment, furniture, and other equipment should be sold, donated, or recycled.

Implementation Steps

1. Formalize the recycling program by adopting PUHSD policy and operating procedures for recyclable collection and monitoring; include delineation of responsibilities (see Appendix D).
2. Appoint a districtwide recycling coordinator to ensure the consistency of programs in each school.
3. Conduct an educational and promotional campaign to remind students and PUHSD personnel about what is recycled and their role in the program.
4. Ensure that collection containers are marked clearly and distributed throughout the school sites to ensure proper collection of recyclable material.
5. Monitor the recycling program to identify the types and quantity of materials being recycled.

Recommendation 3: Consider “green building” architecture for new school construction benefit.

Over the next three years, PUHSD plans to develop approximately 154,000 square feet of new school construction. There are several ways green building design principles can be used to increase student performance, increase the use of recycled-content products, reduce green waste with proper landscaping plans, and reduce energy costs.

Implementation Steps

1. Adopt a districtwide policy for green building design.
2. Select architects and contractors knowledgeable and experienced in green building design for new school construction projects.

Appendix A [PUHSD]: PUHSD Waste Assessment Team

This listing includes the CIWMB and consultant staff working on this project as well as the local jurisdiction and Placer Union High School District staff providing information for this project.

Name	Organization/Affiliation	Phone Number	E-Mail Address
Keir Furey	CIWMB Staff, Team Member	(916) 341-6247	kfurey@ciwmb.ca.gov
Clint Whitney	R&G Consultants for the CIWMB	(916) 730-4204	clintwhitney@accessbee.com
Gregg Roberts	Director, PUHSD, Construction and Facility	(530) 886-4461	groberts@puhsd.k12.ca.us
Lila McAllister	Director, PUHSD, Child Nutrition Services	(530) 886-4472	NA
Doug Macy	Supervisor, PUHSD, Maintenance & Opera	(530) 886-9022	dmacy@puhsd.k12.ca.us
Linda Ellis	PUHSD, Purchasing Agent	(530) 886-4467	NA
Janee Royce	Food Services Purchasing	(530) 886-4471	NA
Bob Christiansen	Principal, Del Oro High	(530) 652-7243	NA
Vinie Rodriguez	Maintenance, Del Oro High	(530) 652-7243	NA
Debbie Brannan	Principal's Secretary	(530) 652-7243	dbrannan@deloro.puhsd.k12.ca.us
JoAnna Belanger	City of Auburn, Admin. Analyst	(530) 885-5508	NA
Eric Oddo	Western Placer Waste Management Authority	(916) 645-5180, ext. 4	Ericoddo@onemain.com
Sue Allen	El Dorado County Department of Education	(530) 622-7130	Sueallen@edcoe.k12.ca.us
John Rowe	Auburn Placer Disposal	(530) 885-3735	NA

Appendix B [PUHSD]: Waste Reduction Practices and Opportunities

This appendix includes the findings of the waste assessment team: observations on current practices and suggested opportunities for waste reduction. The opportunities are grouped by functional areas within the PUHSD.

- Administrative Offices
- Operations and Maintenance
- Food Service
- Transportation
- Procurement
- School Sites

Administrative Offices

Current Practices	Opportunities for Waste Reduction
Approximately 25 percent of files and communication are paperless (i.e., electronic).	Continue this practice. Establish a districtwide waste reduction policy and include such waste prevention efforts in the corresponding procedures.
Laser and toner cartridges are sent back to the PUHSD warehouse to be picked up and recycled by Auburn Placer Disposal. PUHSD receives 50 cents to a dollar for each.	Continue this recycling practice. Establish a districtwide waste reduction policy and include such recycling efforts in the corresponding procedures.
School waste is sent directly to the landfill rather than sorted at a “dirty MRF” like other commercial accounts.	Establish a districtwide waste reduction policy, including source-separated recycling. Establish an information campaign to promote understanding of school diversion efforts (i.e., the importance of removing all recyclables from trash going to compactors).

Operations and Maintenance

Current Practices	Opportunities for Waste Reduction
Custodians dispose of 1-gallon bottles and 5-gallon plastic buckets from cleaning supplies.	Buy cleaning solutions in bulk. Reuse plastic containers and buckets. Recycle plastic containers and buckets.
Approximately 20 percent of the air filters are reusable, while 80 percent are paper frame and roll filters.	Continue and expand the purchase of reusable air filters. Establish a districtwide waste reduction policy and include such reuse efforts in the corresponding procedures.
Custodians use washable cleaning rags that are either washed by laundry service or in on-site machines.	Continue this practice. Establish a districtwide waste reduction policy and include such reuse efforts in the corresponding procedures.
Custodians dispose of mop heads.	Wash mop heads along with the cleaning rags.
Ninety-nine percent of lighting is fluorescent, and used light tubes are discarded.	Fluorescent light tubes contain mercury; recycle fluorescent tubes rather than discard them in the regular trash.
The PUHSD maintains approximately 50 acres of athletic fields and ornamental lawns. Grass clippings are allowed to decompose in place.	Continue this practice. Establish a districtwide waste reduction policy and include green waste management (e.g., grasscycling, composting on-site or at MRF, burning) in the corresponding procedures. Consider the purchase of a mulching mower when replacing old equipment.
Leaves are sometimes taken to a composting facility at the County's MRF. However, significant portions of the leaves are disposed of. Because the MRF does not separate composting material out of the waste stream, all leaves disposed of end up in the landfill.	Expand the practice of sending landscaping waste to the compost facility. Consider requesting that the hauler provide green waste collection bins. Compost green waste and leaves on-site. Establish a districtwide waste reduction policy and include green waste management (e.g. grasscycling, composting on-site or at MRF, burning) in the corresponding procedures.
Tree and shrub trimmings are sent to the composting facility at the county's MRF.	Continue this practice Establish a districtwide waste reduction policy and include green waste management (e.g. grasscycling, composting on-site or at MRF, burning) in the corresponding procedures.
The PUHSD rents a chipper when needed.	Continue this practice.
Construction debris is self-hauled to the transfer station at the county's MRF.	Continue this practice. Establish a districtwide waste reduction policy and include such recycling efforts in the corresponding procedures.
Herbicide (Roundup) is used on school grounds.	Explore nontoxic options to weed control.
The 50 acres of turf is fertilized four times a year.	Grasscycle (grasscycling can have the overall impact of reducing fertilization requirements by 25 percent or more).

Food Service

Current Practices	Opportunities for Waste Reduction
Cardboard and beverage containers are recycled in the food service area and in the cafeterias.	<p>Continue this practice.</p> <p>Establish a districtwide waste reduction policy, including source-separated recycling and cardboard and beverage container recycling in this program.</p> <p>Establish a recycling campaign to promote understanding of school diversion efforts with respect to MRF.</p>
Food waste is disposed of in significant quantity.	Establish a districtwide waste reduction policy and include reuse/recycling activities (including practices like food donations, food waste source separation, composting) in the corresponding procedures.
Milk and juice cartons are a major food service waste.	Explore recycling options with the hauler and MRF (e.g., separating cartons out of the waste, grinding, and composting).
Paper food trays and boats are a major food service waste.	Consider reusable, recyclable, or compostable trays.
The PUHSD employs the Offer vs. Serve lunch program.	<p>Continue this practice.</p> <p>Establish a districtwide waste reduction policy and include such waste prevention efforts in the corresponding procedures.</p>
Food Services washes and reuses hand towels.	<p>Continue this practice.</p> <p>Establish a districtwide waste reduction policy and include such reuse efforts in the corresponding procedures.</p>

Transportation

Current Practices	Opportunities for Waste Reduction
Transportation services for the PUHSD are contracted out through a joint powers authority.	Include requirements for waste prevention, recycling, and procurement of recycled content-products (RCP) and other environmentally preferable products in contract language.

Procurement

Current Practices	Opportunities for Waste Reduction
Centralized purchasing accounts for approximately 90 percent of the PUHSD purchases. Although there is no current policy for purchasing RCP, they primarily buy from El Dorado Stockless Purchasing (electronically), which provides RCPs as the default product for paper products. Cleaning supplies are also purchased centrally. Individual school purchases comprise the remaining 10 percent and include items such as toner and printer cartridges.	<p>Continue purchasing through El Dorado Stockless Purchasing.</p> <p>Establish a policy to purchase RCPs and other environmentally preferable products (centrally and at school sites) and require contractors and vendors to comply with policy.</p> <p>Increase electronic ordering.</p>
Main waste types from the warehouse include plastic jugs and shrink-wrap.	<p>Continue purchasing cleaning solutions in concentrated form and in bulk when appropriate.</p> <p>Work with vendors to design specifications to eliminate excess packaging.</p> <p>Ask vendor to provide the district with a program to return or reuse packaging materials.</p> <p>Adopt a district-wide waste reduction policy and include packaging reduction in the corresponding procedures.</p>

School Sites

Current Practices	Opportunities for Waste Reduction
<p>There are paper-recycling boxes in each classroom and office. Students run this recycling program. Students collect paper from the bins every two weeks and place it into a 3-cubic yard bin at the back of the campus for collection by the hauler.</p>	<p>Establish a districtwide waste reduction policy, including source-separated recycling.</p> <p>Improve this recycling program by making the 3-cubic yard bin more easily assessable to students and creating a policy and operating procedures.</p>
<p>Colfax High School uses a burn pile for some of its tree and shrub trimmings and leaves.</p>	<p>Adopt a districtwide waste reduction policy and include green waste management (e.g., grasscycling, compost on-site or MRF, burning) in the corresponding procedures.</p> <p>Consider requesting that the hauler provide green waste collection bins.</p> <p>Consider composting green waste and leaves on-site.</p>
<p>At Del Oro High School, green waste is spread out and allowed to decompose on a large area behind the school.</p>	<p>Adopt a districtwide waste reduction policy and include green waste management (e.g. grasscycling, compost on-site or MRF, burning) in the corresponding procedures.</p> <p>Continue this “composting” practice.</p> <p>Consider requesting that the hauler provide green waste collection bins.</p>
<p>The wood shop disposes of six 55-gallon drums of wood scraps a month, of which 90 percent is pressed wood.</p>	<p>List in a materials exchange program (e.g., CalMAX).</p>
<p>The art history class uses sawdust from wood shop to make pit fires for pottery.</p>	<p>Continue this practice.</p> <p>Adopt a districtwide waste reduction policy and include this reuse activity in the corresponding procedures.</p>
<p>The metal shop has two bins (made from pickup truck beds) for scrap metal recycling.</p>	<p>Continue this practice.</p> <p>Adopt a districtwide waste reduction policy, including source-separated recycling. Include this scrap metal activity in the corresponding procedures.</p>

Appendix C [PUHSD]: Resources

This resource listing is designed to offer the school district information for local recycling contacts, CIWMB contacts, local vendors, and other resources. It is not a comprehensive directory, nor does a vendor listing imply a recommendation.

Local Jurisdiction Solid Waste and Recycling Contacts

Placer County

Eric Oddo, Senior Planner
Phone: (916) 645-5180, ext.4
E-Mail: ericoddo@onemain.com

City of Auburn

Joanna Belanger, Administrative Analyst
Phone: (916) 823-4211, ext.145
E-Mail: jbelanger@foothill.net

California Integrated Waste Management Board (CIWMB) Contacts

Office of Local Assistance

Kyle Pogue
Phone: (916) 341- 6267
E-Mail: kpogue@ciwmb.ca.gov

General information on waste reduction throughout California. Assistance in setting up a waste prevention/recycling program.

Office of Integrated Education

Tavia Pagan
Phone: (916) 341- 6768
E-Mail: tpagan@ciwmb.ca.gov

Information on CIWMB's free workshops to California teachers on three classroom curricula (*Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* [CIWMB pub. #322-99-009]; *Earth Resources--A Case Study: Oil* [CIWMB pub. #333-98-010]; and *Exploring Environmental Issues: Municipal Solid Waste*, published by Project Learning Tree) and an activity guide (*The Worm Guide: A Vermicomposting Guide for Teachers* [CIWMB pub. #560-01-007]).

Local Vendors

District Hauler

Auburn Placer Disposal

John Rowe, General Manager
12305 Shale Ridge Lane
Auburn, CA 95602
Phone: (530) 885-3735

Information regarding waste collection and recycling in Placer County.

Recyclers

Norcal Waste Systems Inc.

Customer Service (530) 885-3873

Auburn Community Recycling Services

350 Sacramento Street

Auburn, CA 95603

Phone: (530) 889-2267

Auburn-Placer Disposal Service Inc.

John Rowe, General Manager

12305 Shale Ridge Lane

Auburn, CA 95602

Phone: (530) 885-3735

Tomra Recycling

357 Nevada Street

Auburn CA 95603

Phone: (530) 823-9797

20/20 Recycle Centers

Phone: 1-800-883-2020

Earth's 911

www.cleanup.org/

Provides information pertaining to the following categories:

- Local recycling information
- Household hazardous waste collections
- Composting
- State and local information
- Environmental events

Purchasing Cooperatives

Recycled Products Purchasing Cooperative (RPPC)

Phone: 1-800-694-8355

www.recycledproducts.org

RPPC is a nonprofit organization dedicated to increasing the use of recycled-content paper. Membership is free and products include white and colored copy paper; RPPC uses its purchasing power to meet or beat prices for virgin material copy paper. With 90 warehouses throughout California, RPPC serves private and public agencies. Customers include Pomona Unified School District, Pajaro School District, JFK University, University of California San Diego, and University of California Santa Barbara.

Stockless Purchase Program

Contact: Sue Allen

Phone: 530 622-7130, ext. 240

E-Mail: sueallen@edcoe.k12.ca.us

The El Dorado Department of Education administers this purchasing cooperative. Membership is \$100 per year. The co-op offers school supplies, custodial supplies, and computer supplies at highly competitive prices. Over 80 school districts are members. Membership is open statewide.

Materials Exchanges**CalMAX**

Phone: 1-877-520-9703 (toll-free)

www.ciwmb.ca.gov/CalMAX/

Information regarding the CIWMB's free service designed to help businesses find markets for materials they have traditionally discarded.

KidMAX:

Phone: 1-877-520-9703 (toll-Free)

www.ciwmb.ca.gov/CalMAX/KidMAX.htm

Information regarding the CIWMB's free source of used materials to California's schools.

Appendix D [PUHSD]: Model Board of Education Waste Reduction Resolution and Environmental Purchasing Policy

Contained in Appendix F of this document.

Appendix E [PUHSD]: Sample Letter to Vendors

Contained in Appendix G of this document.

Appendix F [PUHSD]: Glossary

Contained in Appendix K of this document.

Waste Assessment Report: Ravenswood City Elementary School District

1.0 Executive Summary

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts can play an important role in their communities in achieving this mandate.

The Ravenswood City Elementary School District (RCESD) is located in the City of East Palo Alto in San Mateo County, California. RCESD consists of 11 elementary schools serving 5,400 students. In addition to the school sites, the RCESD operations include administration, food service, operation and maintenance, and transportation facilities. The RCESD is the largest employer in the City of East Palo Alto.

The California Integrated Waste Management Board (CIWMB) staff conducted a waste assessment of the RCESD operations to identify current waste management practices and recommend cost-effective waste management strategies the school district can implement to reduce its solid waste generation and potentially save money. This waste assessment report is based on information collected in interviews and a walk-through of RCESD facilities conducted December 5–6, 2000.

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the manner materials are purchased, used, and discarded. There are several components to implementing this philosophy:

- Reduce — Waste Prevention
- Reuse
- Recycling
- Procurement Practices
- Composting/Vermicomposting
- Construction and Demolition (C&D) Debris and “Green” Building Design

1.1 District Waste Information

- RCESD generates approximately 2,261,126 pounds of waste per year.¹
- RCESD disposes of approximately 1,667,916 pounds and recycles 593,210 pounds.²

¹ Volume to weight conversion rate is 107 lbs. per cubic yard for disposal, the result of additional analysis done by Waste Analysis Branch staff using data obtained in the 1999 Statewide Waste Disposal Characterization Study, and 100 lbs. per cubic yard for recyclables (uncompacted OCC) United States Environmental Protection Agency, Business Users Guide.

- Browning Ferris Industries (BFI) provides collection and disposal service to RCESD at an annual cost of \$210,289.
- RCESD has instituted a pilot cafeteria disposable tray separation and stacking program to minimize disposal volume.

1.2 Summary of Key Recommendations

A complete review of the RCESD's current waste management practices and opportunities for waste reduction and savings is contained in Appendix B. Based on the waste assessment results, RCESD should consider implementing the following recommendations immediately.

- **Recommendation 1:** Adopt a districtwide waste reduction policy.
- **Recommendation 2:** Evaluate options for refuse collection and recycling service.
- **Recommendation 3:** Reduce waste and waste disposal volume.
- **Recommendation 4:** Adopt a districtwide procurement policy that promotes recycled content products (RCP) and other environmentally preferable products.
- **Recommendation 5:** Establish a districtwide recycling program.

1.3 Estimated Savings

It is estimated that the district will save more than \$93,700 per year if the recommendations of this report are implemented. There are minimal costs associated with these recommendations (e.g. stacking food service trays to conserve disposal volume, implementing a double-sided copy policy); however, it is believed that the estimated savings would cover such costs.

2.0 Introduction

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts are important to the achievement of this mandate for several reasons:

- It is estimated that school districts contribute approximately 764,000 tons to the total volume of solid waste in California.³
- In some medium-sized and smaller communities, schools contribute as much as 15 percent of the waste generated in the community.⁴

² This total reflects only the waste prevention and recycling efforts that the project team was able to quantify. The RCESD participates in other such efforts, but due to lack of specific data or accurate measurement tools, quantification of other efforts was not feasible.

³ CIWMB, *Statewide Waste Characterization Study: Results and Final Report*, CIWMB pub. #340-00-009, December 1999, p. 36.

⁴ CIWMB, Solid Waste Characterization Database, www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

- Visible and active waste prevention and recycling programs in schools provide excellent role models that supports environmental curricula in the classroom.
- To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into adulthood.
- School districts are an integral part of every community and are important participants in civic leadership.
- The majority of the state’s population is involved with schools in some way—as students, parents, professionals or volunteers. Schools serve as positive role models for environmental stewardship.

Staff of the CIWMB's, Office of Local Assistance and a consulting firm conducted a waste assessment of RCESD operations. Interviews of RCESD personnel and a guided walk-through of school district facilities were conducted on December 5–6, 2000. Staff of the County of San Mateo and the City of East Palo Alto also participated in the assessment. The objective of the assessment was to identify current waste management practices and develop recommendations for cost-effective strategies the RCESD can implement to reduce the generation of solid waste and potentially save money. The results of the waste assessment are discussed in this report.

This report consists of six sections:

- 1.0 Executive Summary
- 2.0 Introduction
- 3.0 School District Information
- 4.0 Reduce, Reuse, Recycle
- 5.0 Waste Assessment Findings
- 6.0 Analysis and Recommendations

3.0 School District Information

The RCESD is located in the City of East Palo Alto in San Mateo County, California. Approximately 550 certificated and classified staff serve the district’s 11 elementary schools and 5,400 students.⁵ In addition to the school sites, the district operations include administration, food service, operation and maintenance, and transportation facilities. The RCESD is the largest employer in the City of East Palo Alto.

4.0 Reduce, Reuse, Recycle

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the way materials are purchased, used and discarded.

⁵ California Department of Education, *Ravenswood City Elementary School District*, www.cde.ca.gov/ and www.smcoe.k12.ca.us/index_5_0.html - ravenswood.

This section summarizes how this approach applies to the waste management system within a typical school district.

4.1 Reduce—Waste Prevention

Very often, managers look to recycling first when pursuing waste reduction. Recycling can divert large volumes of material from the waste stream and reduce disposal costs. However, preventing waste from occurring (also called source reduction) is an even more important part of a waste management program, reducing both waste and cost.

Everything that goes into the trash bin is something that was purchased. Throwing the item in the trash bin adds the cost of disposal to the original price of the item. Whatever can be diverted from the trash bin by waste prevention, reuse or recycling will result in disposal cost savings.

Waste prevention strategies include:

- Copying on both sides of a sheet of paper (double-sided copying).
- Ordering bulk supplies to reduce excess packaging.
- Grasscycling.
- Xeriscaping.

4.2 Reuse

Reusing materials can save money and contribute to resource conservation. Material exchange centers serve as clearinghouses for new and used material, supplies and equipment. These materials are available at little or no cost to institutions such as school districts.

Reuse strategies include:

- Using reusable rather than disposable food serving trays and eating utensils.
- Reusing packing boxes or sending them back to the vendor/manufacturer.
- Donating excess and leftover food to food banks and food rescue programs;.
- Donating used items to local charities or other nonprofit organizations.
- Participating in local and global book exchanges.
- Securing or exchanging materials through material exchange centers such as KidMAX and CalMAX.
- Utilizing federal, State, and local surplus programs.

4.3 Recycling

A recycling program is more than collecting beverage containers such as aluminum cans, glass, and some plastic containers. White paper, mixed paper, newspaper, corrugated cardboard, tin cans, and scrap metal all have recycle value as well. Every municipality and region has a different waste management infrastructure, so it is important for school districts to work closely with the local jurisdiction solid waste management and recycling coordinator and waste haulers to maximize opportunities to recover recyclables from the waste stream.

There are five essential elements to a good recycling program:

- A written district-wide waste reduction policy.
- Guidelines, education and training for students, teachers, administrators, custodians, and staff within each district department.
- Review and negotiation of recycling and disposal contracts, taking into account the variety of materials, collection schedules, cost/revenue, training, education, resources (e.g., storage containers), and degree of contaminants, etc.
- A reliable collection system consisting of a sufficient number of strategically placed, well-labeled collection containers.
- Monitoring and evaluation of program compliance and performance.

4.4 Procurement Practices

Collecting recyclable material and reusing material are only part of the resource conservation process. For recycling to work in the marketplace, it is equally important to “close the loop” by purchasing products that contain postconsumer recycled-content material. Consumer demand for goods manufactured with recycled content will ensure a market for the materials collected in recycling programs.

School districts can increase demand for recycled content products, lower costs of materials, and increase purchasing power by participating in purchasing cooperatives. Many school districts already participate in purchasing cooperatives, purchasing a variety of products and services from insurance to school supplies and food. Cooperatives increase the purchasing power of a single district. By participating in cooperatives, school districts can expect to negotiate prices that are more competitive, reduce packaging, and secure a greater supply and variety of recycled content products.

4.5 Composting/Vermicomposting

Organic waste includes “green waste” (e.g., grass clippings and tree and shrub clippings) and food waste. Using the Reduce, Reuse and Recycle approach, a school district should first consider ways of reducing organic waste by examining the sources. To reduce green waste, for example, a district should select landscaping plants that do not require frequent trimming (xeriscaping) and leave grass clippings

in place (grasscycling) whenever possible. Vermicomposting of food scraps on school sites is an excellent student educational activity. Additionally, leftover food should be reused or donated whenever feasible. Finally, organic waste can be collected separately and composted either off- or on-site. Many municipalities recycle green waste by using it as mulch and compost for landscaping in city parks and median strips and for community beautification projects.

4.6 Construction and Demolition Debris and “Green” Building Design

School districts throughout California are engaged in major school renovations and new school building projects. These projects present excellent opportunities to divert construction and demolition (C&D) debris into other uses. Concrete and asphalt waste can be used as road base; wood materials can be reused or used as raw material for the manufacture of particleboard or mulch or as a bulking agent in the composting process. Additionally, reinforcement bar (re-bar), dry wall, carpet, and asphalt roofing shingles can be recycled.

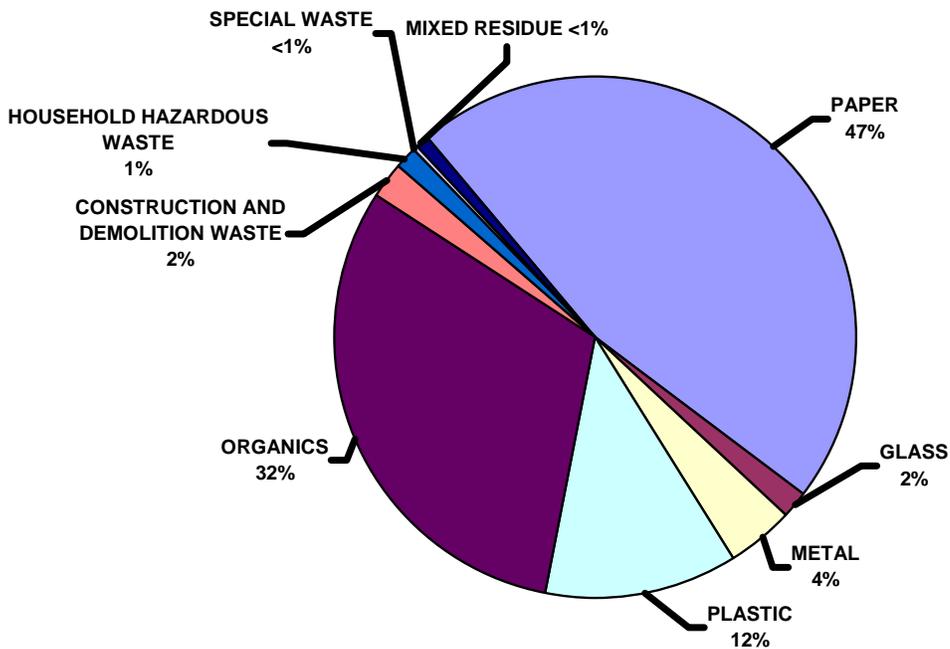
5.0 Waste Assessment Findings

5.1 Waste Generation

The waste assessment revealed that the RCESD generates approximately 2,261,126 pounds of waste each year. The RCESD disposes of approximately 1,667,916 pounds and recycles another 593,210 pounds. The annual cost of disposal is \$210,289. The RCESD contributes about 10 percent of the solid waste generated in the City of East Palo Alto.

Figure 1 illustrates the estimated composition of RCESD’s solid waste stream.⁶

Figure 1
Estimated Waste Composition for Ravenswood City Elementary School District



⁶ CIWMB, Solid Waste Characterization Database, www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

These data, combined with information collected from the waste assessment walk-through, enabled the waste assessment team to identify the largest components of the RCESD waste stream to target for potential waste reduction program development.

5.2 Disposal

Browning Ferris Industries (BFI) provides RCESD with refuse collection and disposal service. RCESD does not have a specific contract with BFI for this service; rather, BFI extends to RCESD the service offered to commercial accounts, as negotiated in the franchise agreement with the City of East Palo Alto. This service includes 15 six-cubic-yard refuse containers and 1 three-cubic-yard container serviced two to five times a week, depending on the school site. Refuse collection and disposal services cost RCESD approximately \$210,289 annually based on the volume of the refuse containers serviced. This results in a collection and disposal cost to the school district of \$252 per ton. Table 1 lists the bin number, size, weekly service frequency of waste containers used in the district, and the weekly disposal volumes for each RCESD school or facility.

Table 1: Refuse Collection Service Chart

Facility	Number of Bins	Bin Size (cubic yards)	Service Days per Week	Weekly Disposal Volume (cubic yards)	Estimated Weekly Disposal (pounds)
Belle Haven Elementary	2	6	2	24	2,568
Brentwood Oaks	1	6	5	30	3,210
Caesar Chavez/Green Oaks/CDC	3	6	5	90	9,630
Costano Elementary	2	6	3	36	3,852
James Flood Magnet School	1	6	3	18	1,926
Menlo Oaks Magnet School	2	6	5	60	6,420
McNair Intermediate	2	6	4	48	5,136
EPA Charter School	1	6	3	18	1,926
49er Academy	1	3	2	6	642
Administration	1	6	5	30	3,210
Totals	16	57	37	360	38,520

5.3 Reduce and Reuse

Waste reduction activities employed within RCESD include the use of double-sided copying and e-mail; reuse activities include grasscycling and reuse of cleaning rags.

5.4 Recycling

Some schools in the RCESD participate in recycling mixed paper, corrugated cardboard, aluminum, glass, plastic, and tin cans. The level of recycling program implementation varies

depending on the specific school site. Recycling service is provided by BFI at no additional cost. RCESD can also recycle green waste (landscaping trimmings) through BFI; however, it does not appear that green waste is consistently recycled throughout the district. Scrap metal is also recovered from school sites and other RCESD facilities for recycling.

6.0 Analysis and Recommendations

The waste assessment team observed several waste reduction practices in the RCESD and identified several opportunities for further waste reduction and cost savings. A comprehensive list of opportunities for action, listed by school district functional area, is included in Appendix B. These opportunities have been divided into tiers and summarized in Table 2.

- Tier 1 options are those opportunities that will provide maximum waste reduction and financial benefit to the RCESD.
- Tier 2 options are those activities that are currently in place and should be formalized or strengthened.
- Tier 3 options are those opportunities that will provide substantial waste reduction benefit but may take longer to implement or involve additional cost to implement.

The strategies discussed in this section are the Tier 1 options that the waste assessment team identified as the actions that will provide maximum waste reduction and financial benefit to RCESD. Implementing these recommendations will generate immediate benefits to the RCESD.

Table 2: Ravenswood City Elementary School District Summary of Options

Tier One	
1. A.	Adopt a districtwide waste reduction policy.
1. B.	Evaluate options for waste collection and disposal service.
1. C.	Reduce waste and waste disposal volume. Set double-sided copying policy for printers and copiers; add incentives. Request packaging take-back; accept only newspapers that are needed. Stack disposable food service trays. Donate leftover food to community organizations. Separate food waste and compost it. Reuse and recycle aluminum roasting pans.
1. D.	Establish a procurement policy that maximizes resources and promotes use of RCP products and other environmentally preferable products. Establish RCP procurement policy. Explore joining food purchase cooperatives . Consider joining purchasing cooperatives or forming joint powers authorities (JPA) (e.g., printing).

<p>1. E. Establish a districtwide recycling program.</p> <p>Set policy for source separation of recyclables (e.g., mixed paper, aluminum cans). Increase recycling bin service. Label all trash bins and recycling bins clearly in Spanish and English. Break down corrugated cardboard; keep separate from other recyclables. Sell scrap metal to recyclers. Donate used furniture. Recycle toner cartridges. Recycle fluorescent light tubes.</p>
Tier Two
<p>2.A. Establish a districtwide green waste management program.</p> <p>Set policy for grasscycling, xeriscaping, chipping, and mulching. Locate compost bins at all schools.</p>
<p>2.B. Continue waste reduction activities.</p> <p>Continue using e-mail, electronic ordering, and computer faxing. Continue using washable towels. Continue to reuse routing envelopes.</p>
Tier Three
<p>3.A. Recycle C & D material.</p>
<p>3.B. Separate milk waste and compost milk cartons.</p>

Recommendation 1: Adopt a Districtwide Waste Reduction Policy

Benefit

With some notable exceptions, most school waste reduction initiatives fail over time because the programs are not “institutionalized” by the adoption of formal policies and operating procedures by the Board of Trustees and the superintendent. Programs initiated by well-meaning teachers, principals, students, and other individuals generally disappear when these motivated individuals graduate, are promoted, or leave the school district.

The most effective way to institutionalize waste reduction practices is for the Board of Trustees to adopt clear statements of district policy and for the superintendent to adopt operating procedures and training plans with which to implement the board’s policy (see Appendix D for model waste reduction resolution and environmental purchasing policy).

Implementation Steps

1. Adopt a board resolution endorsing and supporting integrated waste management principles of Reduce, Reuse, and Recycle (See Appendix D).
2. Ask each RCESD department (e.g., food service, maintenance, transportation, purchasing) to develop policies and operating procedures that support waste reduction principles and institutionalize the waste reduction practices.

3. Ask the purchasing department to formalize its preference for recycled-content and other environmentally preferable products.
4. Ask each department director to monitor the amount that is reused or recycled, cost savings, or other measures of success and to provide periodic reports to the superintendent.

Recommendation 2: Evaluate Options for Waste Collection and Disposal Service

Benefit

The RCESD paid its waste hauler \$210,289 for waste collection, recycling, and disposal this past year. This calculates to \$252 per ton. This figure is significantly higher than any of the five other school districts in this pilot project. The RCESD should consider renegotiating the fee structure with its present hauler or seek competitive bids from other waste haulers. With competition, the RCESD may lower its cost of waste management services. The RCESD may also want to consider retaining an expert consultant to assist in the complex bidding and negotiation process.

In negotiating with waste hauling companies, there are two key issues to consider:

- **Recycling services offered:** Most waste haulers offer both recycling collection and pickup services. The district should request the size and number of collection bins that will handle the recyclable volume generated at each facility. Many waste haulers provide recycling bins and recycle material collections at no additional cost. While the hauler must recover the cost of recycling services, the revenue received from the sale of recyclable materials offsets much of the cost.
- **Appropriate level of service:** Two elements make up the cost of waste hauling—the size of the bin and the frequency of service. It is important to negotiate the number and size of bins and frequency of service appropriate to the volume of waste generated.

Recommendation 3: Reduce Waste and Waste Disposal Volume

This section discusses four ways to eliminate or reduce the creation of waste.

- **Adopt a double-sided copying policy.**

Benefit

RCESD purchases approximately 600 cases of white and colored multi-use copy paper per year. It appears that most of the **copy** machines in the RCESD are capable of double-sided copying, but it is not clear whether the practice is required or is routine throughout the school district. Using both sides of a sheet of paper is a sensible conservation measure. If a ream of paper costs \$2.50, and if both sides of each sheet of paper are used, the cost per page of that ream of paper has been reduced significantly (to \$.0025 per page rather than \$.005 per page). If the RCESD used paper in this manner, it would yield an estimated annual savings of as much as \$15,000.

Implementation Steps

1. Establish a formal district policy requiring double-sided copying (see Appendix D).
 2. Check all copiers and printers to ensure that they are capable of double-sided copying. Reset all copiers and printers to automatically make double-sided copies.
 3. Acquaint administrative staff and teachers with the policy and its cost benefits.
 4. Create incentives for teachers and staff to use double-sided copying. For example, if teachers or departments are “charged” by the number of sheets used, a system of discounting or credit could be awarded for double-side copying.
- **Stack disposable trays before disposal.**

Benefit

In April of 2000, the South Bay Waste Authority completed a report, *Analysis of Cafeteria Waste Disposal and Recycling Options for the Ravenswood Elementary School District*.⁷ The report examined kitchen waste, food waste, trays, and other food service related waste. The study team found that by far the largest volume of waste from food service was from the disposal method of unstacked trays. The report concluded that the stacking of used trays saved a significant amount of cubic yards of waste volume per day in trash bin space.

The RCESD is currently serving approximately 7,400 meals a day on polystyrene serving trays. A pilot tray-stacking program is now underway at the Belle Haven School. This program should be expanded to all other schools sites to achieve maximum disposal cost savings. Using the methodology included in the report referenced above, it is reasonable to expect approximately \$70,232 in disposal costs savings per year if the stacking of trays occurred at every cafeteria site.

Implementation Steps

1. Expand the tray-stacking system throughout the RCESD.
 2. Conduct sessions to educate students and school workers about the environmental and economic benefits of stacking trays.
 3. Enlist older students to conduct and monitor tray cleaning and separation in the cafeterias.
- **Establish Take-Back Policy**

Benefit

Waste disposal costs money. The consumer pays for a product or material, uses it and then must pay for the disposal of any waste produced. It is possible to alter this cycle by preventing material that creates unnecessary waste from entering or staying on RCESD

⁷ Environmental Science Associates, *Analysis of Cafeteria Waste Disposal and Recycling Options for the Ravenswood Elementary School District*, April 20, 2000

sites. For example, if requested, many suppliers will take back pallets, packing boxes, and packing material, thus saving the RCESD the disposal expense for the waste packaging. It is also important to be vigilant about “free” gifts. The San Jose Mercury News has been routinely delivering large quantities of newspapers to the RCESD. Some of the papers are used in the classrooms, but the majority of the copies are unused and become instant waste.

Implementation Steps

1. Administrators and teachers should assess the way in which books, supplies, and other materials are delivered to the school site; as appropriate, they should request that suppliers reduce excessive packaging or take back the packaging.
2. The district procurement officer should seek packaging and pallet take-back from the district’s suppliers.
3. Administrators should exercise caution in accepting gifts and donations of items that may only contribute to the solid waste stream.

- **Reduce Food Service Waste**

Benefit

While the percentage of food waste in the RCESD is not excessive, any waste that RCESD can divert from disposal will lead to cost savings. Leftover food from the kitchens can be donated to community organizations. Additionally, there is a compost bin at Belle Haven Elementary that can be used for some food waste. Other schools may want to establish compost and vermiculture operations for educational purposes. Also, the waste hauler may be willing to collect food waste separately for recycling. For example, a pilot food waste collection and composting program is being conducted now in the City and County of San Francisco. The kitchens also use large numbers of disposable aluminum roasting pans. These pans can be reused several times before they are recycled.

Implementation Steps

1. Food service workers should be alert to opportunities to reduce waste and to find worthy outlets for leftover food.
2. Food service workers and custodians should continue the good work they are doing in source separation of cardboard and #10 steel cans. Administration should ensure that the waste hauler provides sufficient recycling bins to accommodate this material.
3. Food service workers and teachers can work together to set up composting and vermiculture projects wherever feasible.
4. The RCESD should consider including food waste composting services in its request for proposals for waste hauling and disposal services.

Recommendation 4: Establish a procurement policy that maximizes resources and promotes use of recycled content products (RCP) and other environmentally preferable products.

Benefit

Procurement of supplies is centralized in the RCESD's purchasing office, with some purchases made by the principals at the schools. Custodial supplies are purchased in bulk, thus saving money and reducing unnecessary packaging. Some of the supplies are RCP, but most are not. There is no districtwide policy for RCP purchase. It also appears that teachers, principals, and administrators are not utilizing the resources of materials exchange centers to full advantage.

Three elements can contribute to an optimized procurement policy:

- Using material exchanges when possible.
- Joining purchasing cooperatives to leverage purchasing.
- Purchasing recycled-content products (e.g., copy paper, bath tissue, and paper towels).

Materials exchange centers are available which serve as clearinghouses for new and used material, supplies, and equipment, available to institutions at low or no cost. A recent review of the items available through CalMAX revealed plastic buckets, paint, fabric scraps, and trees. Similar kinds of material are available through KidMAX, a materials exchange exclusively for teachers. There are also regional materials exchanges, including Resource Area for Teachers (RAFT) in San Jose (see Appendix C).

The El Dorado County Office of Education Stockless Purchase Program is an example of a purchasing cooperative that saves school districts time and money while providing low-cost office and school, custodial, computer, and athletic RCPs and supplies (see Appendix C). An approach similar to leveraged buying power is the formation of joint powers authorities or agreements (JPA). Many school districts and other public entities form JPAs to leverage their collective buying power for supplies, food, and a variety of services.

The collection of recyclable material is only one part of recycling. In order for a market to exist for recycled material—aluminum, steel, paper, cardboard, etc.—there needs to be a demand for this material by manufacturers. If consumers demand products containing recycled content, then the market for recyclables will be created and maintained. Thus, the purchase of RCP is a crucial element of the recycling process, the closing of the loop between waste and new products.

Implementation Steps

1. Adopt districtwide policies that require reduced packaging, the reuse of materials, and the purchase of RCPs whenever possible (see Appendix D).
2. Distribute information on materials exchange centers and surplus programs to purchasing staff, school principals, and teachers.

3. The district should explore forming or joining purchasing and food service cooperatives or forming JPAs with other districts in the region.
4. Request bids on items containing recycled content (see Appendix D).

Recommendation 5: Establish districtwide recycling program.

Benefit

The district's waste hauler provides recycling collection bins for mixed paper, corrugated cardboard, aluminum, glass, plastic, and metal cans; however the utilization of the bins varies between school sites. Since recycling services are provided at no additional cost, any material that can be taken out of the waste stream and recycled saves the RCESD disposal costs.

Approximately 29 percent of the RCESD waste stream is mixed paper, corrugated cardboard, aluminum, glass, plastic, and metal cans (see Figure 1). RCESD's current recycling rate is 26 percent. If the remaining 3 percent of the above materials were diverted from the disposal bins, the savings would be approximately \$8,500 per year.

Implementation Steps

The district recycling coordinator should:

1. Verify with waste hauler which material is appropriate for the recycling bins provided.
2. See that collection containers are marked clearly in both Spanish and English and placed strategically at the school sites to ensure proper utilization.
3. Work with the teachers to inform students and teaching and administrative staff about recycling and reuse programs.
4. Work with the operations and maintenance manager to see that computer equipment, furniture, and other equipment are reused and/or recycled properly.
5. Monitor the recycling program to identify the types and quantity of materials being recycled.
6. Make periodic reports to the superintendent and school board on system performance and cost savings.

Appendix A [RCESD]: Waste Assessment Team

This listing includes the CIWMB and consultant staff working on this project as well as the local jurisdiction and Ravenswood City Elementary School District (RCESD) staff providing information for this project.

Name	Organization/Affiliation	Phone Number	E-Mail Address
Keir Furey	CIWMB Staff, Project Leader	(916) 341-6247	Kfurey@ciwmb.ca.gov
Terri Gray	CIWMB Staff, Team member	(916) 341-6252	tgray@ciwmb.ca.gov
Kyle Pogue	CIWMB Staff, Team member	(916) 341-6267	kpogue@ciwmb.ca.gov
Sue Sakaki	R&G Consultants for the CIWMB	(510) 531-5377	sakaki@esgcon.com
Clint Whitney	R&G Consultants for the CIWMB	(916) 730-4204	Clintwhitney@accessbee.com
Charlie M. Knight	RCESD Superintendent	(650) 329-2800, ext.110	cknight@ravenswood.k12.ca.us
Jeff Williams	RCESD Security Chief	(650) 329-2800	jwilliams@ravenswood.k12.ca.us
Mariana Dinia	RCESD Food Service Director	(650) 329-2800, ext.118	mdania@ravenswood.k12.ca.us
Mack McClendon	RCESD Controller	(650) 329-2800, ext. 121	N/A
Mack Smith	RCESD Purchasing Coordinator	(650) 329-2800, ext. 126	msmith@ravenswood.k12.ca.us
Mahendra Chahal	RCESD Transportation Coordinator	(650) 329-2800, ext. 169	mchahal@ravenswood.k12.ca.us
Jose Luis Alcaraz	RCESD Maintenance & Operations Director	(650) 329-2800, ext/ 171	jalcaraz@ravenswood.k12.ca.us
Lillian Clark	San Mateo County Recycling Coordinator	(650) 599-1447	lclark@co.sanmateo.ca.us
Holly Taylor	Garden Project Coordinator-Belle Haven School	(650) 329-2898	roots@sofcom.com
Martha Naveretti	Principal, Brentwood Elementary School	(650) 329-2881	mnavarrete@brentwood.edisonproject.com
Ruth Brooks-Woods	Principal, James Flood Magnet School	(650) 329-2891	rwoods@ravenswood.k12.ca.us

Appendix B [RCESD]: Waste Reduction Practices and Opportunities

This appendix includes the findings of the waste assessment team and includes observations on current waste management practices and suggested opportunities for waste reduction. The opportunities are grouped by functional areas within the RCESD.

- Administrative Offices
- Procurement
- Operations and Maintenance
- Food Service
- Transportation
- School Sites

Administrative Offices

Current Practices	Opportunities for Waste Reduction
<p>Double-sided copying and printing to save paper is not uniformly employed.</p>	<ul style="list-style-type: none"> • Establish a districtwide policy for double-sided copying and use of double-sided copying by the contractors and vendors who provide documents to the RCESD. • Develop incentives for staff to comply with policy. • Form joint cooperative agreements or form joint powers authorities with other school districts for printing services.

Procurement

Current Practices	Opportunities for Waste Reduction
<p>There is no districtwide or school policy to purchase recycled-content products (RCP), nor is there any concerted effort to purchase RCPs.</p>	<ul style="list-style-type: none"> • Establish a districtwide purchasing policy to support the purchase of recycled-content and environmentally preferable products (See Appendix D). • Join paper products purchasing cooperative (See Appendix C).
<p>Pallets are reused.</p>	<p>Adopt a districtwide pallet reuse and recycling District-wide policy.</p>
<p>The RCESD disposes of packaging waste.</p>	<p>Adopt a districtwide packaging reduction policy. Reference www.ciwmb.ca.gov/Packaging/.</p>
<p>Some purchases are made in bulk (e.g., glue purchased in one-gallon bottles and smaller bottles are refilled).</p>	<p>Adopt a districtwide policy to purchase products in bulk.</p>

Operations and Maintenance

Current Practices	Opportunities for Waste Reduction
Although the RCESD has the necessary equipment (grasscycling mower and chipper), the district does not consistently grasscycle large turf areas or utilize chips and mulches on-site.	<ul style="list-style-type: none"> Establish a district-wide policy requiring grasscycling of turf areas and chipping and mulching of other green waste for use on all school grounds. Add leaves to school compost piles (e.g., Belle Haven Elementary School) when possible.
A garden project at Belle Haven Elementary School received funding from a Department of Education grant. Compost bins have been built at Belle Haven Elementary School and are ready for use.	<ul style="list-style-type: none"> Complete this project. Reference: www.recycleworks.org/compost/index.html. Use this program as a model for all the district's schools.
Custodians separate beverage containers, cardboard, and other recyclable material from trash.	<ul style="list-style-type: none"> Adopt a policy for districtwide source-separated recycling. Break cardboard down prior to placing in recycling bin to conserve bin space.
Recycling bins are overflowing.	Increase recycling bin service.
Scrap metal is sold to recyclers.	<ul style="list-style-type: none"> Continue this practice. Consider tracking and reporting revenues from this activity.
Fluorescent tubes are currently thrown in trash.	<p>Recycle fluorescent light tubes.</p> <p>References:</p> <ul style="list-style-type: none"> Mercury Technologies, Inc.; Hayward, CA (510) 429-1129. Allied Environmental Technology; Fremont, CA (510)-490-8686.
Old furniture is not reused.	<p>Seek donation opportunities for used furniture.</p> <ul style="list-style-type: none"> List used furniture in the CIWMB's CalMAX (www.ciwmb.ca.gov/CalMAX/) or KidMAX (www.ciwmb.ca.gov/CalMAX/KidMAX.htm) classified exchange catalogs. SCRAP (www.aubergines.com/scrap/) Internet Resale Directory (www.secondhand.com/)
Cleaning rags are laundered on-site.	Consider using old towels in other areas of the school (e.g., auto shop classes as oil wipes or donate them to a cloth scrap dealer).
30-cubic yard bins are used for long-term storage rather than collection of scrap metal for recycling, as intended.	Use 30-cubic yard bin to collect scrap metal and other intended items for recycling.
Non-school sources dump trash in unlocked school containers.	<ul style="list-style-type: none"> Lock fences at school entrances. Lock recycling and refuse containers.

Food Service

Current Practices	Opportunities for Waste Reduction
The RCESD does not participate in a food-purchasing cooperative.	Explore advantages of joining a food-purchasing cooperative.
Cardboard and aluminum cans are recycled in all kitchens.	<ul style="list-style-type: none"> • Continue this practice. • Incorporate this recycling activity into districtwide recycling policy.
Reusable/washable cotton towels are used in the seven kitchens.	Continue this practice.
Food waste accounts for less than 10 percent by volume of lunch waste, but it accounts for 80 percent of the weight. The RCESD disposes of food waste.	<ul style="list-style-type: none"> • Establish a districtwide plan to reduce food waste: • Separate liquid waste and place in garbage disposal (e.g., Belle Haven School). • Establish a districtwide policy to separate food waste and compost on- or off-site. • Establish a districtwide policy to donate leftover food to community programs.
Students at some school sites empty residual milk in a bucket before placing cartons in the trash.	<ul style="list-style-type: none"> • Establish a districtwide policy of separating liquid waste before disposal. • Consider including composting milk cartons and food waste as a specification in the district's waste hauling contract.
A vermicomposting (worm) bed is available at some school sites.	Expand vermicomposting to additional school sites within the district. Reference: www.recycleworks.org/compost/index.html
Milk cartons are discarded.	Consider composting milk cartons. Explore a take-back service from vendor.
Polystyrene trays are disposed of without stacking.	<ul style="list-style-type: none"> • Stack polystyrene trays before disposal. • Switch to washable trays and implement kitchen recycling with no change in the treatment of food waste. • Switch to washable trays, implement kitchen recycling, and implement food waste composting. Reference: <i>Analysis of Cafeteria Waste Disposal and Recycling Options for the Ravenswood Elementary School District</i> (report dated 4/20/00).
Students at some school sites scrape food waste from the polystyrene trays before stacking trays.	Establish a districtwide policy to stack polystyrene trays before disposal.
#10 cans are separated and disposed of by kitchen staff.	Re-establish recycling for #10 cans with the waste hauler.
Approximately 30 large aluminum roasting pans are generated and disposed of weekly.	Reuse and recycle large aluminum roasting pans.
The RCESD utilizes the traditional "serve" type food service to students.	Consider the "offer" type food service to reduce food waste.

Transportation

Current Practices	Opportunities for Waste Reduction
The RCESD recycles used oil and used oil filters.	<ul style="list-style-type: none"> • Continue this practice. • Consider becoming a certified used oil collection center.
Used front tires of school buses are recapped and rotated for use as back tires.	Continue this practice.
Shop towels are reused and cleaned through a laundry service.	Consider using old towels in other areas of the school (e.g., use as oil wipes in auto shop classes) and/or give to a cloth scrap dealer.
Cardboard boxes are reused for record storage.	Continue this practice.
Cardboard boxes and aluminum cans are recycled.	Continue this practice. Incorporate this recycling activity into a districtwide recycling policy.
Twelve of the 16 buses and 4 of the 6 vans use natural gas fuel.	Continue this practice.
It is not clear if re-refined oil is used in district vehicles.	Purchase rerefined motor oil. Reference: www.ciwmb.ca.gov/UsedOil/ReRefined

School Sites

Current Practices	Opportunities for Waste Reduction
<p>The RCESD makes some paper waste reduction efforts in its classrooms (e.g., Spanish on one side, English on the other; use of half-sheets; whiteboards; double-sided copies; reusable routing envelopes; e-mail).</p>	<ul style="list-style-type: none"> • Establish a districtwide policy for double-sided copying and printing. • Foster the use of double-sided copies in documents submitted by the contractors and vendors. • Reuse single-sided scrap paper for homework or class work. • When replacing copiers, purchase copiers with double-sided copying capability.
<p>A local newspaper provides more free copies than needed to some school sites for use in classroom instruction.</p>	<ul style="list-style-type: none"> • Request school staff to obtain only the number of newspaper copies needed. • Recycle used newspapers.
<p>Aluminum cans are collected for recycling in the teacher's lounge.</p>	<ul style="list-style-type: none"> • Continue this practice • Incorporate this recycling activity into a District-wide recycling policy.
<p>Recycling containers are available for the classrooms, administration offices, etc. at some school sites. Students empty paper bins into 90-gallon recycling bins.</p>	<ul style="list-style-type: none"> • Continue this practice • Incorporate this recycling activity into a District-wide recycling policy.
<p>Some of the recycling bins at the school sites were not clearly labeled.</p>	<p>Provide clear and consistent labels for the recycling containers (e.g., material types accepted, what is not accepted) in English and Spanish.</p>
<p>Toner cartridges for printers and photocopiers are not recycled.</p>	<p>Establish a districtwide policy to recycle toner cartridges for printers and photocopiers.</p>

Appendix C [RCESD]: Resources

This resource listing is designed to offer the school district contact information for local recycling contacts, CIWMB contacts, local vendors, and other resources. It is not a comprehensive directory, nor does a vendor listing imply a recommendation.

Local Jurisdiction Solid Waste and Recycling Contacts

County

Lillian Clark

Phone: (650) 599-1447

E-Mail: lclark@co.sanmateo.ca.us

Information regarding school district recycling activities in San Mateo County. They offer special services to schools including curriculum materials and speakers, waste assessments, and technical assistance.

City

David Bishop

Phone: (650) 853-3132

Information regarding recycling activities in the City of East Palo Alto. The city recently (November 2000) passed a C&D ordinance establishing guidelines for the percentage of materials required to be recycled from demolition and construction activities.

South Bayside Solid Waste Authority

Kathleen Gallagher

Phone: (650) 599-1485

The South Bay Waste Management Authority (SBWMA) provides information on solid waste management and recycling in San Mateo County.

County Surplus Property Warehouse

Fair Oaks Service Center

2710 B Middlefield Road

Redwood City, CA

www.recycleworks.org/resident/surplus.html

Materials Exchange: Resource Area for Teachers (RAFT)

1355 Ridder Park Drive

San Jose, CA 95131

Phone: (408) 451-1420

E-Mail: raft@raft.net

RAFT is a nonprofit organization serving over 4000 Bay Area teachers, providing them with school supplies, art supplies, and furniture at greatly discounted prices (10 percent of retail). Cost of membership is \$35 per teacher per year.

California Integrated Waste Management Board (CIWMB) Contacts

Office of Local Assistance

Keir Furey

Phone: (916) 341-6247

E-Mail: kfurey@ciwmb.ca.gov

General information on waste reduction and recycling throughout California. Assistance in setting up a waste prevention/recycling program.

Office of Integrated Education

Pauline Lawrence

Phone: (916) 341-6767

E-Mail: plawrenc@ciwmb.ca.gov

Information on CIWMB's free workshops to California teachers on three classroom curricula (*Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* [CIWMB pub. #322-99-009]; *Earth Resources--A Case Study: Oil* [CIWMB pub. #333-98-010]; and *Exploring Environmental Issues: Municipal Solid Waste*, published by Project Learning Tree) and an activity guide (*The Worm Guide: A Vermicomposting Guide for Teachers* [CIWMB pub. #560-01-007]).

Local Vendors***Haulers*****Browning-Ferris Industries (BFI)**

333 Shoreway Road

San Carlos, CA 94070

(650) 637-1411— Recycling

(650) 592-2411

www.bfipeninsula.com/

Information regarding waste collection, recycling, transportation, disposal, and related services to both public and private customers in Atherton, Belmont, Burlingame, East Palo Alto, Foster City, Half Moon Bay, Hillsborough, Menlo Park, Redwood City, San Carlos, and San Mateo.

Recyclers**Simsmetal America**

699 Seaport Blvd

Redwood City, CA 94063

(650)-369-4161

Simsmetal at Redwood City accepts steel scrap, including furniture that is at least 50 percent metal and pays \$18 per ton. Although no aluminum is accepted at this facility, it can be sent to the San Jose Simsmetal facility.

Earth's 911

1-800-CLEANUP

www.cleanup.org/

Provides information pertaining to the following categories:

- Local recycling information.
- Household hazardous waste collections.
- Composting.
- State and local information.
- Environmental events.

Purchasing Cooperatives

Recycled Products Purchasing Cooperative (RPPC)

Phone: (800) 694-8355

www.recycledproducts.org/

RPPC is a nonprofit organization dedicated to increasing the use of recycled content paper. Membership is free and products include white and colored copy paper. They use their purchasing power to meet or beat price for virgin material copy paper. With 90 warehouses throughout California, they serve private and public agencies. Their customers include Pomona Unified School District, Pajaro School District, JFK University, University of California San Diego, and University of California Santa Barbara.

Stockless Purchase Program

Sue Allen

Phone: (530) 622-7130, ext. 240

E-Mail: sueallen@edcoe.k12.ca.us

The El Dorado Department of Education administers this purchasing cooperative. Membership is \$100 a year. The co-op offers school supplies, custodial supplies, and computer supplies at highly competitive prices. Over 80 school districts are members. Membership is open statewide.

Materials Exchanges

CalMAX

Phone: (877) 520-9703 Toll Free

www.ciwmb.ca.gov/CalMAX/

CIWMB's material exchange (free service) is designed to help businesses find markets for materials they have traditionally discarded; school districts can find supplies and materials for free or at low cost.

KidMAX

Phone: 1-877-520-9703 (toll-free)

www.ciwmb.ca.gov/CalMAX/KidMax.htm

CIWMB's free source of used materials to California's schools.

Appendix D [RCESD]: Model Board of Education Waste Reduction Resolution and Environmental Purchasing Policy

Contained in Appendix F of this document.

Appendix E [RCESD]: Sample Letter to Vendors

Contained in Appendix G of this document.

Appendix F [RCESD]: Glossary

Contained in Appendix K of this document.

Waste Assessment Report: Santee School District

1.0 Executive Summary

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts can play an important role in their communities in achieving this mandate.

The Santee School District (SSD) is located in the City of Santee in San Diego County, California. The SSD consists of nine K–8 schools and one K–6 school and serves over 8,000 students. In addition to the school facilities, the SSD operations include an administrative office, food service, transportation, and operation and maintenance facilities.

The California Integrated Waste Management Board (CIWMB) staff conducted a waste assessment of SSD operations to identify current waste management practices and recommend cost-effective waste management strategies the SSD can implement to reduce the generation of solid waste and potentially save money. The waste assessment report includes information gathered from interviews and a walk-through of SSD facilities conducted on January 24, 2001.

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the manner materials are purchased, used, and discarded. There are several components to implementing this philosophy:

- Reduce - Waste Prevention
- Reuse
- Recycling
- Procurement Practices
- Composting/Vermicomposting
- Construction and Demolition (C&D) Debris and “Green” Building Design

1.1 District Waste Information

- SSD annually generates approximately 2,716,831 pounds of solid waste, of which 1,647,531 pounds are disposed of and 1,069,300 pounds are recycled.¹
- The disposed-of waste consists mostly of green waste (27.3 percent), followed by paper (20.5 percent), food waste (20.3 percent), aluminum, glass, plastic, and tin (13.7 percent), and other materials.²

¹ Volume to weight conversion rate is 107 lbs per cubic yard for disposal, the result of additional analysis done by the CIWMB’s Waste Analysis Branch staff using data obtained in the 1999 Statewide Waste Disposal Characterization Study and 100 lbs per cubic yard for recyclables, United States Environmental Protection Agency, Business Users Guide. The recycling total reflects only the activities the project team was able to quantify.

- EDCO Disposal Corporation (EDCO) provides refuse collection and disposal service for approximately 1,647,531 pounds of solid waste per year, at an annual cost of \$34,572 (not including the cost of recycling collection).
- EDCO charges for recycling collection service in addition to refuse collection and disposal, collecting mixed paper, cardboard, and green waste for approximately \$5,460 per year.
- Another recycler, California Fibers, picks up the recyclable white and colored paper at no charge to the SSD.³

1.2 Summary of Key Recommendations

A complete review of the SSD's current waste management practices and opportunities for waste reduction and savings is contained in Appendix B. The following recommendations are provided to the SSD for immediate consideration.

- **Recommendation 1:** Adopt a districtwide waste reduction policy including paper waste reduction.
- **Recommendation 2:** Establish and formalize a districtwide recycling program.
- **Recommendation 3:** Evaluate recycling service agreements.
- **Recommendation 4:** Adopt a districtwide procurement policy that promotes recycled content products (RCP) and other environmentally preferable products.

1.3 Estimated Savings

It is estimated that the SSD will save approximately \$9,000 per year if the recommendations of this report are implemented. There are minimal costs associated with these recommendations; however, it is believed that the estimated savings would cover such costs.

2.0 Introduction

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts are important to the achievement of this mandate for several reasons:

- It is estimated that school districts contribute approximately 764,000 tons to the total volume of solid waste in California.⁴
- In some medium-sized and smaller communities, schools contribute as much as 15 percent of the waste generated in the community.⁵

² CIWMB, Solid Waste Characterization Database, www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

³ Since the time of the assessment, EDCO has been contracted for all recycling services and California Fibers no longer serves the SSD.

⁴ CIWMB, *Statewide Waste Characterization Study*, December 1999, page 36.

- Visible and active waste prevention and recycling programs in schools provide excellent role models that support environmental curricula in the classroom.
- To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into adulthood.
- School districts are an integral part of every community and are important participants in civic leadership.
- The majority of the state’s population is involved with schools in some way—as students, parents, professionals, or volunteers. Schools serve as positive role models for environmental stewardship.

Staff of the CIWMB’s Office of Local Assistance (OLA) and a consulting firm conducted a waste assessment of SSD operations on January 24, 2001. The assessment consisted of interviews with SSD personnel and a guided walk-through of SSD facilities. Staff from the local jurisdiction also participated in the assessment. The objective of the assessment was to identify current waste management practices and develop recommendations for cost-effective strategies the SSD can implement to reduce the generation of solid waste and potentially save money. The results of the waste assessment are discussed in this report.

This report consists of six sections:

1. Executive Summary
2. Introduction
3. School District Information
4. Reduce, Reuse, Recycle
5. Waste Assessment Findings
6. Analysis and Recommendations

3.0 School District Information

The SSD is located in the City of Santee in San Diego County, California and consists of nine K–8 schools and one K–6 school. The SSD’s 442 certificated and 440 classified staff members serve approximately 8,000 students.⁶ In addition to the school facilities, SSD operations include an administrative office, food service, transportation, and operation and maintenance facilities. SSD is the largest employer in the City of Santee.⁷

⁵ CIWMB, op.cit.

⁶ CA Department of Education’s Web-page at <http://data1.cde.ca.gov/dataquest/> and the Santee School District Web-page at <http://www.ci.santee.ca.us/about/demographics.htm>

⁷ Santee School District Web-page at <http://www.ci.santee.ca.us/about/demographics.htm>

4.0 Reduce, Reuse, Recycle

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the way materials are purchased, used and discarded. This section summarizes how this approach applies to the waste management system within a typical school district.

4.1 Reduce—Waste Prevention

Very often, managers look to recycling first when pursuing waste reduction. Recycling can divert large volumes of material from the waste stream and reduce disposal costs. However, preventing waste from occurring (also called source reduction) is an even more important part of a waste management program, reducing both waste and cost.

Everything that goes into the trash bin is something that was purchased. Throwing the item in the trash bin adds the cost of disposal to the original price of the item. Whatever can be diverted from the trash bin by waste prevention, reuse or recycling will result in disposal cost savings.

Waste prevention strategies include:

- Copying on both sides of a sheet of paper (double-sided copying).
- Ordering bulk supplies to reduce excess packaging.
- Grasscycling.
- Xeriscaping.

4.2 Reuse

Reusing materials can save money and contribute to resource conservation. Material exchange centers serve as clearinghouses for new and used material, supplies and equipment. These materials are available at little or no cost to institutions such as school districts.

Reuse strategies include:

- Using reusable rather than disposable food serving trays and eating utensils.
- Reusing packing boxes or sending them back to the vendor/manufacturer.
- Donating excess and leftover food to food banks and food rescue programs;.
- Donating used items to local charities or other nonprofit organizations.
- Participating in local and global book exchanges.

- Securing or exchanging materials through material exchange centers such as KidMAX and CalMAX.
- Utilizing federal, State, and local surplus programs.

4.3 Recycling

A recycling program is more than collecting beverage containers such as aluminum cans, glass, and some plastic containers. White paper, mixed paper, newspaper, corrugated cardboard, tin cans, and scrap metal all have recycle value as well. Every municipality and region has a different waste management infrastructure, so it is important for school districts to work closely with the local jurisdiction solid waste management and recycling coordinator and waste haulers to maximize opportunities to recover recyclables from the waste stream.

There are five essential elements to a good recycling program:

- A written district-wide waste reduction policy.
- Guidelines, education and training for students, teachers, administrators, custodians, and staff within each district department.
- Review and negotiation of recycling and disposal contracts, taking into account the variety of materials, collection schedules, cost/revenue, training, education, resources (e.g., storage containers), and degree of contaminants, etc.
- A reliable collection system consisting of a sufficient number of strategically placed, well-labeled collection containers.
- Monitoring and evaluation of program compliance and performance.

4.4 Procurement Practices

Collecting recyclable material and reusing material are only part of the resource conservation process. For recycling to work in the marketplace, it is equally important to “close the loop” by purchasing products that contain postconsumer recycled-content material. Consumer demand for goods manufactured with recycled content will ensure a market for the materials collected in recycling programs.

School districts can increase demand for recycled content products, lower costs of materials, and increase purchasing power by participating in purchasing cooperatives. Many school districts already participate in purchasing cooperatives, purchasing a variety of products and services from insurance to school supplies and food. Cooperatives increase the purchasing power of a single district. By participating in cooperatives, school districts can expect to negotiate prices that are more competitive, reduce packaging, and secure a greater supply and variety of recycled content products.

4.5 Composting/Vermicomposting

Organic waste includes “green waste” (e.g., grass clippings and tree and shrub clippings) and food waste. Using the Reduce, Reuse and Recycle approach, a school district should first consider ways of reducing organic waste by examining the sources. To reduce green waste, for example, a district should select landscaping plants that do not require frequent trimming (xeriscaping) and leave grass clippings in place (grasscycling) whenever possible. Vermicomposting of food scraps on school sites is an excellent student educational activity. Additionally, leftover food should be reused or donated whenever feasible. Finally, organic waste can be collected separately and composted either off- or on-site. Many municipalities recycle green waste by using it as mulch and compost for landscaping in city parks and median strips and for community beautification projects.

4.6 Construction and Demolition Debris and “Green” Building Design

School districts throughout California are engaged in major school renovations and new school building projects. These projects present excellent opportunities to divert construction and demolition debris (C&D) into other uses. Concrete and asphalt waste can be used as road base; wood materials can be reused or used as raw material for the manufacture of particleboard or mulch or as a bulking agent in the composting process. Additionally, reinforcement bar (re-bar), dry wall, carpet, and asphalt roofing shingles can be recycled.

Specifying the reuse and recycling of demolition debris in construction contracts can accomplish the diversion of C&D waste. Districts should partner with the local solid waste management and recycling coordinator and local waste haulers for assistance in developing the most resource-efficient approach.

For school districts engaged in new construction, there are several ways green building design principles can be used to increase student performance, increase the use of recycled content products, reduce green waste with proper landscaping plans, and reduce energy costs. Architects and contractors knowledgeable and experienced in green building design should be selected for new school construction projects.

5.0 Waste Assessment Findings

5.1 Waste Generation

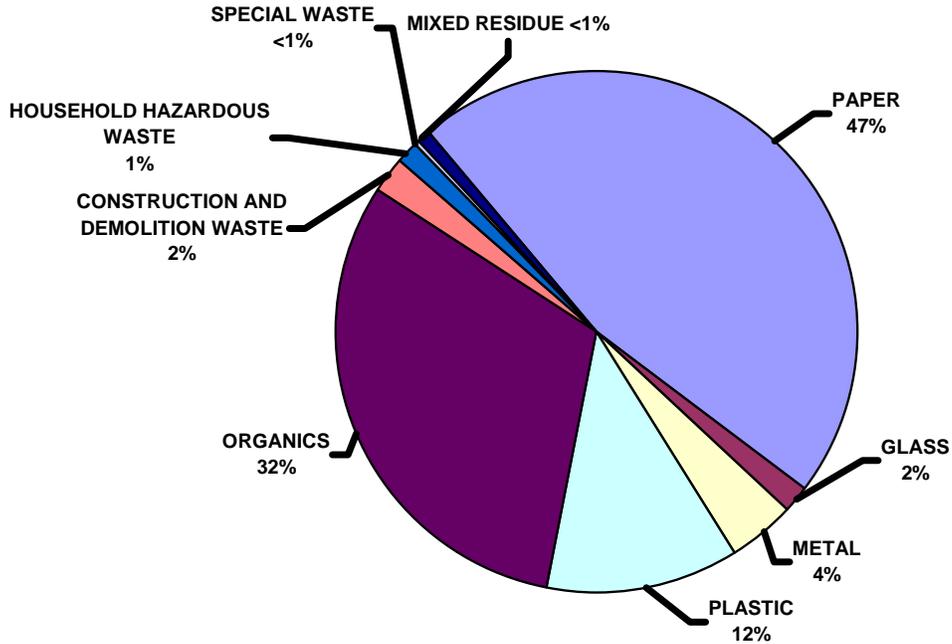
The total amount of waste generated equals the amount of material disposed plus the amount of material diverted from disposal (e.g., reduced, reused and recycled). Annually, the SSD generates approximately 2,716,831 pounds of material, of which approximately 1,647,531 pounds are disposed of and 1,069,300 pounds are diverted from disposal through waste prevention and recycling efforts.

Figure 1 illustrates the estimated composition of SSD’s solid waste stream.⁸

⁸ CIWMB, op.cit.

These data, combined with information collected from the waste assessment walk-through, enabled the waste assessment team to identify the largest components of the SSD waste stream to target for potential waste reduction program development.

Figure 1
Estimated Waste Composition for the Santee School District



5.2 Disposal

The EDCO provides the SSD with refuse collection and disposal service. This service includes 10 four-cubic-yard and 8 three-cubic-yard refuse containers serviced five times a week (with the exception of three facilities serviced twice a week) during the regular school session with reductions in the service level during the summer months. The cost of this service is approximately \$33,467 annually. Table 1 illustrates the disposal service level for each facility.

Table 1: EDCO Disposal Service

Facility	Address	No. of Bins	Volume (cubic yards)	Service Days/Week ⁹	Volume/Month (cubic yards)	Cost/Month
Chet F. Harritt School	8120 Arlette St.	1	4	5	86.60	\$219.26
ERC	9619 Cuyamaca St.	1	4	2	34.64	\$97.98
District Office	9625 Cuyamaca St.	1	4	2	34.64	\$97.98
Rio Seco School	9545 Cuyamaca St.	1	3	5	64.95	\$292.20
Rio Seco School	9545 Cuyamaca St.	1	4	5	86.60	
Rio Seco School	9545 Cuyamaca St.	1	3	2	25.98	
Cajon Park Satellite	10350 E. Nopal Lane	1	3	5	64.95	\$219.26
Educational Services	9880 Hoffman Lane	1	3	5	64.95	\$331.13
Educational Services	9880 Hoffman Lane	1	4	5	86.60	
Hill Creek School	9665 Jeremy St.	2	3	5	129.90	\$306.56
Cajon Park School	10300 Magnolia Ave.	1	4	5	86.60	\$292.20
Cajon Park Annex	10300 Magnolia Ave.	1	3	5	64.95	
Santee School	10445 Mission Gorge	2	3	5	129.90	\$306.56
Carlton Hills School	9353 Pike Rd.	1	4	5	86.60	\$219.26
Prospect Ave School	9303 Prospect Ave.	1	4	5	86.60	\$219.26
Sycamore Canyon	10201 Settle Rd.	1	4	5	86.60	\$219.26
Carlton Oaks School	9353 Wethersfield	2	3	5	129.90	\$306.56
Pepper Drive	1935 Marlinda Way	1	4	5	86.60	\$219.26
Total					1437.56	\$3346.73

5.3 Recycling

SSD currently participates in cardboard and mixed paper recycling at the district office, maintenance and grounds, transportation, procurement warehouse, and food service. This service is provided by EDCO for \$15.37 per site a month. EDCO also provides green waste collection and recycling to five of the SSD's school sites for

⁹ Five times per week from August 24 through June 30 and one time per week from July 1 through August 21 with the exception of: 1) support services, ERC and the District office which are collected all year long; and 2) Hill Creek and Carlton Oaks Schools, which have two 3 cubic yard bins serviced five days a week from July 1 through July 24.

\$85.00 per facility a month. Table 2 illustrates EDCO's recycling service level at each facility. In addition to these recycling services, EDCO provides classroom presentations and materials recovery facility (MRF) tours.

Table 2: EDCO Recycling Service

Facility	Address	Service	Quantity	Volume (cubic yards)	Service Days/Week	Volume /Month (cubic yards)	Cost/ Month
ERC	9619 Cuyamaca St.	Recycle	1	3	1	12.99	\$15.37
District Office	9625 Cuyamaca St.	Recycle	2	3	1	25.98	\$15.37
Rio Seco School	9545 Cuyamaca St.	Green	1	3	1	12.99	\$85.00
Educational Services	9880 Hoffman Lane	Recycle	1	3	5	64.95	0
Educational Services	9880 Hoffman Lane	Green	1	3	1	12.99	0
Hill Creek School	9665 Jeremy St.	Green	1	3	1	12.99	\$85.00
Cajon Park School	10300 Magnolia Ave.	Green	1	3	1	12.99	\$85.00
Prospect Ave. School	9303 Prospect Ave.	Green	1	3	1	12.99	\$85.00
Pepper Drive	1935 Marlinda Way	Green	1	3	1	12.99	\$85.00
Total						181.86	\$455.74

Scrap metal is collected and recycled by operations and maintenance staff. Other materials regularly recycled include appliances, computers, electronic equipment, and construction and demolition debris. During the past year, the SSD recycled 500 pounds of appliances and 500 pounds of computers.

5.4 Reduce and Reuse

There are a number of reduce and reuse activities in which SSD participates (e.g., electronic purchasing, lumber reuse, grasscycling); however, only one of these practices was quantifiable. The practice of grasscycling and other green waste recycling results in approximately 30,000 pounds a year of waste diverted from the landfill.

6.0 Analysis and Recommendations

The waste assessment team observed many effective waste reduction practices in the SSD and identified several opportunities for further waste reduction and cost savings. A comprehensive list of opportunities for action listed by school district functional area is

included in Appendix B. These opportunities are divided into tiers and are summarized in Tables 3 and 4.

- The Tier 1 options are those opportunities that will provide maximum waste reduction and financial benefit to the SSD.
- Tier 2 options are those activities currently in place that should be supported, formalized, or strengthened.
- Tier 3 options are those opportunities that will provide substantial waste reduction benefit, but they may take longer to implement or involve additional cost to implement.
- The strategies discussed in this section are the Tier 1 options (Table 3) that the waste assessment team identified as the actions that will provide maximum waste reduction and financial benefit to the SSD.

Table 3: Santee School District Options

Tier One	
1.A.	<p>Adopt a districtwide waste reduction policy.</p> <p>Establish procedures for paper waste reduction. Require double-sided copies for larger print jobs. Provide e-mail access to all employees. Evaluate district forms for reduction opportunities. Reduce junk mail and unnecessary catalogs. Continue practice of electronic purchasing.</p>
1.B.	<p>Establish and formalize districtwide recycling program.</p> <p>Set policy for districtwide source separated recycling. Include print shop in EDCO mixed paper recycling program. Formalize green waste management practices (grasscycling, recycling, etc.). Establish districtwide mixed paper recycling (including newspapers). Establish districtwide aluminum can recycling program. Establish recycling for #10 cans. Offer recycling collection at special events. Recycle used printer cartridges. Flatten cardboard boxes and backhaul to kitchen for recycling.</p>
1.C.	<p>Evaluate recycling service agreements.</p> <p>Evaluate other options for recycling services. Consider implementing a District-wide mixed paper recycling program. Consider forming a JPA for solid waste management services.</p>
1.D.	<p>Adopt districtwide policy that promotes recycled-content products (RCP) and other environmentally preferable products.</p> <p>Check for availability of RCPs through North County Educational Purchasing Consortium. Consider purchase of rebuilt printer cartridges.</p>

Recommendation 1: Adopt a districtwide waste reduction policy.

With some notable exceptions, most school waste reduction initiatives fail over time because the programs are not “institutionalized” by the adoption of formal policies and operating procedures by the Board of Trustees and the superintendent. Programs initiated by well-meaning teachers, principals, students, and other individuals generally disappear when these motivated individuals graduate, are promoted, or leave the district.

The most effective way to institutionalize waste reduction practices is for the Board of Trustees to adopt clear statements of policy and for the superintendent to adopt operating procedures and training plans with which to implement the Board’s policy (see Appendix D for model policies).

The SSD has instituted effective waste management practices in several areas. Two in particular stand out. The maintenance and grounds department has implemented green waste management practices that have produced outstanding waste reduction results. The food service department has reinstated the use of reusable cafeteria service food trays, thereby eliminating the disposal of polystyrene food trays, a major component of food service waste in other school districts.

The SSD is to be commended for these initiatives. By formalizing a policy and asking departments to develop operating procedures that support waste reduction goals, the SSD will be able to preserve and build upon these good practices.

Paper Waste Prevention Strategies

Benefit

In most school districts, office paper (white and colored copy paper) is a commodity that is purchased and used in large quantity. There are several strategies to reduce the use and the cost of this commodity. The first strategy involves eliminating the paper use that is not necessary (electronic purchasing, e-mails, etc.) and eliminating the sources of excess incoming paper (extra catalogs and magazines, junk mail). The second strategy is to make maximum use of the paper (double-sided copying, reusing paper). Using both sides of a sheet of paper is a sensible conservation measure. If a ream of paper costs \$2.50, and if both sides of each sheet of paper are used, the cost per page of that ream of paper is reduced significantly (to \$.0025 per page rather than \$.005 per page). For every 500 cases of paper, the savings would be \$6,250.

Implementation Steps

1. Establish a formal SSD waste reduction policy and include paper waste reduction strategies such as double-sided copying.
2. Check all copiers and printers to ensure that they are capable of double-sided copying. Reset all copiers and printers to automatically make double-sided copies.
3. Acquaint administrative staff and teachers with the policy and its cost benefits.

4. Create incentives for teachers and staff to use double-sided copying. For example, if teachers or departments are “charged” by the number of sheets used, a system of discounting or credit could be awarded for double-side copying.
5. Promote the reuse of paper (using the blank sides for homework, scratch pads) by setting up collection trays/bins for reusable paper.
6. Implement electronic ordering, the elimination of duplicate forms, and the use of e-mail (to replace paper copies).
7. Request fewer catalogs and removal from junk mailing lists.

Recommendation 2: Establish and formalize districtwide recycling program.

Benefit

SSD appears to be doing a good job recycling used equipment and furniture, but there is no districtwide collection program for other recyclable material (e.g., paper, cardboard, beverage containers). There are collection services established at the SSD offices; however, the recycling services are not consistently available at the individual school sites. There are no districtwide recycling programs for beverage containers, newspapers, cardboard, and #10 cans, and the print shop does not participate in mixed paper recycling.

Recyclables include paper, corrugated cardboard, aluminum, glass, plastic, and metal cans, representing about 30 percent of the solid waste stream. Any material that can be taken out of the waste stream and recycled saves the SSD disposal costs. Even if the SSD must pay for recycling bins, a cost savings is possible. EDCO charges approximately \$15 a month for one three-cubic-yard recycling bin that it picks up once a week. Taking three cubic yards of recyclables a week out of the trash can translate into a reduced service level, perhaps up to \$25 a month. This scenario could mean an annual savings of \$2,500 (savings of \$25 per month at each of 10 school sites over a 10-month period).

Implementation Steps

Appoint a recycling coordinator who will:

1. Obtain more recycling bins from the waste hauler or recycler; obtain and place more recyclable collection containers throughout the offices and school sites.
2. Ensure that collection containers are marked clearly in both Spanish and English and placed strategically at the school sites to ensure proper source separation.
3. Work with the teachers to develop an education and outreach program to inform students and teaching and administrative staff about the recycling program.
4. Work with departments and school sites to improve operations. For example, arrange for the flattening and backhauling of cardboard boxes from school sites to the central kitchen and/or the warehouse.

5. Support existing school site recycling programs (e.g., aluminum can collection by students and staff) to ensure their reliability and consistency.
6. Provide recycling collection containers at school and community events.
7. Monitor the recycling program to identify the types and quantity of materials being recycled.
8. Make periodic reports to the superintendent and school board on system performance and cost savings.

Recommendation 3: Evaluate recycling service agreements.

Benefit

In many school districts, the waste hauler provides waste collection and recycling collection in a single fee structure. In Santee, EDCO, the SSD waste hauler, separates the cost of trash collection and disposal from the recycling collection service. Currently SSD maintains recycling programs with EDCO and with other vendors, including California Fibers. District staff reported concerns with the paper program at the school sites (e.g., timeliness of pickup, overflowing bins, difficulty of separating white paper from colored paper).

As discussed in the previous section, additional recyclable material can be diverted from the SSD waste stream. Within the limits of this study, it is difficult to quantify the potential cost savings, but it is likely that there will be a modest cost savings if suitable recycling agreements can be made along with adjustments to the service levels in trash collection.

When comparing recycling services, SSD might consider the following questions:

- What materials will be collected for recycling?
- What will the vendor charge for this service?
- What kinds of and how many bins will be provided to each site?
- How often will the bins be serviced?
- Will the vendor also provide smaller collection containers for classrooms and offices?

Implementation Steps

1. Establish recycling goals for the SSD as part of the board resolution on waste reduction.
2. Work with current vendors (EDCO and California Fibers) to see what service improvements are possible.
3. Contact local recyclers to get information on their service arrangements and fees. The local government recycling contact may offer some assistance and direction (see Appendix C).
4. Establish agreements with recycling vendors that offer the most cost-effective service.

5. Consider forming a joint powers authority (JPA) with other school districts to negotiate rates that are more competitive.
6. Monitor the service carefully to ensure that agreements and recycling goals are being met.

Recommendation 4: Adopt a districtwide procurement policy that promotes use of recycled-content products (RCP) and other environmentally preferable products.

Benefit

The waste assessment team noted several good procurement practices in place at the SSD. Procurement of supplies is centralized in the purchasing office and the SSD belongs to the North County Educational Purchasing Consortium. Custodial supplies are purchased in bulk, thus saving money and reducing unnecessary packaging.

Three elements can contribute to an optimized procurement policy:

- Using material exchanges when possible.
- Joining purchasing cooperatives to leverage purchasing power.
- Purchasing recycled-content products (e.g., copy paper and other paper goods) and other environmentally preferable products.

It was not evident that SSD teachers and staff were using materials exchange centers. Materials exchange centers serve as clearinghouses for new and used material, supplies, and equipment available to institutions free or at low cost. A recent review of the items available through CalMAX revealed plastic buckets, paint, fabric scraps, and trees. Similar kinds of material are available through KidMAX, a materials exchange exclusively for teachers (see Appendix C).

SSD belongs to one purchasing cooperative; unfortunately, it does not appear that this particular cooperative offers a wide range of RCPs supplies. The team noted that some of the supplies are RCP, but most are not; and there is no districtwide policy for RCP or other environmentally preferable product purchases.

The El Dorado County Office of Education Stockless Purchase Program is an example of a purchasing cooperative that saves school districts time and money while providing low-cost office, school, custodial, computer, and athletic RCPs and supplies (see Appendix C). An approach similar to leveraged buying power is the formation of JPAs. Many school districts and other public entities form JPAs to leverage their collective buying power for supplies, food, and a variety of services.

The collection of recyclable material is only one part of recycling. In order for a market to exist for recycled material—aluminum, steel, paper, cardboard, etc.—there needs to be a demand for this material by manufacturers. If consumers demand products containing recycled content, then the market for recyclables will be created and maintained. Thus, the purchase of RCPs is a crucial element of the recycling process, the closing of the loop between waste and new products.

Implementation Steps

1. Adopt districtwide policies that require the reuse of materials and the purchase of RCPs and other environmentally preferable products whenever possible (see Appendix D).
2. Distribute information on materials exchanges and surplus programs to purchasing staff, school principals, and teachers.
3. Distribute information on the quality of RCP supplies and the importance of using RCP supplies.
4. Explore forming JPAs or joining purchasing cooperatives that offer RCP supplies at competitive prices.
5. Request bids on items containing recycled content and other environmentally preferable products (see Appendix D).

Table 4: Summary of Tier Two and Three Options

Tier Two
<p>Continue and formalize:</p> <ul style="list-style-type: none">Offer vs. Serve.Practice of donating food to local charities.Use of reusable trays.Use of reusable aprons, towels, and hair covers.Adding leftover food to menu.Used oil, oil filter and solvent recycling.Sending used tires for shredding/recycling.Scrap metal recycling.Use of industrial service for cleaning shop towels.Purchasing vehicle parts with reduced packaging.Bulk purchasing of chemicals.Practice of wood reuse.Grasscycling and green waste recycling.Chipping and mulching.Purchasing durable equipment and repairing.Reusing cloth towels.Pallet reuse and recycling.Recycling appliances.Selling surplus equipment.Computer recycling.Requiring asphalt and concrete recycling.
Tier Three
<p>Consider:</p> <ul style="list-style-type: none">Recycling used fluorescent light bulbs.Purchasing can crusher.Purchasing a cardboard baler.Establishing an on-site towel laundering service.Using reusable air conditioning filters.Purchasing reclaimed engine coolants.Purchasing re-refined oil for vehicles.Exploring recycling or reuse options for sawdust.Monitoring food wasted and adjust menus accordingly.Composting food scraps on site.

Appendix A [SSD]: Waste Assessment Team

This listing includes the CIWMB and consultant staff working on this project as well as the local jurisdiction and the Santee School District staff providing information for this project.

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Appendix B [SSD]: Waste Reduction Practices and Opportunities

This appendix includes the findings of the waste assessment team: observations on current waste management practices and suggested opportunities for waste reduction. The opportunities are grouped by functional area within the SSD.

- Administrative Offices
- Procurement
- Operations and Maintenance
- Food Service
- Transportation
- School Sites

Administrative Offices

Current Practices	Opportunities for Waste Reduction
<p>Some paper reduction strategies (e.g., double-sided copies, voice mail, e-mail) are employed, but not used consistently.</p> <p>The print shop makes double-sided copies (e.g., back-to-back printing) for approximately 60 percent of its jobs. There is not, however, a districtwide policy for double-sided copying.</p>	<p>Establish a districtwide waste reduction policy and include specific paper waste reduction activities in the corresponding procedures.</p> <ul style="list-style-type: none"> • Require double-sided copies, including their use by the contractors and vendors who provide reports to the SSD (www.ciwmb.ca.gov/bizwaste/OfficePaper/Policy.htm). • Develop incentives for staff to comply with policy (e.g., reduced cost for double-sided copies). • Establish a districtwide program for paper reuse, using trays to collect single-sided paper for reuse (e.g., making scratch pads from used paper). • Provide e-mail access to all employees so memos and notices can be distributed electronically. • Evaluate SSD forms for paper reduction opportunities (e.g., smaller font, double-sided, electronic). • Reduce junk mail (see details under school sites). • Use educational and promotional materials provided by CIWMB (www.ciwmb.ca.gov/bizwaste/OfficePaper/Promote.htm). • Establish a districtwide recycling program to recover paper. Consider implementing a mixed paper recycling program.
<p>The print shop is collecting all clean office paper for recycling, but it is disposing of paper scraps and colored paper.</p>	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy, including districtwide-mixed paper recycling. • Give the print shop access to the SSD's existing EDCO mixed paper recycling program.
<p>The SSD superintendent has made recycling and waste prevention a priority.</p>	<ul style="list-style-type: none"> • Develop districtwide waste reduction policy including recycling and waste prevention goals, policies, and procedures. • Recognize current reduction activities and make them a part of standard operating procedures. • Consider applying for local, State and federal recognition (e.g., President's Environmental Youth Awards at www.epa.gov/enviroed/pdf/09awards.pdf)

Operations and Facilities

Current Practices	Opportunities for Waste Reduction
Custodian staff collects recyclables from SSD facilities (EDCO) but not school sites (California Fibers).	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy including a districtwide recycling program. • Evaluate the local recycling services provided (e.g., EDCO, California Fibers) to obtain best value in service. • Consider joining or forming a JPA with other districts for solid waste management services.
Cleaning solutions are purchased in smaller containers to be distributed to individual schools. Amounts need to be small enough to be used up before the product goes bad, as some solutions have a limited shelf life. Some custodial purchases do include concentrated cleaners.	<p>Establish a districtwide policy to promote purchasing RCPs and other environmentally preferable products:</p> <ul style="list-style-type: none"> • Increase efforts to purchase cleaning solutions in concentrated form. • Purchase cleaning solutions in bulk, when feasible. • Purchase less toxic products (www.epa.gov/opptintr/epp/cleaners/select/index.htm). • When feasible, purchase one cleaning product that can be used for a variety of purposes (www.westp2net.org/janitorial/jp4.htm).
It was not clear from the notes if reusable air filters are used.	Consider using reusable air filters.
Reusable terry cloth towels are provided, but the laundering is left up to each janitor; therefore, if an individual chooses not to launder the towels, they are thrown away, not reused.	Consider providing on-site towel laundering or using service (as transportation department does) for industrial towels.
School sites are used as community facilities for scouts, church groups, PTA, baseball leagues, and other groups. In some instances, recycling services are provided for such events. In fact, one of the school sites hosts the local 4th of July celebration and the City of Santee provides recycling containers.	<ul style="list-style-type: none"> • Continue this practice. • Expand this practice of special event recycling to include recycling at all special events at school sites, and make it part of a districtwide recycling program.
The SSD purchases high-quality, commercial-grade equipment (e.g., vacuum cleaners, buffers, carpet extractor, and other custodial machinery). The maintenance department has a technician on staff to maintain and repair such equipment. As a result, the maintenance department rarely needs to replace any equipment.	Continue this practice.

Maintenance and Grounds

Current Practices	Opportunities for Waste Reduction
<p>The school district participates in grasscycling during the spring and summer months and green waste recycling during the fall and winter months.</p>	<ul style="list-style-type: none"> • Continue these practices. • Establish a districtwide waste reduction policy and include such waste prevention and composting activities in the corresponding procedures.
<p>Outside contractor provides tree-trimming service, and the green waste is mulched and used on-site for erosion control and weed abatement. Trimmings from in house jobs are also chipped and used as mulch on-site. Because of these efforts, the SSD reduced its disposal from two loads per month of tree trimmings (5 to 6 cubic yards) to zero.</p>	<ul style="list-style-type: none"> • Continue these practices. • Establish a districtwide waste reduction policy and include such waste prevention and composting activities in the corresponding procedures.
<p>The SSD uses a portable “chemigation” system through which any fertilizers, herbicides, and pesticides are applied through the irrigation system (i.e., sprinklers) at night.</p>	<ul style="list-style-type: none"> • Use less toxic products, when feasible (reference report at www.cdpr.ca.gov/docs/schools/pm0102.pdf).
<p>The liquid chemicals from the above system are purchased in 55-gallon drums which are then transferred to smaller containers (e.g., 20-gallon). The smaller drums are rinsed and reused but not disposed of. The 55-gallon drums are collected and returned to the manufacturer for reuse. As a result, there is no container waste from this activity.</p>	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
<p>The SSD’s woodshop hosts a wood reuse bunker (storage). This wood is used to repair items. Additionally, the wood is reused to make needed items rather than purchase new.</p>	<ul style="list-style-type: none"> • Continue these activities. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
<p>Sawdust from the woodshop is collected through a filtration system and then disposed of.</p>	<p>Investigate the possibility of including sawdust in the green waste collection bins.</p>
<p>Fluorescent light bulbs are not recycled. Approximately 400 waste light bulbs (4-foot and 8-foot) are generated five times a year (about 2,000 pounds annually).</p>	<p>Recycle used fluorescent lighting tubes.</p> <ul style="list-style-type: none"> • Lighting Resources, Inc. Ontario, CA (909) 923-7252 • Mercury Recovery Services Monrovia, CA (818) 301-1372
<p>Cardboard is backhauled from the school sites through the SSD’s procurement warehouse delivery system. Staff breaks down and stacks the cardboard that is collected when delivery is made the following day. Much of the cardboard is reused through the print shop and in other areas. The remaining cardboard is collected at the procurement warehouse for EDCO.</p>	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse and recycling activity in the corresponding procedures.

Current Practices	Opportunities for Waste Reduction
Approximately 40 to 50 pallets are reused and/or recycled each month.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
Aluminum containers and scrap metals (e.g., fencing, door and window frames, pipes) are collected for recycling.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.
Appliances (e.g., microwaves, refrigerators, stoves, ovens, washers, dryers) are recycled rather than thrown away (approximately 10 items or 500 pounds per year).	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.
The SSD hosts a surplus sale each year to get rid of excess equipment and furniture	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
SSD participates in computer recycling.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.
SSD requires C&D waste recycling by contractors —asphalt is ground and reused and concrete is also recycled.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.

Food Service

Current Practices	Opportunities for Waste Reduction
Every Friday is "Chef's Choice Day," when leftover food is added to the menu as a special item.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
Some food redistribution occurs (e.g., reuse, donation to local charity).	<ul style="list-style-type: none"> • Continue and expand this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
Food waste is disposed of.	<ul style="list-style-type: none"> • Continue Offer vs. Serve. • Track number of meals prepared and number of students served. • Monitor the types of food wasted and alter menu accordingly. • Compost food scraps at the school gardens (e.g., Hillcreek and Carlton Oaks).
Significant amounts of cardboard are generated and recycled at central kitchen.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures. • Flatten cardboard boxes before depositing in recycling bin. • Backhaul cardboard to central kitchen for recycling. • Consider purchasing a cardboard baler.
#10 food cans are disposed of and represent a significant portion of the food service waste stream. (These cans are recovered for recycling through the MRF sorting process, but the SSD pays EDCO for disposal of them.)	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy that includes a districtwide recycling program (and include #10 cans). • Establish a recycling program for #10 cans, with collection bins at school sites and backhauling to central kitchen for recycling. • Consider purchasing a can crusher for additional volume reduction.
The SSD belongs to the San Diego Food Co-op.	<ul style="list-style-type: none"> • Continue this practice and make it part of standard operating procedures.
Reusable trays are used at school sites. These are washed (central dishwasher) at the central kitchen.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
Reusable cloth aprons, towels, and hair covers are used at the central kitchen and reusable plastic aprons are used at the schools.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.

Transportation

Current Practices	Opportunities for Waste Reduction
Asbury Environmental Services collects used oil, oil filters, solvents for parts washer, and other automotive fluids for recycling.	<ul style="list-style-type: none"> • Continue this practice. • Consider becoming a registered industrial generator to receive a 16¢-per-gallon recycling incentive for all the used oil generated by school equipment. (see www.ciwmb.ca.gov/UsedOil/CertsRegs/registr.htm).
Old tires are sent to be recapped (Park House Tires) and when returned are then used as back tires.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.
Tires too worn for recapping are sent to S&S tires, where they are ground and used for road base.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.
The transportation office has a recycle bin for mixed recyclables.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.
Scrap metal is recycled through A-1 Metal.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such recycling activity in the corresponding procedures.
The drain system is equipped with a stage-3 clarifier (water oil/tar separator) and is serviced by Safety Clean. Water runoff from the wash rack is filtered through this system.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such waste/pollution prevention activity in the corresponding procedures.
Transportation staff purchases some products with reduced packaging (e.g., oil filters with 24 filters in a single box).	<ul style="list-style-type: none"> • Continue this practice. • Work with vendors to design specifications to eliminate excess packaging. • Ask your vendor to provide the District with a program to return or reuse packaging materials. • Adopt a districtwide waste reduction policy and include packaging reduction strategies in the corresponding procedures.
Reusable shop towels, cleaning towels, and uniforms are used and cleaned through a laundry service.	<ul style="list-style-type: none"> • Continue this practice. • Consider using old towels and uniforms in other areas of the school (i.e. auto shop classes as oil wipes) and/or give to a cloth scrap dealer. • Establish a districtwide waste reduction policy and include such reuse activity in the corresponding procedures.

Current Practices	Opportunities for Waste Reduction
Transportation staff does not use recycled oil in buses. They have issues with the quality of re-refined motor oil.	<ul style="list-style-type: none"> Consider purchasing re-refined oil for the buses and fleet vehicles (www.ciwmb.ca.gov/UsedOil/ReRefined/).
There was no mention in the waste assessment notes regarding the purchase of reclaimed engine coolants.	<ul style="list-style-type: none"> Consider using reclaimed engine coolants when servicing vehicles (http://www.epa.gov/cpg/pdf/vehi-00.pdf).

Procurement

Current Practices	Opportunities for Waste Reduction
<p>All purchases are made from the North County Educational Purchasing Consortium in San Diego County (SSD policy). There is no policy to purchase products with recycled content. Some products purchased contain recycle content (e.g., paper, paper towels, etc.).</p>	<ul style="list-style-type: none"> • Investigate the availability of RCPs and other environmentally preferable products with the North County Educational Purchasing Consortium; if available, purchase RCP environmentally preferable supplies when feasible. • Adopt a districtwide policy to purchase RCPs and other environmentally preferable products and request that the consortium include RCPs in their bids. • Consider establishing a price preference for RCPs and other environmentally preferable products.
<p>Purchase orders are made at the point of generation (e.g., school site, SSD office, transportation) electronically and processed through the SSD office.</p>	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such waste prevention activity in the corresponding procedures.
<p>SSD does not purchase rebuilt laser and printer cartridges because they found that the quality was not comparable with new ones.</p>	<p>Investigate the purchase of rebuilt laser and printer cartridges.</p>
<p>They are not currently sending new toner and printer cartridges back for recycling.</p>	<p>Establish a districtwide waste reduction policy that supports a districtwide recycling program, including toner cartridges.</p>

School Site

Current Practices	Opportunities for Waste Reduction
<p>White and colored paper are collected in a single bin in each classroom and then sorted by students into larger bins for colored and white paper.</p>	<ul style="list-style-type: none"> • Continue this practice. • Consider setting up source separation bins in the classrooms (to eliminate the sorting). <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Consider switching to a mixed paper recycling program.
<p>California Fibers collects the white and colored paper bins on an “on call” basis. Staff indicated that California Fibers might take two to three weeks to service the bins after a call is placed. As a result, the paper bins are overflowing and there is cross-contamination of colored and white papers.</p>	<p>Work with California Fibers to provide better service (e.g., more timely, more bins).</p>
<p>Newspaper is a large component of the school site waste stream.</p>	<ul style="list-style-type: none"> • Include newspapers in the recycling program. • Work with city hauler, EDCO, California Fibers, or other recycler to get newspaper recycling accomplished.
<p>Aluminum cans are collected in teacher's lounge for recycling by a school staff member.</p>	<ul style="list-style-type: none"> • Continue this practice. Support this kind of individual recycling effort if it appears to work. • Establish a districtwide waste reduction policy, including a districtwide recycling program (and include beverage containers).
<p>Some paper reduction strategies (e.g., double-sided copies, voice mail instead of memos, etc.) are employed at school offices, but not consistently.</p>	<ul style="list-style-type: none"> • See opportunities for “Administrative Offices.”
<p>Printer ink cartridges from school office are shipped back to manufacturer via Fed-Ex.</p>	<ul style="list-style-type: none"> • Continue this practice. • Establish a District-wide waste reduction policy and include such recycling activity in the corresponding procedures.
<p>A significant amount of waste at the school office comes from unwanted mail and excess catalogs.</p>	<p>Reduce junk mail (see paper waste prevention strategies under Administrative Offices and visit www.ciwmb.ca.gov/WPW/Home/junkmail.htm):</p> <ul style="list-style-type: none"> • Call mail-order catalog companies. • Contact specific organizations or businesses. • Return junk mail. • Get off national mailing lists.

Appendix C [SSD]: Resources

This resource listing is designed to offer the school districts contact information for local recycling contacts, CIWMB contacts, local vendors, and other resources. It is not a comprehensive directory, nor does a vendor listing imply a recommendation.

Local Jurisdiction Solid Waste and Recycling Contacts

County

Marilyn Corodemas
Phone: (619) 694-3595
E-Mail: mcorodeh@co.san-diego.ca.us

Information regarding school recycling activities in San Diego County.

City

Jim Stoner
Phone: (619) 258-4100 x 183
E-Mail: jstoner@ci.santee.ca.us

Information regarding recycling activities in the City of Santee.

San Diego Association of Governments
Jack Koerper
Phone: (619) 595-5372
E-Mail: jko@sandag.cog.ca.us

Carolina Gregor
Phone: (619) 595-5399
E-Mail: cgr@sandag.cog.ca.us
www.sandag.cog.ca.us/projects/regional_planning/waste.html

Information regarding regional integrated waste management planning (serves as the county's Integrated Waste Management Local Task Force).

California Integrated Waste Management Board (CIWMB) Contacts

Office of Local Assistance

Zane Poulson
Phone: (916) 341-6278
E-Mail: zpoulson@ciwmb.ca.gov

General information on waste reduction and recycling throughout California. Assistance in setting up a waste prevention/recycling program.

Office of Integrated Education

Rachelle Steen
Phone: (916) 341- 6764
E-Mail: rsteen@ciwmb.ca.gov

Information on CIWMB's free workshops to California teachers on three classroom curricula (*Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* [CIWMB pub. #322-99-009]; *Earth Resources--A Case Study: Oil* [CIWMB pub. #333-98-010]; and *Exploring Environmental Issues: Municipal Solid Waste*, published by Project Learning Tree) and an activity guide (*The Worm Guide: A Vermicomposting Guide for Teachers* [CIWMB pub. #560-01-007]).

Local Vendors

Haulers

EDCO Disposal Corporation

(mixed paper, cardboard, and green waste)

6670 Federal Blvd.

Lemon Grove, CA 91945

Phone: (619) 287-7555

www.edco-corp.com

California Fibers Recycling Services

(school-site paper recycling)

Phone: (619) 442-4039

Recyclers

Earth's 911

Phone: 1-800-CLEANUP

www.cleanup.org/

Provides information pertaining to the following categories:

- Local recycling information.
- Household hazardous waste collections.
- Composting.
- State and local Information.
- Environmental events.

I Love A Clean San Diego

www.ilacsd.org/

Urban Corps of San Diego

Building 238, Naval Training Center

San Diego, CA 92133

Phone: (619) 523-2828

www.urbancorpssd.org

Purchasing Cooperatives

Recycled Products Purchasing Cooperative (RPPC)

Phone: 1-800-694-8355

www.recycledproducts.org

RPPC is a nonprofit organization dedicated to increasing the use of recycled-content paper. Membership is free and products include white and colored copy paper; RPPC uses its purchasing power to meet or beat prices for virgin material copy paper. With 90 warehouses throughout California, RPPC serves private and public agencies. Its customers include Pomona Unified School District, Pajaro School District, JFK University, University of California San Diego, and University of California Santa Barbara.

Stockless Purchase Program

Sue Allen

Phone: (530) 622-7130, ext. 240

E-Mail: sueallen@edcoe.k12.ca.us

The El Dorado Department of Education administers this purchasing cooperative. Membership is \$100 a year. The co-op offers school supplies, custodial supplies, and computer supplies at highly competitive prices. Over 80 school districts are members. Membership is open statewide.

Materials Exchange Centers

CalMAX

Phone: 1-877-520-9703 (toll-free)

www.ciwmb.ca.gov/CalMAX/

CIWMB's materials exchange (free service) designed to help businesses find markets for materials they have traditionally discarded; school districts can find supplies and materials for free or at low cost.

KidMAX

Phone: 1-877-520-9703 (toll-free)

www.ciwmb.ca.gov/CalMAX/KidMax.htm

CIWMB's free source of used materials to California's schools.

Appendix D [SSD]: Model Board of Education Waste Reduction
Resolution and Environmental Purchasing Policy

Contained in Appendix F of this document.

Appendix E [SSD]: Sample Letter to Vendors

Contained in Appendix G of this document.

Appendix F [SSD]: Glossary

Contained in Appendix K of this document.

Waste Assessment Report: Visalia Unified School District

1.0 Executive Summary

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts can play an important role in their communities in achieving this mandate.

The Visalia Unified School District (VUSD) is located in the City of Visalia in Tulare County, California. VUSD consists of twenty-two elementary schools, four middle schools, four high schools and three special schools. In addition to the school sites, VUSD operations include one administration office, one operations office, one custodial grounds building and three centralized food service facilities.

California Integrated Waste Management Board (CIWMB) staff conducted a waste assessment of VUSD operations to identify current waste management practices and recommend cost-effective waste management strategies the school district can implement to reduce its solid waste generation and potentially save money. The information contained in this waste assessment report is based on interviews and a walk-through of VUSD facilities conducted on November 14–16, 2000.

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the manner materials are purchased, used, and discarded. There are several components to implementing this philosophy:

- Reduce—Waste Prevention
- Reuse
- Recycling
- Procurement Practices
- Composting/Vermicomposting
- Construction and Demolition (C&D) Debris and “Green” Building Design

1.1 District Waste Information

- Annually, the VUSD generates approximately 7,842,159 pounds of waste, of which approximately 5,632,159 pounds are disposed of and 2,210,000 pounds are recycled.¹

¹ Volume to weight conversion rate is 107 pounds per cubic yard for disposal, the result of additional analysis done by CIWMB’s Waste Analysis Branch staff using data obtained in the 1999 Statewide Waste Disposal Characterization Study, and 100 pounds per cubic yard for recyclables (uncompacted OCC), United States Environmental Protection Agency, *Business Users Guide*.

- The City of Visalia Public Works Department provides the VUSD with refuse collection and disposal service at an annual disposal cost of \$263,927, or approximately \$94 per ton.
- In a recycling program for mixed recyclables provided by the city, VUSD recycles an estimated 2,210,000 pounds of cardboard, paper and beverage containers per year, a diversion rate of 28 percent.²

1.2 Summary of Key Recommendations

A complete review of the VUSD's current waste management practices and opportunities for waste reduction is contained in Appendix B. The following recommendations are provided to the VUSD for immediate consideration.

- **Recommendation 1:** Adopt a districtwide waste reduction policy.
- **Recommendation 2:** Implement waste reduction strategies.
- **Recommendation 3:** Establish a procurement policy that maximizes resources and promotes the use of recycled-content products (RCP) and other environmentally preferable products.
- **Recommendation 4:** Formalize the districtwide recycling program.
- **Recommendation 5:** Formalize the green waste management program.

1.3 Estimated Savings

It is estimated the VUSD will save up to \$200,000 per year if the recommendations of this report are implemented. There are minimal costs associated with these recommendations (e.g., stacking food service trays to preserve disposal volume, implementing a double-sided copy policy); however, it is believed that the estimated savings would cover such costs.

2.0 Introduction

The Integrated Waste Management Act requires every California city and county to divert 50 percent of its waste from landfills. School districts are important to the achievement of this mandate for several reasons:

- It is estimated that school districts contribute approximately 764,000 tons to the total volume of solid waste in California.³

² This total reflects only the waste prevention and recycling efforts that the project team was able to quantify. The VUSD participates in other such efforts, but due to lack of specific data or accurate measurement tool, quantification of other efforts was not feasible.

³ CIWMB, *Statewide Waste Characterization Study: Results and Final Report*, December 20, 1999, page 36.

- In some medium-sized and smaller communities, schools contribute as much as 15 percent of the waste generated in the community;⁴
- Visible and active waste prevention and recycling programs in schools provide excellent role models that support environmental curricula in the classroom.
- To the extent that environmental education is part of classroom curricula, students will carry resource conservation lessons into adulthood.
- School districts are an integral part of every community and are important participants in civic leadership.
- The majority of the state's population is involved with schools in some way—as students, parents, professionals or volunteers. Schools serve as positive role models for environmental stewardship.

Staff of the CIWMB's Office of Local Assistance (OLA) and a consulting firm conducted a waste assessment of VUSD operations. Interviews of VUSD personnel and a guided walk-through of school district facilities were conducted on November 14-16, 2000. A representative from the City of Visalia also participated. The objective of the assessment was to identify current waste management practices and develop recommendations for cost-effective strategies the VUSD can implement to reduce the generation of solid waste and potentially save money. The results of the waste assessment are discussed in this report.

This report consists of six sections:

- 1.0 Executive Summary
- 2.0 Introduction
- 3.0 School District Information
- 4.0 Reduce, Reuse, Recycle
- 5.0 Waste Assessment Findings
- 6.0 Analysis and Recommendations

⁴ CIWMB, *Statewide Waste Characterization* data site, <http://ciwmb.ca.gov/WasteChar/JurisSel.asp>

3.0 School District Information

VUSD is located in the City of Visalia in Tulare County, California and consists of 22 elementary schools, a newcomer language school, four middle schools, four high schools, one adult school, and a school that serves orthopedically-handicapped students. The VUSD's 2,000 certificated and classified staff serves approximately 24,000 K–12 students and 10,000 adult school students.⁵ In addition to the school facilities, the VUSD operations include one administration office, an operations office, one custodial/grounds building, and a centralized food service facility. The VUSD's 40 facilities cover over two million square feet.

4.0 Reduce, Reuse, Recycle

“Reduce-Reuse-Recycle” is a resource conservation philosophy promoting reduction in solid waste generation through changes in the way materials are purchased, used and discarded. This section summarizes how this approach applies to the waste management system within a typical school district.

4.1 Reduce—Waste Prevention

Very often, managers look to recycling first when pursuing waste reduction. Recycling can divert large volumes of material from the waste stream and reduce disposal costs. However, preventing waste from occurring (also called source reduction) is an even more important part of a waste management program, reducing both waste and cost.

Everything that goes into the trash bin is something that was purchased. Throwing the item in the trash bin adds the cost of disposal to the original price of the item. Whatever can be diverted from the trash bin by waste prevention, reuse or recycling will result in disposal cost savings.

Waste prevention strategies include:

- Copying on both sides of a sheet of paper (double-sided copying).
- Ordering bulk supplies to reduce excess packaging.
- Grasscycling.
- Xeriscaping.

4.2 Reuse

Reusing materials can save money and contribute to resource conservation. Material exchange centers serve as clearinghouses for new and used material, supplies and equipment. These materials are available at little or no cost to institutions such as school districts.

⁵ VUSD Web site, www2.visalia.k12.ca.us/profile.htm

Reuse strategies include:

- Using reusable rather than disposable food serving trays and eating utensils.
- Reusing packing boxes or sending them back to the vendor/manufacturer.
- Donating excess and leftover food to food banks and food rescue programs;
- Donating used items to local charities or other nonprofit organizations.
- Participating in local and global book exchanges.
- Securing or exchanging materials through material exchange centers such as KidMAX and CalMAX.
- Utilizing federal, State, and local surplus programs.

4.3 Recycling

A recycling program is more than collecting beverage containers such as aluminum cans, glass, and some plastic containers. White paper, mixed paper, newspaper, corrugated cardboard, tin cans, and scrap metal all have recycle value as well. Every municipality and region has a different waste management infrastructure, so it is important for school districts to work closely with the local jurisdiction solid waste management and recycling coordinator and waste haulers to maximize opportunities to recover recyclables from the waste stream.

There are five essential elements to a good recycling program:

- A written districtwide waste reduction policy.
- Guidelines, education and training for students, teachers, administrators, custodians, and staff within each district department.
- Review and negotiation of recycling and disposal contracts, taking into account the variety of materials, collection schedules, cost/revenue, training, education, resources (e.g., storage containers), and degree of contaminants, etc.
- A reliable collection system consisting of a sufficient number of strategically placed, well-labeled collection containers.
- Monitoring and evaluation of program compliance and performance.

4.4 Procurement Practices

Collecting recyclable material and reusing material are only part of the resource conservation process. For recycling to work in the marketplace, it is equally important to “close the loop” by purchasing products that contain postconsumer recycled-content material. Consumer demand for goods manufactured with recycled content will ensure a market for the materials collected in recycling programs.

School districts can increase demand for recycled content products, lower costs of materials, and increase purchasing power by participating in purchasing cooperatives. Many school districts already participate in purchasing cooperatives, purchasing a variety of products and services from insurance to school supplies and food. Cooperatives increase the purchasing power of a single district. By participating in cooperatives, school districts can expect to negotiate prices that are more competitive, reduce packaging, and secure a greater supply and variety of recycled content products.

4.5 Composting/Vermicomposting

Organic waste includes “green waste” (e.g., grass clippings and tree and shrub clippings) and food waste. Using the Reduce, Reuse and Recycle approach, a school district should first consider ways of reducing organic waste by examining the sources. To reduce green waste, for example, a district should select landscaping plants that do not require frequent trimming (xeriscaping) and leave grass clippings in place (grasscycling) whenever possible. Vermicomposting of food scraps on school sites is an excellent student educational activity. Additionally, leftover food should be reused or donated whenever feasible. Finally, organic waste can be collected separately and composted either off- or on-site. Many municipalities recycle green waste by using it as mulch and compost for landscaping in city parks and median strips and for community beautification projects.

4.6 Construction and Demolition Debris and “Green” Building Design

School districts throughout California are engaged in major school renovations and new school building projects. These projects present excellent opportunities to divert construction and demolition debris (C&D) into other uses. Concrete and asphalt waste can be used as road base; wood materials can be reused or used as raw material for the manufacture of particleboard or mulch or as a bulking agent in the composting process. Additionally, reinforcement bar (re-bar), dry wall, carpet, and asphalt roofing shingles can be recycled.

Specifying the reuse and recycling of demolition debris in construction contracts can accomplish the diversion of C&D waste. Districts should partner with the local solid waste management and recycling coordinator and local waste haulers for assistance in developing the most resource-efficient approach.

For school districts engaged in new construction, there are several ways green building design principles can be used to increase student performance, increase the use of recycled content products, reduce green waste with proper landscaping plans, and reduce energy costs. Architects and contractors knowledgeable and experienced in green building design should be selected for new school construction projects.

5.0 Waste Assessment Findings

5.1 Waste Generation

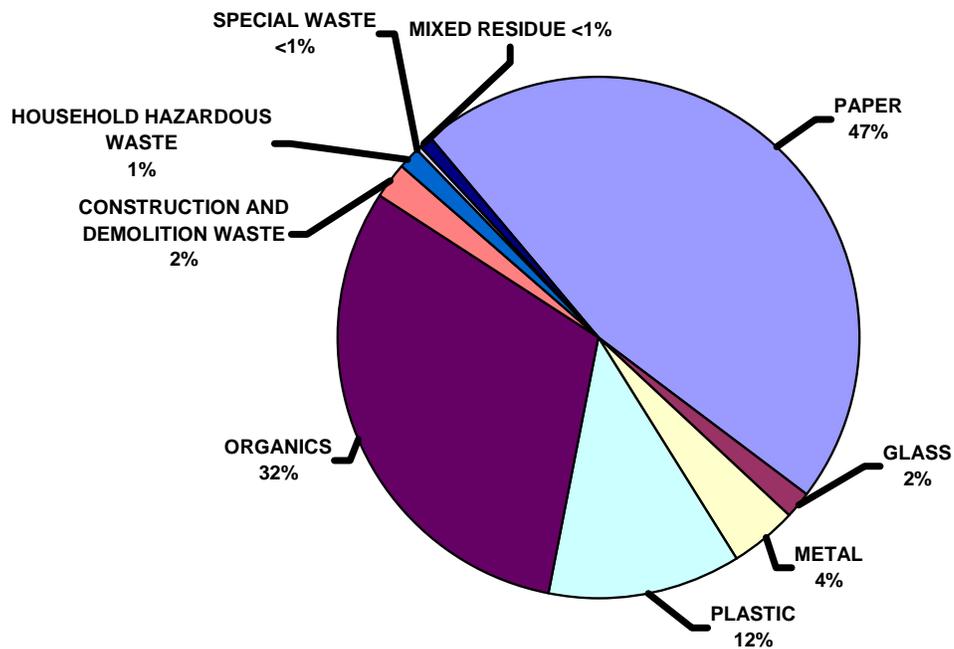
The total amount of waste generated equals the amount of material disposed plus the amount of material diverted from disposal (i.e., reduced, reused, and recycled).

VUSD generates approximately 7,842,159 pounds of waste material. Based on the number of bins and collection frequency, approximately 5,632,159 pounds are disposed of and 2,210,000 pounds are recycled. However, during the November walk-through of several VUSD facilities and school sites, the waste assessment team observed that many “green” or recycled material bins were underutilized possibly by as much as 50 percent. Therefore, the 2,210,000 pounds of recycled material referred to above may be more representative of recycling *capacity* rather than of actual recycling *achieved*.

Figure 1 illustrates the estimated composition of VUSD’s solid waste stream.⁶

These data, combined with information collected from the waste assessment walk-through, enabled the waste assessment team to identify the largest components of the VUSD waste stream to target for potential waste reduction program development.

Figure 1
Estimated Waste Stream Composition for Visalia Unified School District



⁶ Based on CIWMB’s Solid Waste Characterization Database at www.ciwmb.ca.gov/WasteChar/JurisSel.asp.

5.2 Disposal

The City of Visalia's Public Works Department provides the VUSD with refuse collection and disposal service. This service includes 52 three-cubic-yard and 47 two-cubic-yard refuse containers serviced five times a week, with the exception of those at the Adult School and Sierra Vista sites, which are picked up three times per week, and those at the Stadium (Redwood), which are collected twice a week. VUSD is charged based on this service schedule (i.e., by the bin pull). The cost of this service is \$263,927 annually. Additionally, some schools within the school district but located outside of the Visalia city limits are serviced by other local refuse companies.

5.3 Reduce and Reuse

VUSD also participates in a number of reduce and reuse activities, such as, double-sided copies, paper reuse (e.g., scratch pads), and grasscycling; however, none of these practices were readily quantifiable.

5.4 Recycling

VUSD currently participates in commingled recycling. Specifically, in addition to the 99 brown bins for regular trash, the city provides 28 green bins for recyclables (e.g., beverage containers, mixed paper, and cardboard). The green bin material is taken to the materials recovery facility (MRF) for further sorting while the brown bin trash is landfilled directly (e.g., food, green material, and other wet wastes). There have been some reports that occasionally, green bin material is taken to the landfill rather than to the MRF, perhaps due to contamination of the recyclables.

6.0 Analysis and Recommendations

The waste assessment team observed several waste reduction practices in the VUSD and identified several opportunities for further waste reduction and cost savings. A comprehensive list of opportunities for action, listed by VUSD functional area, is included in Appendix B. These opportunities have been divided into tiers and summarized in Table 1.

- Tier 1 options are those opportunities that will provide maximum waste reduction and financial benefit to VUSD.
- Tier 2 options are those activities that are currently in place and should be formalized or strengthened.
- Tier 3 options are those opportunities that will provide substantial waste reduction benefit, but they may take longer to implement or involve additional cost to implement.

The strategies discussed in this section are the Tier 1 and some Tier 2 options that the waste assessment team identified as the actions that will provide maximum waste reduction and financial benefit to the VUSD.

Table 1: Visalia Unified School District Summary of Options

Tier One	
1.A.	Adopt a districtwide waste reduction policy.
1.B.	Implement waste reduction strategies. Formalize policy of double sided copying; provide incentives. Review number of bins and pickups per week to assess whether some can be eliminated. Stack polystyrene trays for lower volume disposal.
1.C.	Establish a procurement policy that maximizes resources and promotes use of RCPs and other environmentally preferable products. Use material exchanges when appropriate. Join purchasing cooperatives to leverage buying power. Set policy for use and purchase of RCP copy paper. Explore use of RCP paper towels and toilet paper. Monitor/check principal-directed purchases for RCP content, resource efficiency.
1.D.	Formalize and strengthen the districtwide recycling program. Obtain more recyclable collection bins, provide recycle bins in classrooms and at stadium. Conduct recycling awareness (including MRF) for teachers, students and workers. Formalize Special Ed program for CRV collection. Continue employee recognition activity.
1.E.	Formalize the green waste management program. Set policy for grasscycling, xeriscaping, and composting and implement districtwide.
Tier Two	
2.A.	Establish recycling for other materials. Reuse scrap lumber from maintenance yard. Recycle fluorescent lamps. Recycle toner cartridges. Set policy to purchase rerefined oil, recycled antifreeze, bulk purchase of brake cleaner for vehicle maintenance yard and student auto shops districtwide.
Tier Three	
3.A.	Implement measures to reduce food waste. Separate food scrap and use vermiculture. Ensure students have enough time to eat lunch. Explore purchasing can crusher. Recycle #2 plastic buckets.
3.B.	Implement measure to reduce C&D waste. Set policy of keeping C&D waste out of landfills.
3.C.	Set green building policy for construction/remodel.
3.D.	Explore reusable rather than disposable products. Explore feasibility of reusable air filters.
3.E.	Explore regaining value for recyclable materials. Explore market for sale of waste paper.

Recommendation 1: Adopt a Districtwide Waste Reduction Policy

With some notable exceptions, most school waste reduction initiatives fail over time because the programs are not “institutionalized” by the adoption of formal policies and operating procedures by the Board of Trustees and the superintendent. Programs initiated by well-meaning teachers, principals, students, and other individuals generally disappear when these motivated individuals graduate, are promoted, or leave the school district.

The most effective way to institutionalize waste reduction practices is for the Board of Trustees to adopt clear statements of policy and for the Superintendent to adopt operating procedures and training plans with which to implement the Board’s policy (see Appendix D for model waste reduction resolution and environmental purchasing policy).

VUSD already has in place effective waste reduction practices, but all too often, good practices are lost when the persons responsible leave or transfer. The adoption of a Board policy on waste reduction and recycling will remind all VUSD personnel of the importance of integrating waste reduction practices in their daily operations. The development of department procedures—in purchasing, maintenance and operations, food service—will ensure the continuity of the good practices and encourage staff to think of new ways to reduce waste.

Implementation Steps

1. Adopt school board resolution endorsing and supporting integrated waste management principles of Reduce, Reuse and Recycle (see Appendix D).
2. Require that each VUSD department (food service, maintenance, transportation, purchasing, etc.) develop policies or operating procedures that support waste reduction principles and institutionalize the good practices.
3. Require that department directors monitor the amount reused or recycled, cost savings, or other measures of success and report back to the superintendent.

Recommendation 2: Implement Waste Reduction Strategies

Double-Sided Copying

The VUSD purchases approximately 60,000 reams of white and colored multi-use copy paper per year. The print shop in the administration office prints double-sided copies most of the time. However, it is unclear whether double-sided copying is required or routinely done throughout the VUSD. Using both sides of a sheet of paper is a sensible conservation measure. If a ream of paper costs \$2.50, and both sides of each sheet of paper are used, the value from that ream of paper has doubled (cost of \$.0025 per page rather than \$.005 per page). Using both sides of each sheet of paper is equivalent to a savings of \$75,000 per year.

Implementation Steps

1. Establish a formal VUSD policy requiring double-sided copying (see model policy in Appendix D).
2. Check all copy machines to ensure that they are capable of double-sided printing. Have machines reset to automatically print double-sided copies.
3. Acquaint administrative staff and teachers with the policy and the cost benefits.
4. If possible, create incentives for teachers and staff to use duplex copying rather than single-sided copying. For example, if teachers or departments are “charged” by copies made, a system of discounting or credit could be awarded for double-sided copying.

Optimizing Waste Bins

The City of Visalia handles the majority of the VUSD’s solid waste with two private haulers providing service to the few schools outside of the Visalia City limits. The City of Visalia provides a combination of brown bins (for regular trash) and green bins (for recyclable materials including beverage containers, cardboard, and mixed paper). The two- and three-cubic-yard bins are picked up five times per week, except for those at the Adult School and Sierra Vista sites that are picked up three times per week and those at Stadium (Redwood) that are collected twice a week. The pickup service is provided regardless of the amount of material in the bins, and the waste assessment team observed that many of the bins were not full. At the same time, it appears that the recycling bin capacity is underutilized.

By ensuring that all recyclables end up in the green bins, thus reducing the volumes in the brown bins, the VUSD could adjust its service levels. The monthly cost for servicing one three-cubic-yard bin five times a week is \$246; if the same bin were picked up only three times a week, the monthly cost would be \$157, a 40 percent cost savings. The VUSD could realize significant cost savings (\$50,000 to \$100,000 a year).

Implementation Steps

1. Conduct a review of the amount of material in the trash bins and make adjustments to the size of the bins and the frequency of pickups.
2. Label the “green” bins more clearly to indicate what kind of recyclable material can be placed in these bins.

Stacking Trays

The VUSD food service department serves 33 schools with a total enrollment of 24,000 students. The four major sources of food-related waste are polystyrene lunch trays, leftover food, cardboard, and #10 steel cans. The VUSD pays for waste disposal by volume, not by weight, so a simple and effective way to reduce the volume of waste would be to flatten cardboard and cans and to stack the polystyrene trays.

The VUSD serves 7,900 meals a day utilizing polystyrene serving trays. A recent study in the San Francisco Bay Area demonstrated that stacking trays before placing them in the disposal

bins yields significant disposal costs savings.⁷ It is estimated that VUSD could save as much as \$24,473 per year by implementing this strategy. Students currently monitor the distribution of beverage pouches at some schools and could be enlisted to monitor the collection and stacking of trays.

Implementation Steps

1. Work with the school administrators, teachers, and food service staff to develop a cafeteria waste collection system that separates food waste and re-stacks trays.
2. Conduct an education program to inform students of the benefits of stacking trays (environmental and cost benefits).
3. Conduct collection and stacking under the supervision of adult or student monitors.

Recommendation 3: Establish a procurement policy that maximizes resources and promotes use of recycled-content products (RCP) and other environmentally preferable products.

Procurement of supplies is centralized in the VUSD's purchasing office, with some purchases made by the principals at the schools. Custodial supplies are purchased in bulk, thus saving money and reducing unnecessary packaging. Some of the supplies are recycled-content products (RCP); however, most are not. There is no districtwide policy for RCP purchase. It also appears that teachers, principals, and administrators are not utilizing the resources of materials exchange centers to full advantage.

Three elements can contribute to an optimized procurement policy:

- Using material exchanges when possible.
- Joining purchasing cooperatives to leverage purchasing.
- Purchasing recycled content products (e.g., copy paper, bath tissue, paper towels).

Material exchange centers serve as clearinghouses for new and used material, supplies and equipment, available to institutions free or at low cost. A recent review of the items available through CalMAX revealed plastic buckets, paint, fabric scraps and trees. Similar kinds of material are available through KidMAX, a materials exchange exclusively for schools (see Appendix C).

The El Dorado County Office of Education Stockless Purchase Program is an example of a purchasing co-op that saves school districts time and money while providing low-cost office and school, custodial, computer, and athletic RCPs and supplies (see Appendix C). A similar approach to leveraged buying power is the formation of joint powers authorities (JPA). Many school districts and other public entities form JPAs to leverage their collective buying power for supplies, food, and a variety of services.

⁷ ESA Environmental Science Associates, *Analysis of Cafeteria Waste and Recycling Options for the Ravenswood Elementary School District*, for the South Bayside Solid Waste Authority, April 20, 2000.

The collection of recyclable material is only one part of recycling. In order for a market to exist for recycled material—aluminum, steel, paper, cardboard, etc.—there needs to be a demand for this material by manufacturers. If consumers demand products containing recycled content, then the market for recyclables will be created and maintained. Thus, the purchase of recycled content products is a crucial element of the recycling process, the closing of the loop between waste and new products.

Implementation Steps

1. Adopt districtwide policies that require reduced packaging, the reuse of materials, and the purchase of RCPs whenever possible (see Appendix D).
2. Distribute information on materials exchange centers to purchasing staff, school principals, and teachers.
3. Explore forming or joining purchasing and food service cooperatives or forming JPAs with other districts in the region.
4. Request bids on items containing recycled content and other environmentally preferable products (see Appendix D).

Recommendation 4: Formalize and Strengthen the Districtwide Recycling Program

The City of Visalia provides 28 green bins for the collection of mixed recyclables (cardboard, mixed paper, and beverage containers). During the walk-through, the waste assessment team observed that these bins were not being fully utilized. Formalizing policies and procedures will ensure the continued success of the recycling program and reduce the overall volume of waste. In addition, there remain some opportunities for an increased level of waste reduction and recycling.

Implementation Steps

1. Formalize the recycling program by adopting operating procedures for recyclable collection and monitoring; include delineation of responsibilities.
2. Appoint a districtwide recycling coordinator to ensure the consistency of programs in each school and in each administrative department.
3. Conduct an educational and promotional campaign to remind students and VUSD personnel about what is recyclable and their role in the program.
4. Ensure that collection containers are set up, marked clearly, and distributed throughout the school sites to ensure proper collection of recyclable material.
5. Monitor the recycling program to identify the types and quantity of materials being recycled.

Recommendation 5: Formalize the Green Waste Management Program

Based on the waste assessment and the waste composition analysis (Figure 1), organic landscaping waste accounts for 28 percent of the VUSD's solid waste, or approximately 2,196,000 pounds per year. If the VUSD kept all green waste out of the disposal bins, the disposal cost savings could be over \$103,000 a year. Currently, the custodial/grounds department reports that they practice grasscycling and spreading of chipped tree trimmings at many of the school sites. This is a good practice and formalizing it with policies and procedures will ensure that these practices are consistently applied throughout the VUSD.

Benefits of grasscycling include the cost savings from using less fertilizer, less water, and less labor time. Grasscycling allows rapid decomposition of the clippings, returning nutrients to the soil. Shredding the tree and shrub trimmings with a chipper and using this material as mulch helps conserve moisture and suppress weeds, thus saving on water and herbicide use.

Implementation Steps

1. Adopt a school board resolution committing the VUSD to a policy of waste reduction.
2. Formalize green waste recycling procedures in the custodial/grounds department, including the key elements of grasscycling and chipping tree/shrub trimmings for mulch or compost.
3. Train the custodians to separate any green waste from the regular waste.
4. Purchase additional equipment, such as mulching mower and chipper, as practicable.

Appendix A [VUSD]: Waste Assessment Team

This listing includes the State and consultant staff working on this project as well as the local jurisdiction and Visalia Unified School District (VUSD) staff providing information for this project.

Name	Organization/Affiliation	Phone Number	E-Mail Address
Rebecca Brown	CIWMB Staff/Contact for Tulare County	(916) 341-6680	rbrown@ciwmb.ca.gov
Terri Gray	CIWMB Staff, Team Member	(916) 341-6252	tgray@ciwmb.ca.gov
Keir Furey	CIWMB Staff, Project Leader	(916) 341-6247	kfurey@ciwmb.ca.gov
Clint Whitney	R&G Consultants for the CIWMB	(916) 730-4204	clintwhitney@accessbee.com
Sue Sakaki	R&G Consultants for the CIWMB	(510) 531-5377	sukaki@esgcon.com
Pavel Matustik	R&G Consultants for the CIWMB	(661) 510-0518	pmatustik@scvsfsa.org
Terry White	Director, VUSD Transportation	(559) 730-7856	twhite@visalia.k12.ca.us
Rich Carlson	Director, VUSD Maintenance	(559) 730-7589	rcarlson@visalia.k12.ca.us
Leeann Errotabere	Director, VUSD Purchasing	(559) 730-7539	lerrotabere@visalia.k12.ca.us
Clae Nave	Principal, Willow Glen Elementary	(559) 730-7798	cnave@visalia.k12.ca.us
Dave Tonini	Principal, Green Acres Middle School	(559) 730-7376	dtonini@visalia.k12.ca.us
Bob Cesena	Principal, Golden West High School	(559) 730-7814	bcesena@visalia.k12.ca.us
Manual Rico	Director, VUSD Custodial/Grounds	(209) 730-7890	mrico@visalia.k12.ca.us
Jeri Wheaton	Director, VUSD School Nutrition Programs	(559) 730-7871	jwheaton@visalia.k12.ca.us
Patty Rohman	Director, VUSD Administrative Services	(559) 730-7529	prohman@visalia.k12.ca.us
Anna Saldana	Printing Supervisor	(559) 730-7542	asaldana@visalia.k12.ca.us
Judy Richmond	Transportation/Parts & Inventory	(559) 730-7595	jrichmond@visalia.k12.ca.us
Glenn Richardson	Transportation/Shop Foreman	(559) 730-7595	grichardson@visalia.k12.ca.us
Tom Baffa	Solid Waste Services Manager, Public Works Dept.	(559) 738-3569	txbaff@ci.visalia.k12.ca.us

Appendix B [VUSD]: Waste Reduction Practices and Opportunities

This appendix includes the findings of the waste assessment team: observations on current practices and suggested opportunities for waste reduction. Opportunities are grouped by functional area within the VUSD.

- Administrative Offices
- Operations and Maintenance
- Food Service
- Transportation
- Procurement
- School Sites

Administrative Offices

Current Practices	Opportunities for Waste Reduction
<p>Staff achievements (e.g., savings and other efficiencies) are rewarded through employee recognition at Board of Supervisors' meetings.</p>	<ul style="list-style-type: none"> • Continue this practice. • Consider formalizing this practice in the form of staff awards as part of the Board of Supervisors' and/or City Council meeting agenda.
<p>Usable scrap paper from the print shop is made into scratch pads and provided to teachers.</p>	<ul style="list-style-type: none"> • Continue this practice • Establish a districtwide waste reduction policy and include such reuse activities.
<p>Toner cartridges and bottles from the print shop are returned to supplier for reuse/recycling.</p>	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
<p>VUSD staff makes double-sided copies as much as possible.</p>	<p>Establish a districtwide waste reduction policy to reduce paper waste and include such activities.</p> <ul style="list-style-type: none"> • Require double-sided copies for certain size jobs, setting the copiers to make two-sided copies as the default. • Develop incentives for staff to comply with policy (e.g., reduced cost). • Establish a districtwide program to support the VUSD's paper reuse activities (e.g., scratch pads made from used paper). • Provide e-mail access to all employees so memos and notices can be distributed electronically. • Evaluate VUSD forms for reduction opportunities (e.g., smaller font, double-sided, electronic, etc.). • Reduce junk mail (see details under school sites). • Include in this policy a districtwide recycling program to recover paper.
<p>Sometimes brown bins are used for recyclables (because there are not enough green bins). This leads to some confusion and may contribute to the incorrect use of the bins (i.e., contamination issues).</p>	<ul style="list-style-type: none"> • Get hauler to provide bins that are properly color-coded and/or labeled. • Provide districtwide education and promotion of the existing waste reduction activities. • Clearly label the bins so that staff and students understand what materials go into each.

Current Practices	Opportunities for Waste Reduction
<p>Refuse service is provided the same number of times each week regardless of the amount of material in the bins, and bins are not always full when collected.</p>	<ul style="list-style-type: none"> • Some brown bins (refuse) could be replaced with green bins (recycling). • Since the brown bins are sometimes collected when they are not full, monitored removal of some of these dumpsters could potentially save VUSD refuse costs.
<p>Existing recycling program is not clear to all staff (e.g., the dumpsters are not labeled with respect to what is accepted, and some teachers and other staff are unaware of recycling program).</p>	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy including the existing commingled recycling program. • Hold a promotional campaign to explain and elicit support for the VUSD's waste reduction efforts.
<p>The VUSD is planning future construction, deconstruction or retrofit of school and administrative buildings.</p>	<p>Consider developing a green building policy for use in all new construction, remodeling, and repair projects.</p>

Operations and Maintenance

Current Practices	Opportunities for Waste Reduction
Grasscycling is practiced at most sites. The blades of a frail-type mower are reversed in order to get a mulching effect.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such waste reduction activities.
Grounds workers do the pruning and tree trimming and use a wood chipper. Wood chips and leaves are landsread on city property and at some school sites.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such waste reduction activities.
During the waste assessment, it was noted that several heavy bricks with cement were thrown into the trash dumpster at one high school.	Establish a districtwide waste reduction policy and include the recycling of construction and demolition materials (e.g., lumber, asphalt, concrete, bricks).
During building maintenance, large pieces of lumber are left over and disposed of.	Consider reusing lumber in wood shop classes.
VUSD's Stock Status Report lists 5,022 48-inch fluorescent lamps.	Establish a districtwide waste reduction policy that includes the recycling of fluorescent light tubes.
As preventative maintenance, all heat/air filters are changed on a three-month schedule.	Consider switching to reusable filters.

Food Service

Current Practices	Opportunities for Waste Reduction
VUSD provides an Offer vs. Serve lunch program.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Polystyrene lunch trays are disposed of and are a significant component of the food service waste stream by volume.	<ul style="list-style-type: none"> • Stack trays into the shipping bags for disposal to reduce volume in refuse bins. • Investigate the potential to recycle these trays.
Leftover food is disposed of. It represents a large segment of the food service waste stream.	Consider implementing a vermicomposting program for the leftover food.
Cardboard is generated in large quantities and is recycled.	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy and include such activities. • Hold a promotional kick-off campaign to elicit support for the district's waste prevention efforts.
Steel cans are disposed of in significant quantities.	<ul style="list-style-type: none"> • Consider purchasing a steel-can crusher to reduce volume. • Investigate the possibility of recycling steel cans.
High school special education students collect beverage containers from classrooms and grounds. The redemption money is used for equipment, parties, P.E. uniforms, holiday gifts, etc.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities. • Consider formalizing this program and obtaining designated collection containers so that collection is easier and safer. • Work with the city's Solid Waste Services Manager regarding opportunities to use surplus recycling containers and/or for assistance in seeking grant funding for containers.
The elementary schools use LDPE (#4 plastic) milk pouches rather than disposable cartons.	<ul style="list-style-type: none"> • Continue this practice. LDPE (#4 plastic) is not recyclable in most communities, but it does conserve space in the refuse bins. • Consider bidding for cartons, which may be composted or bulk milk dispensers for individual (washable) cups for students.
Kitchens receive food (e.g., margarine) in #2 plastic buckets that are typically reused.	Establish a districtwide waste reduction policy and include such reuse activities.

Transportation (including auto shop class)

Current Practices	Opportunities for Waste Reduction
Waste oil is hauled off by Evergreen (part of oil purchase contract with Chevron).	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction program; include these recycling activities in the program. • Consider becoming an industrial generator of used oil to receive the recycling incentive.
Safety Kleen collects all of the chemicals and oil filters for recycling.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Waste antifreeze is collected by a San Joaquin recycler.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Oil filters are crushed on-site and collected by a San Joaquin recycler.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Used tires are collected by a tire hauler for reuse/recycling.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Scrap metals are reused in the metals class. Engine parts with usable cores are returned to the vendor; otherwise, they are collected for recycling once a month.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Drivers recycle aluminum cans (money used for staff parties).	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Buy brake cleaner in bulk.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Cloth towels and mops are laundered and reused (i.e., no paper towel use).	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Use refillable containers (i.e., eliminate spray can waste).	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Soiled cardboard (e.g., grease-stained) goes into dumpster for disposal; clean cardboard and packing materials go to stockroom for reuse.	<ul style="list-style-type: none"> • Continue this practice. • Establish a districtwide waste reduction policy and include such activities.
Paper waste and old corrugated cardboard are put into trash bin.	Place cardboard and paper into green recycling bins.
Rerefined oil is not used.	Consider purchasing rerefined oil for the buses and fleet vehicles.

Procurement

Current Practices	Opportunities for Waste Reduction
<p>VUSD does not have a formal purchasing policy addressing recycled-content products (RCP) or environmentally preferable purchasing; however, some products are in fact RCPs (e.g., the print shop purchases approximately 500 reams/year of which 80 to 90 percent is recycled content).</p>	<ul style="list-style-type: none"> • Establish a districtwide purchasing policy to support the purchase of recycled-content and other environmentally preferred products and require purchasing groups, contractors, and vendors to comply with policy. • Consider joining purchasing cooperatives to leverage purchasing power. • Purchase recycled-content and other environmentally preferable products when comparable in quality and price. • Consider adopting a policy that supports purchase preference for RCPs and EPP products. • Consider making purchases electronically.
<p>Some bulk purchasing is done (e.g., some custodial purchases).</p>	<ul style="list-style-type: none"> • Continue purchasing cleaning solutions in bulk, in concentrated form. • When feasible, purchase one cleaning product that can be used for a variety of purposes. • Purchase less toxic products (www.epa.gov/opptintr/epp/cleaners/select/index.htm).
<p>Some items that are purchased new could be replaced with slightly used or donated items.</p>	<p>Consider reuse opportunities when applicable. Examples include:</p> <ul style="list-style-type: none"> • KidMAX is a source of supplies, materials, furniture, art supplies, etc., all offered free for school uses. • State and federal surplus property programs.
<p>Most cardboard is reused by stockroom for redistribution of items to school sites or is taken home by staff.</p>	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy and include such activities. • Adopt packaging reduction measures (i.e., shipper hauls boxes back or alternate shipping/packing methods are considered).

School Sites

Current Practices	Opportunities for Waste Reduction
Office staff receives a large volume of junk mail and faxes.	<p>Reduce junk mail (www.ciwmb.ca.gov/WPW/Home/JunkMail.htm).</p> <ul style="list-style-type: none"> • Call mail-order catalog companies. • Contact specific organizations or businesses. • Return junk mail. • Get off national mailing lists.
Local restaurant donated french-fry tubs to classrooms for reuse as pencil holders.	<ul style="list-style-type: none"> • Continue creative reuse activities and partnerships with businesses in the community. • Consider other reuse options, such as KidMAX, a source of supplies, materials, furniture, art supplies, etc., all offered free for school uses.
School secretaries post memos and general bulletins next to teachers' mailboxes instead of making individual copies.	<ul style="list-style-type: none"> • Establish a districtwide waste reduction policy and include such activities. • Use this area as a place to advertise the VUSD's waste reduction efforts.
Printer toner cartridges are donated to a high school student for recycling (school receives cash donation).	<ul style="list-style-type: none"> • Continue this practice • Establish a districtwide waste reduction policy and include these reuse/recycling activities.
Teachers appear to regularly practice material reuse (e.g., use of white boards, saving scraps for other projects, and sharing excess materials).	<ul style="list-style-type: none"> • Continue this practice • Establish a districtwide waste reduction policy to encourage and support these reuse activities.

Appendix C [VUSD]: Resources

This resource listing is designed to offer the school districts useful contact information for local recycling contacts, CIWMB contacts, local vendors and other resources. It is not a comprehensive directory, nor does a vendor listing imply a recommendation.

Local Jurisdiction Solid Waste and Recycling Contacts

County

Jeff Monaco, Tulare County Solid Waste Director

Phone: (559) 733-6635

E-Mail: jmonaco@co.tulare.ca.us

Karie Rodriguez, Recycling Coordinator (Tulare County, unincorporated)

Phone: (559) 733-6653

E-Mail: krodrigu@co.tulare.ca.us

Information regarding school recycling activities in Tulare County.

City

Britt Fussel, Visalia Public Works Director

Phone: (559) 783-3331

E-Mail: bfussel@ci.visalia.ca.us

Tom Baffa, Solid Waste Services Manager

Phone: (559) 738-3569

E-Mail: txbaff@ci.visalia.ca.us

Information regarding school recycling activities in the City of Visalia.

Joint Powers Authorities

Consolidated Waste Management Authority

Dan Meinert

Phone: (209) 591-5906

E-Mail: dmeinert@dinuba.ca.gov

Information regarding school recycling activities in Tulare County.

California Integrated Waste Management Board (CIWMB) Contacts

Office of Local Assistance

Rebecca Brown

Phone: (916) 341- 6680

E-Mail: rbrown@ciwmb.ca.gov

General information on waste reduction and recycling throughout California. Assistance in setting up a waste prevention/recycling program.

Office of Integrated Education

Rachelle Steen

Phone: (916) 341- 6764

E-Mail: rsteen@ciwmb.ca.gov

Information on CIWMB's free workshops to California teachers on three classroom curricula (*Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* [CIWMB pub. #322-99-009]; *Earth Resources--A Case Study: Oil* [CIWMB pub. #333-98-010]; and *Exploring Environmental Issues: Municipal Solid Waste*, published by Project Learning Tree) and an activity guide (*The Worm Guide: A Vermicomposting Guide for Teachers* [CIWMB pub. #560-01-007]).

Local Vendors

Haulers

City of Visalia

Contact: Tom Baffa Solid Waste Services Manager

Phone: (559) 738-3569

E-Mail: txbaff@ci.visalia.ca.us

The City of Visalia collects all residential and commercial refuse and recycling.

Recyclers

Tulare County Recycling (USA Waste of California) ("dirty" MRF)

26951 Road 140 Visalia, CA 93292

Contact: Mr. Roy Ludwig

Phone: 559-741-1766

Sunset Waste Paper ("clean" MRF)

Contact: John Mohoff

Phone: (559) 739-1595

E-Mail: jmohoff@sunsetwastesystems.com

Sunset Waste Paper

Contact: Rose Niemi, Recycling Coordinator

Phone: (559) 739-1595

E-Mail: rniemi@sunsetwastesystems.com

Community Services & Employment Training, Inc.

Contact: Brad Albert

Phone: (559) 732-4194

E-Mail: Balbert@CSET.org

www.cset.org

Tulare County Compost & Biomass

24478 Road 140 Tulare, CA 93274

Contact: John Jones

Phone: (559) 686-1622

Earth's 911

Phone: 1-800-CLEANUP

www.cleanup.org/

Recycling, pollution prevention, environmental information by postal code.

Purchasing Cooperatives**Recycled Products Purchasing Cooperative (RPPC)**

Phone: 1-800-694-8355

www.recycledproducts.org

RPPC is a nonprofit organization dedicated to increasing the use of recycled-content paper. Membership is free and products include white and colored copy paper. RPPC uses its purchasing power to meet or beat prices for virgin material copy paper. With 90 warehouses throughout California, RPPC serves private and public agencies. Customers include Pomona Unified School District, Pajaro School District, JFK University, University of California San Diego, and University of California Santa Barbara.

Stockless Purchase Program

Contact: Sue Allen

Phone: (530) 622-7130, ext. 240

E-Mail: sueallen@edcoe.k12.ca.us

The El Dorado Department of Education administers this purchasing cooperative. Membership is \$100 per year. The co-op offers school supplies, custodial supplies, and computer supplies at highly competitive prices. Over 80 school districts are members. Membership is open statewide.

Materials Exchanges**CalMAX**

Phone: 1-877-520-9703 (toll-free)

www.ciwmb.ca.gov/CalMAX/

Information regarding the CIWMB's free service designed to help businesses find markets for materials they have traditionally discarded.

KidMAX

Phone: 1-877-520-9703 (toll-free)

www.ciwmb.ca.gov/CalMAX/KidMax.htm

Information regarding the CIWMB's free source of used materials to California's schools.

Appendix D [VUSD]: Model Board of Education Waste Reduction Resolution and Environmental Purchasing Policy

Contained in Appendix F of this document.

Appendix E [VUSD]: Sample Letter to Vendors

Contained in Appendix G of this document.

Appendix F [VUSD]: Glossary

Contained in Appendix K of this document.

Appendix E: Food Service Alternatives in School Districts

The United States Department of Agriculture (USDA) is the primary sponsor and regulatory agency for all the school nutrition programs. In California the California Department of Education, Child, Youth and Family Branch, Nutrition Services Division provides supervisory and advisory services to schools.

The USDA sponsors three basic school nutrition programs: National School Lunch Program (NSLP), National School Breakfast Program (NSBP), and National School Snack Program.

For the NSLP, the USDA recognizes four menu-planning options:

1. Nutrient Standard Menu Planning (NSMP or NuMenus).
2. Assisted Nutrient Standard Menu Planning (ANSMP or Assisted NuMenus).
3. Food-Based Menu Planning (FBMP).
4. Meal Pattern (traditional meal pattern: 2 ounces of protein, ½ cup of milk, ¾ cup of fruits and vegetables, one serving of bread).

The breakfast menu-planning options are very similar. It can be said that from these four menu planning alternatives, options number 1 and 2 (NSMP and ANSMP) provide the least amount of food waste, and generally lower food cost. This observation is based on the empirical data from the Santa Clarita Valley School Food Service Agency (SCVSFSA), which has been on the NSMP for the last four years. Before switching to NSMP, the agency was using as a menu planning option the traditional meal pattern.

The advantage of the NSMP plan is a lower food cost and lower food waste. The disadvantage is that NSMP menu planning is more difficult and more labor-intensive than the traditional method.

The USDA allows several meal service options:

1. In a traditional meal service, children are served the minimum portions required of all components of a reimbursable meal. This type of service ensures that each child receives a meal that can be claimed for reimbursement.
2. Family style differs in that all the required components of a reimbursable meal are placed on the table in quantities large enough to serve all children. The children normally serve themselves. An adult supervisor must be present to encourage the children to take the minimum required portions.
3. Offer Versus Serve provides flexibility in the meal program and reduces waste. Depending on the meal option (i.e., NSMP, ANSMP, FBMP, or traditional) used by the sponsor, children may decline a minimum number of meal items or components, and the meal may still be considered complete and may be claimed for reimbursement.

Under NSMP and ANSMP using Offer Versus Serve, at least three menu items must be offered. A student must select at least two menu items and may decline a maximum of two menu items (if more than three are offered). One selection must be an entrée.

Under the food-based and the traditional menu planning options, all five required food items must be offered. At the discretion of the school food service authority (SFA), students may be permitted to decline one or two of the required five food items.

The benefits of the Offer Versus Serve option are the lower food cost (25 percent or more) and much lower food waste as the students have a tendency to select only the items they would eat. It is advisable that the SFA offer more than one entrée choice even in the elementary schools. A wider selection helps the students to choose the foods they like without being forced to pick only one available entrée, which may be one they dislike.

The only negative of the Offer Versus Serve option is that the students may not always make the best choices for their health benefits and may not select enough fruits and vegetables or milk.

Appendix F: Model Board of Education Waste Reduction Resolution and Environmental Purchasing Policy

Model Resolution

[Name of School District]

WHEREAS, the District recognizes the need to manage resources efficiently and cost effectively, and

WHEREAS, the integrated waste management principles of Reduce, Reuse and Recycle are consistent with principles of good management and environmental stewardship, and

WHEREAS, the integrated waste management principles of Reduce, Reuse and Recycle save energy and resources that will directly benefit our communities, and

WHEREAS, the integrated waste management principles of Reduce, Reuse and Recycle are necessary to reduce the impact on landfill capacity, and

WHEREAS, District staff should serve as positive role models to students and the community concerning environmental issues:

THEREFORE, BE IT RESOLVED that the *[Name of School District]* will implement a comprehensive and integrated waste management program that will include:

1. Waste prevention practices such as material reuse, double-sided copying, e-mail, and electronic purchase orders.
2. Recycling of corrugated cardboard; white and mixed paper; aluminum, glass, plastic, and metal containers; and landscape trimming.
3. Reuse and recycling of construction and demolition materials to the greatest extent possible.
4. Purchase of products containing the highest amount of post-consumer material practicable.
5. Annual assessment of each department's effectiveness in applying this policy.

AND THEREFORE BE IT FURTHER RESOLVED THAT: The Superintendent shall adopt school and departmental procedures that implement and support this integrated program.

Adopted: *[Date]*

Signed: *[President of Board of Education, Superintendent of Schools]*

Model Environmental Purchasing Policy

[Name of School District]

I. Purpose

The purpose of this policy is to support the purchase of recycled-content, recyclable, and other environmentally preferable products in order to minimize environmental impacts relating to our work. The *[Name of School District]* recognizes our employees can make a difference in favor of environmental quality. The District prefers the purchase of environmentally preferable products whenever they perform satisfactorily and are available at a reasonably competitive price.

All District departments and schools shall adopt and promote the use of recycled-content, recyclable, and other environmentally preferable products as a department/school priority. In doing so, the department/school shall:

1. Encourage waste prevention, reuse, recycling, market development, and use of recycled-content, recyclable and other environmentally preferable products through lease agreements, contractual relationships, and purchasing practices with vendors, contractors, businesses, and other government agencies.
2. Adopt waste prevention, reuse, recycling, and use of recycled-content, recyclable, and other environmentally preferred products as a department/school priority.
3. Generate less waste material by reviewing how supplies, materials, and equipment are manufactured, purchased, packaged, delivered, and used, and the manner of their disposal.
4. Serve as a model for the District and our community to influence waste prevention, recycling, and procurement efforts.

II. Definitions

“Environmentally Preferable Products” means products that have a lesser impact on human health and the environment than competing products. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation and/or disposal of the product.

“Recycled-Content Products” are products manufactured with waste material that has been recovered or diverted from the waste stream. Recycled material may be derived from postconsumer waste (material that has served its intended end use and been discarded by a final consumer), industrial scrap, manufacturing waste and/or other waste that otherwise would not have been utilized.

III. Policies

1. All District personnel will specify recycled-content, recyclable, and other environmentally preferable products whenever practicable.
2. The District shall solicit the use of recycled-content, recyclable, and other environmentally preferable products in its procurement documents as appropriate.
3. District department/schools shall practice waste prevention and recycling whenever practicable.

IV. Responsibilities of [*Name of Purchasing Department*]

The [*Name of Purchasing Department*] shall be responsible for coordinating the implementation of this policy and shall:

1. Develop and maintain information about recycled-content, recyclable, and other environmentally preferable products to be purchased by the District, departments, and schools.
2. Inform other departments/schools of their responsibilities under this policy; provide departments/schools with information about recycled-content, recyclable, and other environmentally preferable product procurement opportunities.
3. Seek to participate in material exchanges and joint powers authorities to negotiate prices that are more competitive.
4. Reuse materials whenever possible.
5. Inform vendors of our Environmental Purchasing Policy.
6. Restrict contracts to only recycled-content, recyclable, and other environmentally preferable products whenever possible (e.g., office supplies, lubricating oils, and janitorial supplies).
7. Review specifications used in public bidding to eliminate barriers to recycled-content, recyclable, and other environmentally preferable products, such as outdated or overly stringent product specifications and specifications not related to product performance. All requests for proposals shall require vendors to offer recycled-content, recyclable, and other environmentally preferable products whenever practicable.
8. Provide the District Superintendent and Board of Trustees with an annual report on the status of key benchmark commodities.

V. Responsibilities of All Departments/Schools

Each department/school shall:

1. Practice waste prevention, reuse, and recycling whenever possible.
2. Continue to utilize recycling programs and expand where possible.
3. Procure recycled-content, recyclable, and other environmentally preferable products whenever practicable.
4. Evaluate each designated product to determine the extent to which departments/schools may practicably use it.
5. Ensure that procurement documents issued by the department/school require environmentally preferable purchasing wherever possible.

Exemption

Nothing in this policy shall be construed as requiring the purchase of products that do not perform adequately or are not available at a reasonable price.

Appendix G: Sample Letter to Vendors

[Date]

[Business Name and Address]

Dear Valued Supplier:

The [Name of School District] and its suppliers enjoy a tradition of meeting the challenges of schools in providing the tools with which to provide a quality education to the children of our community. Today, that challenge is more complex due the increased demand on performance and cost cutting and the emergence of a new force – environmental issues. We share the national concern for improvement of the environment and preservation of our natural resources, and we are committed to reducing our District’s impact on the environment by reducing, reusing, and recycling packaging and other materials. We believe the recently adopted Environmental Purchasing Policy (attached) will achieve this goal and significantly cut purchasing, operating, and disposal costs.

Specifically, we ask you to be a partner with us to:

- Look for opportunities to reduce packaging volume and weight by reducing packaging materials used on the products you manufacture or supply.
- Investigate opportunities to utilize reusable shipping materials, including durable pallets and reusable plastic crates, totes and corrugated boxes.
- Use increasing amounts of recycled materials in the packaging you use with specific minimum goals of 25 percent recycled content in corrugated containers and 20 percent recycled content in plastic containers.
- Utilize the highest recycled content materials possible in other types of packaging, such as folding cartons and blister cards.
- Improve the recyclability of non-reusable shipping materials.

Please do not limit your efforts to these goals. Be innovative! These goals should apply to all product packaging as well as any repair and replacement parts packaging you supply to us.

Thank you for your support.

Sincerely,

[Name of Chief Business Official]

Appendix H: Training Plan

Part I of the training plan provides an overview of the training approach. Part II describes the related entities and their roles. Part III describes the specific steps and activities included in the training plan.

I. Approach

The training plan is designed to strengthen the existing assistance and support provided to school districts with respect to the value and benefits of waste reduction and “green” procurement programs. The CIWMB’s Office of Local Assistance (OLA) staff serves as the primary contact for the support and assistance network for local jurisdictions with respect to general waste reduction program implementation as well as their specific efforts to address school district waste management needs. The goal of this training plan is to equip OLA staff with a strong knowledge and skill set to serve as technical and informational resources for local jurisdictions in their efforts to assist school districts in the implementation of waste reduction and “green” procurement programs. Additionally, OLA staff will conduct regional training sessions for local jurisdictions regarding how to partner with and provide assistance to school districts in an effort to meet the waste reduction requirements of the Integrated Waste Management Act.

II. The training plan includes training for three separate entities:

1. CIWMB’s Office of Local Assistance.
2. Other CIWMB staff engaged in school related activities or programs.
3. Local Jurisdictions—City and County Recycling Coordinators.

The primary benefactor of the training plan will be school districts. The proposed support structure and training will provide school districts with improved and coordinated resources for implementing and sustaining waste reduction and “green” procurement programs. Additionally, by reducing the waste of one of the business sectors within local jurisdictions, the training plan will assist cities and counties in their efforts to meet the waste reduction requirements of the Integrated Waste Management Act.

III. Training Curricula

Training curricula will consist of five main components:

1. Approach: Advocate, clarify and strengthen the existing assistance and support structure and top-town outreach approach.
 - i. Focus on implementing and sustaining waste reduction programs at the school district level rather than at individual schools.
 - ii. Make contacts with school district and school administration rather than teachers and staff.

- iii. Indicate that local jurisdictions are the first line of assistance and support to school districts with the OLA as the primary assistance and support resource for local jurisdictions.
2. Objectives: Present a clear definition of training objectives that are consistent with the goals and objectives of OLA, other CIWMB program areas, local jurisdictions, and school districts.
- i. Meet with representatives from each training group in order to determine their needs. Allow target audiences an opportunity to articulate their needs, objectives, and “wish list” rather than telling them what we think they need to know.
 - ii. Strive to institutionalize waste reduction programs at district level by implementing policy and procedures.
 - iii. Provide technical and financial support and assistance.
3. Training: Discuss the expectations of OLA staff regarding providing assistance to local jurisdictions in their efforts to implement waste reduction programs. Review the waste reduction tools and information available to school districts.
- i. Emphasize the importance of developing a working relationship between local jurisdictions, school districts, and OLA staff.
 - ii. Discuss strategy and what was learned from the pilot project.
 - a. Existing CIWMB waste characterization data for schools can be utilized.
 - b. Importance of knowing about available facilities located in jurisdictions.
 - c. Gleaning information from haulers is an excellent way to obtain insight into the waste stream and for potential new programs and improvements to existing ones.
 - d. Success stories.
 - e. Others.
 - iii. Table 1 provides more detailed task and resource descriptions.
4. Technical Support and Resources:
- i. Who to contact at CIWMB (OLA), local jurisdictions and school districts.
 - ii. Review the waste reduction tools and information available to local jurisdictions for school districts (e.g., Resource Guide).

5. Financial Support

i. Grants

ii. Contracts

iii. Partnerships

iv. Loans

Table 1: Task Outline for Training Plan

Task Name	Resource Names
Conduct Training	
Refine training objectives and plan.	
Determine the training needs of local jurisdictions.	OLA, Resource Committee
Identify training topics and subject areas.	OLA, Resource Committee
Determine training approach (i.e., train the trainer).	OLA, Resource Committee
Determine media and content of training materials (i.e., handouts, presentations).	OLA, Resource Committee
Determine training location and format (i.e., size of class, functional area, waste type).	OLA
Train CIWMB OLA personnel.	
Determine CIWMB OLA personnel to receive training.	OLA
Train OLA to provide outreach to target audience.	OLA
Train OLA to serve as a resource to local government.	OLA
Train OLA to train local government to better consult school districts.	OLA
Train other CIWMB staff engaged in school-related activities or programs.	OLA
OLA personnel train local government personnel.	
Identify local government contacts to be trained.	OLA, Resource Committee
Train local government personnel to provide assistance to school districts.	OLA, Resource Committee
Evaluation and update of training plan.	
Evaluation of training plan by trainers.	OLA
Evaluation of training plan by trainees.	Trainees

Appendix I: Outreach Plan

I. Executive Summary

- A. The School District Diversion Project was initiated in part in response to [Public Resources Code Section 42621](#) that requires the CIWMB to implement a source reduction and recycling program for school districts, including:
1. A survey of school districts throughout the state to determine which districts already have source reduction and recycling programs and which districts need those programs.
 2. Develop a model waste reduction and recycling program.
 3. Provide training on how to implement source reduction and recycling programs.
 4. Provide ongoing technical and informational assistance for school districts implementing source reduction and recycling programs.
 5. Establish a repository of literature and teaching materials from other states and institutions that have instituted source reduction and recycling programs for their waste stream.
 6. Determine the types of equipment needed by school districts to implement source reduction recycling programs.
 7. Provide assistance to school districts in locating markets for their reusable or recyclable materials.
 8. Disseminate information to school districts on office equipment and other items which are made from recycled materials and which are available for purchase by school districts.
- B. The outreach plan is the lead component in a strategy to educate, motivate, and train school officials with respect to waste reduction program implementation. The plan accomplishes this by reaching school officials at the least cost through statewide school-related organizations. These efforts, when coordinated with the technical support of the CIWMB and local jurisdictions to school districts (see Appendix G, School District Diversion Project Training Plan), complete a strategy for implementing waste reduction programs in school districts.

The following school-related associations are the primary target audiences of this outreach plan:

1. California School Boards Association
2. Association of California School Administrators
3. California Association of School Business Officials
4. California State Parent Teacher Association

The outreach plan applies a top-down approach, communicating with school officials that have the authority to adopt, implement and advocate waste reduction policies. In addition to the primary target associations specified above, other school-related organizations have been identified in the

outreach plan, and outreach efforts toward these additional target audiences are recommended as personnel resources and budget permit.

In addition, the School District Diversion Project Training Plan includes training for the CIWMB's Office of Local Assistance (OLA) staff, who will then train local jurisdiction staff to provide technical assistance to school districts implementing and maintaining waste reduction programs.

The outreach plan does not specifically target students, curriculum, or programs designed to reach students, as such efforts are accomplished through the Office of Integrated Education. The outreach plan is specifically designed to target school district administration, associations, and organizations that develop and implement school district policy and procedures.

- C. The outreach plan will be implemented, coordinated, supervised, and refined by the OLA and will include information regarding all of the relevant school-related CIWMB waste reduction programs.
- D. Outreach will be accomplished by educating and influencing the membership of the specified school-related associations and organizations at the regional and statewide levels. Outreach will convey the value and benefits of implementing district-wide waste reduction programs. Outreach will consist of presentations, workshops, dissemination of information, and the provision of ongoing technical and informational assistance.
- E. Outreach Services—Outreach will include a variety of tasks and strategies to:
 - 1. Present the value and benefit of proposed policies and procedures that institutionalize waste reduction strategies.
 - 2. Provide training to OLA staff. OLA staff will train local jurisdictions to provide ongoing technical assistance to school districts with respect to implementation of waste reduction and “green” procurement programs.
 - 3. Promote the on-line “Tools for Schools” resource guide, a comprehensive resource designed to assist school districts in implementing proposed waste reduction policies and programs.

II. Current Situation

The CIWMB currently provides waste reduction program information to schools through several different CIWMB program areas (e.g., OLA, Office of Integrated Education, Green Building Program, Organic Materials Management). OLA staff serves as the liaison between each of the CIWMB program areas and local jurisdictions, including school districts. OLA staff works with local jurisdictions to provide technical assistance to school districts with respect to waste reduction program implementation. As needed, OLA staff works with the applicable staff from the different CIWMB program areas to provide the needed information and assistance. There is presently, however, no “one stop shopping” for school district waste reduction program information. In addition, the current approach is not comprehensive in that it does not provide for all of the outreach requirements specified by legislature (see above). Through development of a comprehensive outreach and training plan, OLA staff can more efficiently and effectively provide technical assistance from the various CIWMB program areas relating to school district waste reduction programs.

II. Outreach Plan Objectives

1. Educate school districts on the value and benefits of establishing districtwide waste reduction and “green” procurement policies.
2. Encourage school districts to adopt districtwide waste reduction and “green” procurement policies.
3. Establish collaboration between CIWMB business areas currently providing information and/or assistance relating to school districts through OLA.
4. Establish collaboration between other State agencies (e.g., Department of Pesticide Regulations, Department of Conservation, California Department of Education, etc.) currently providing information and/or assistance relating to school districts through OLA.
5. Formalize outreach and training objectives for the specified school-related associations and organizations.
6. Develop an outreach plan to reach specified target audiences.
7. Identify the goals and objectives of the target audiences to develop and present an effective message.
8. Prepare a template that may be used as a guideline for making presentations to associations.
9. Develop a training plan to educate OLA staff and local jurisdictions to better assist school districts in achieving the benefits of waste reduction and green procurement programs.
10. In collaboration with local jurisdictions, provide ongoing technical and informational assistance to school districts implementing waste reduction and green procurement programs.

III. Outreach Project Plan

Part A of this section provides an overview of the outreach approach. Part B describes the audiences that will be targeted by the outreach efforts. Part C contains a matrix that gives the activities and tools that should be used to influence each target entity. Part D includes the outreach plan.

A. Approach

The target audience was selected in order to focus outreach efforts in a top-down approach. The goals and objectives of the outreach plan will be presented to elected school board members, superintendents, business officials, administrators, and principals through their related organizations and associations.

This outreach plan includes two specific components:

1. Advocacy of the adoption of waste reduction and green procurement policies at the elected official and superintendent level.
2. Development of guidelines with which administrators can implement waste reduction and green procurement programs.

This approach will allow solicitation of the Outreach Plan benefits at a high-level, in order to gain the necessary visibility and sponsorship to accomplish the specified objectives. Advocacy and influence at a high level is necessary to establish policy and develop the administrative procedures to institutionalize effective waste reduction strategies at the district and school levels.

- B. There are three different levels of school-related entities that are recommended for outreach efforts. Contact with each of the three levels will be based upon the resources allotted to the outreach effort. The outreach plan will initially target Level 1, a very select target audience, in order to best focus CIWMB resources. After successful delivery and implementation of the specified outreach objectives to the Level 1 associations, the scope may be expanded to include Levels 2 and 3, a more comprehensive target audience, as described below. Figure 1 is a graphical depiction of the relationship between the three target audiences, CIWMB, and local jurisdictions.

Level 1—The Level 1 target groups are recommended for the initial and most substantial efforts.

1. **California School Boards Associations (CSBA)**

Executive Director: Davis Campbell

www.csba.org

This is the professional organization for school board members throughout the state. Membership includes board members as well as superintendents and assistant superintendents. CSBA conducts regional activities at the county level. This association also conducts an annual conference in January covering a variety of topics of interest to school leadership.

2. **Association of California School Administrators (ACSA)**

Executive Director: Bob Wells

www.acsa.org

This is the professional organization for certificated administrators including principals, directors, assistant superintendents and superintendents. The state organization is divided into 18 sub-regions with field representatives that provide assistance and in-services to the local regions. ACSA also conducts a variety of workshop activities throughout the year and has an annual conference in April.

3. **California Association of School Business Officials (CASBO)**

Executive Director: Kevin Gordon

www.casbo.org

This is the professional organization for classified administrators including directors, assistant superintendents and, sometimes, superintendents. The state organization is divided into regional sections and maintains a variety of research and development committees. Included in the research committees are such topics as Facilities, Maintenance and Operations, and Purchasing and Transportation. CASBO also conducts several workshops throughout the year in both the southern and northern California regions. The CASBO annual conference is held in April.

4. **California State Parent Teacher Association (PTA)**

Contact: Linda Mayo, V.P. Community Relations

Phone: (213) 620-1100, ext. 304

E-Mail: info@capta.org.

The California State PTA is a branch of the National PTA with over one million members. The state organization is divided into several geographical districts representing individual units. The objectives of PTA include promoting the welfare of children and developing between educators and the general public such united efforts as will secure for all children and youth the highest advantages in physical, mental, social and spiritual education. The state organization cooperates with other groups and organizations working for youth; interprets and implements policies, programs, and projects; and conducts an annual convention for all members.

Level 2—It would be useful to contact the Level 2 target groups if CIWMB resources are available. Most of the members in these groups are also members in one or more of the primary groups.

5. California Association of Public Purchasing Officers (CAPPO)

Executive Assistant: Marvin Sanders

Phone: (209) 835-7480

www.cappo.org

This is the professional organization for public purchasing officers. Its membership includes cities, counties, and school districts, as well as special districts. There is no executive director but rather a board of directors and an executive assistant. Throughout the state, CAPPO members have formed local area groups of purchasers. These “Satellite Groups” are managed by volunteer members from each geographical area. This association generally meets monthly for informative programs and to share ideas. The CAPPO annual conference is generally held in January.

6. California School Food Service Associations (CSFSA)

Executive Director: Janine Newell

Phone: (818) 842-3040

www.csfsa.org

This is the professional organization for school food service managers in the state. The association provides educational programs, supports legislative efforts and promotes community awareness about the food service programs. The association maintains area coordinators as well as standing committees. There is a southern and northern section of the statewide organization. The CSFSA annual conference is held in April.

7. California Association of School Transportation Officials (CASTO)

President: Larry Laxson

Phone: (661) 852-5900

www.castoways.org

This is a professional organization for bus drivers, mechanics and directors of the transportation departments in school districts. The organization is governed by a board of directors and a president, rather than an executive director. There are 20 chapters or sections of the organization throughout the state. The CASTO annual conference is held in April.

8. California County Superintendents Educational Services Association (CCSESA)

Executive Director: Glen Thomas

Phone: (916) 448-4808

www.ccsesa.org

The California County Superintendents Educational Services Association comprises the county superintendents of each of the 58 counties in California and their associated offices. The county superintendent's office serves as intermediary between the state and local school districts within each county. The association is organized around five statewide committees and two committees that carry out and coordinate a variety of functions. CCSESA meets four times a year and has an annual conference in March.

9. **Coalition for Adequate School Housing (CASH)**

Executive Director: Jim Murdoch

Phone: (916) 448-8577

Website www.cashnet.org

The CASH organization consists of school administrators, architects, builders, legal firms, and many others who have an interest in the state school-building program. Their focus is on all aspects of school facilities including energy and conservation matters. The coalition conducts a spring and fall conference as well as an annual conference in March.

10. **Food Service Cooperatives**

Included in Appendix A

11. **Purchasing Consortiums**

Included in Appendix B

Level 3—The Level 3 target groups should be used primarily for dissemination of information. They reach a fairly large audience of school personnel.

12. **School Services of California**

President: Ron Bennett

www.sscal.org

School Services of California is a private firm that has served California school districts in meeting their management, governance, and fiscal responsibilities for the past 26 years. The firm has played an integral role in the development and implementation of education policy at both the state and local levels. They conduct workshops and seminars throughout the year and conduct major conferences in January and July based upon the impact of the State budget on education.

13. **EdSource**

Executive Director: Trish Williams

Phone (650) 857-9604

www.edsource.org

EdSource is an independent, impartial, not-for-profit organization, whose mission is to clarify complex education issues and to promote thoughtful decisions about public school improvement. EdSource distributes a wide range of publications dealing with public education policy issues and events. The organization also conducts an annual forum open to the public and held each spring in both northern and southern California on current school reform issues.

C. Activities and Tools Matrix

The following table lists the Level 1, 2 and 3 audiences along with the basic activities and tools to be used to influence each. The outreach plan in this section describes the detailed approach and tasks for reaching the Level 1 audience.

Table 1: Audiences and Activities/Tools for Levels 1–3

Level	Audience	Activities and Tools
1	CSBA, ACSA, CASBO	<p>Make presentations and conduct workshops for school board members, superintendents, assistant superintendents, principals, and directors at annual conferences. Provide information for newsletters or other publications that reach the target audience. Provide contacts and resources for follow-up.</p> <p>Topics: Provide model policies, procedures, and program information. Explain benefits, case studies, and how to implement proposed waste reduction policies, procedures, and programs. Provide information on how to include proposed waste reduction activities in job descriptions and business practices.</p> <p>Objective: Persuade to adopt policies and develop requisite operational procedures.</p> <p>Appendix D is a template that may be used for drafting presentations for Level 1 target associations.</p>
	California State PTA	<p>Make presentations and conduct workshops at annual convention.</p> <p>Topics: How to support and promote districtwide and public policies that protect and conserve natural resources and provide a quality environment for present and future generations.</p> <p>Objective: Persuade to advocate and support districtwide waste reduction and green procurement policies and programs.</p>
2	CAPPO, CSFSA, CASTO, CCSESA, CASH	<p>Make presentations and conduct workshops at annual conference.</p> <p>Topics: Tailor each message to meet the specific functions of each organization.</p> <p>Objective: Persuade to implement waste reduction strategies applicable to their business area within school districts.</p>
	Food Service Cooperatives	Disseminate information related to food waste reduction (i.e., bulk purchasing, “offer versus serve”, food donation, composting, etc.).
	Purchasing Consortiums	Disseminate information related to purchasing recycled-content paper and other products that are environmentally friendly. Provide materials and resources that will assist in reuse and recycling activities.
3	School Services of California, EdSource	Disseminate brochures, newsletters, fliers, press releases and public service announcements, and advertise in trade journals. Information should include the overall goals and objectives of the “School District Diversion Project,” “How to” information, and innovations in managing the school district waste stream.

D. Project Outreach Plan

The outreach plan provides a brief description of the major tasks, subtasks, and proposed resources and participants for each subtask.

Table 2: Outreach Plan Tasks and Resources

Task Name	Resource Names
Coordinate a unified approach within CIWMB for outreach.	
Meet with other CIWMB areas involved in outreach activities.	
Collaborate with other CIWMB units to determine outreach and training objectives and subject matter.	OLA, Resource Committee
Develop a coordinated outreach effort with other related CIWMB business areas.	OLA, Resource Committee
Further investigate all potential outreach target audiences.	
Match objects with target audience.	OLA
Finalize Level 1 target audience selection.	OLA
Meet and confer with outreach target audiences.	
Determine Level 1 target audience needs, outreach opportunities, and contact persons.	
California School Board Association	OLA, Resource Committee
Association of California School Administrators	OLA, Resource Committee
California Association of School Business Officials	OLA, Resource Committee
California State Parent-Teacher Association	OLA, Resource Committee
Ratify outreach objectives.	
Obtain review and approval of outreach objectives and target audience by all relevant CIWMB units.	OLA
Refine outreach strategy and plan.	
Update outreach strategy documents and plan to reflect insight of expanded team and target audience.	OLA
Clearly define and convey who the primary contact persons are within CIWMB and local government.	OLA, Resource Committee
Define specific outreach approach and tools for each target audience.	OLA
Refine outreach approaches and tools for each target audience.	
Select approaches and tools that cater to all levels of implementation (beginning to veteran).	OLA
Refine subject matter and approach to each Level 1 target audience.	OLA

Task Name	Resource Names
Develop outreach materials.	
Research, review, and consolidate existing materials.	
Customize outreach materials for each target audience.	OLA
Prepare new outreach materials for each target audience.	OLA
Prepare outreach presentations for each Level 1 target audience.	OLA, Resource Committee
Conduct training (see training plan for details).	OLA, Resource Committee
Conduct outreach.	OLA, Resource Committee
Introduce the online resources for school district waste reduction to all audiences.	OLA, Resource Committee
Provide outreach to each Level 1 target audience.	
California School Board Association	OLA
Association of California School Administrators	OLA
California Association of School Business Officials	OLA
California State Parent Teacher Association	OLA
Implement plan for "ongoing" assistance for school districts implementing waste reduction policies.	OLA, Resource Committee
Evaluation and update of outreach plan.	
Evaluation of outreach plan by OLA.	OLA, Resource Committee
Evaluation of outreach plan by Level 1 target audiences.	Level 1 Audiences

Appendix A [Outreach Plan]: Food Service Cooperatives

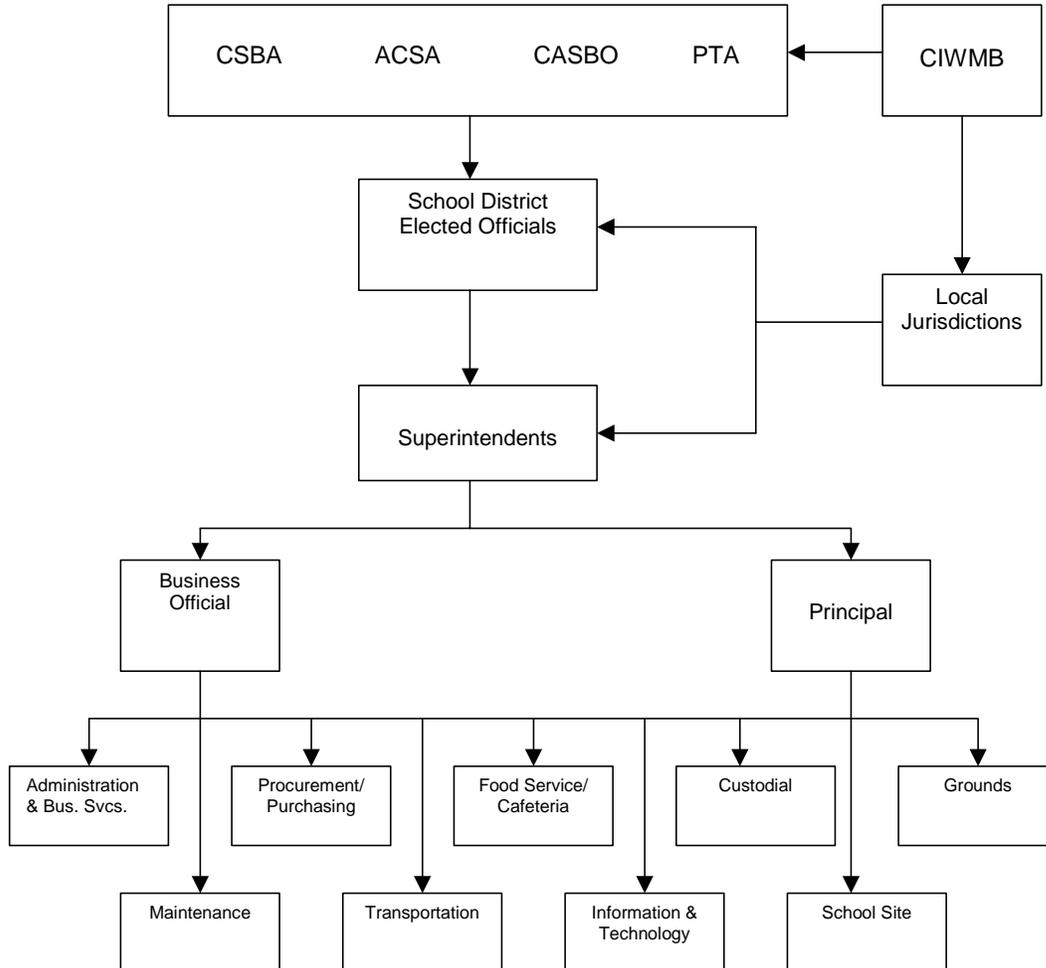
The following is the list of contacts for food cooperatives participating in the Food Distribution Program.

<p>Best Cooperative Janet Wolf Rowland Unified School District 1830 Nogales Street Rowland Heights, CA 91748 (626) 854-8313</p>	<p>Pinco Cooperative Terry Custer Antelope Valley Union High School District 44811 Sierra Highway Lancaster, CA 93534 (661) 575-1050</p>
<p>Cute Cooperative Susan Murai Marysville Joint Unified School District 1919 B Street Marysville, CA 95901 (530) 749-6179</p>	<p>San Gabriel Cooperative Susan Delgado Mountain View Elementary School District 3320 North Gilman Rd. El Monte, CA 91732-3226 (626) 575-2171</p>
<p>Doctor Cooperative Marilynn Wells Alhambra School District 15 W. Alhambra Road Alhambra, Ca 91801 (626)-308-2285</p>	<p>Scope Cooperative Christine Woods Downey Unified School District 11627 Brookshire Ave. Downey, Ca 90421-4999 (562) 904-3542</p>
<p>Four C's Cooperative Lynnelle Grumbles Kingsburg Elementary School District 1900 Mariposa Street Kingsburg, CA 93631 (559) 897-3214</p>	<p>Slic Cooperative Kerri Braverman Vallejo City Unified School District 211 Valle Vista Vallejo, CA 94590 (707) 556-8907 x 3007</p>
<p>Inland Empire Cooperative Jane Stallings 800 South Garey Ave. Pomona, CA 91769 (909) 397-4800 x 3950</p>	<p>Super Cooperative Pavel Matustik Santa Clarita Valley School Food Service Agency 25210 Anza Dr. Valencia, CA 91355 (661) 295-1574 x 103</p>
<p>Nice Cooperative Kathy Drennen Sylvan Union School District 2908 Coffee Rd. Modesto, CA 95355 (209) 574-5607</p>	

Appendix B [Outreach Plan]: Purchasing Consortiums

1. **North San Diego County Consortium**
Contact: Donna Caperton
Phone: (760) 753-6491, ext. 5590
2. **High Desert Purchasing Professional Association (HiDeppa) Consortium**
Contact: Tony Wardell
Phone: (760) 255-6272
3. **Sacramento Joint Powers Purchasing Group**
Contact: Tom Adams
Phone: (916) 228-2370
4. **CASBO Purchasing R&D Committee**
Chair: Ramona Vasquez-Hill
Rialto Unified School District
Phone: (909) 820-6863
E-Mail: rhill@rialto.k12.ca.us
5. **El Dorado Coordinated Pool**
Contact: Sue Ellen
El Dorado County Office of Education
Phone: (530) 295-2240
E-Mail: sueallen@edcoe.k12.ca.us

Appendix C [Outreach Plan]: Relationships of Outreach Target Audiences



Appendix D [Outreach Plan]: Presentation Template

Type of Presentation: Workshop Presentation

Title:

Length:

Objectives: *The items you hope the audience will take action on.*

Target Audience: *By position (i.e., Board Member, Superintendent), School Size (i.e., small, medium, large), School location (i.e., Rural, Suburban, Urban, North, Central, South).*

Supporting and/or Visual Reinforcement: *Handouts, overheads, PowerPoint presentation, etc.*

Related Policies:

Description of Model Program/Policy/Project/Strategy/Discussion:

Presentation Format:

- I. Icebreaker (2 minutes) Interesting fact, current event, etc.
- II. Introduction (5 minutes)
 - A. Introduce yourself by name and, if beneficial, describe your background briefly
 - B. State clearly, SIMPLY, and BRIEFLY the objectives of the presentation
 - C. Specify the related program / policy / project / strategy

D. Specify the desired result or action to be taken by the target audience

III. Main Objective 1 (10 minutes)

A. Describe why the objective is important

B. Describe the step necessary to achieve the objective

C. Describe how to determine when the objective has been met

D. Describe how the objective is a part of the overall strategy being described

IV. Main Objective 2 (10 minutes)

V. Main Objective 3 (10 minutes)

VI. Closing (5 minutes)

A. Summarize all main points and tie together

B. Reiterate desired result or action

VII. Question and Answer (15 minutes)

Appendix J: Model Waste Assessment Methodology

There is a tendency of waste management specialists, be they local jurisdictions, CIWMB staff, nongovernmental organizations, or private consultants, to offer school districts a full menu of waste management strategies, organizational models and promotional materials with the expectation that school districts will immediately see the merits in effective waste management and rise to the challenge of reducing waste. Given the combined challenges of the day-to-day business of education, the focus on student performance, and the growing mandates imposed on schools, this expectation is unrealistic.

Employing an incremental strategy that suggests an initial set of waste reduction practices that are “cheap, easy, and convenient” and that have clear financial benefit to the district will more likely prove successful. The focus should be on waste reduction programs for those segments of the district waste stream that have the most immediate benefits to the districts.

This strategy is particular appealing if the local jurisdiction is trained and equipped to work closely with the district, assisting the district in improving waste reduction over time. With an initial set of facts and strategies for getting started, a continuing working relationship between the districts and the local jurisdiction can be initiated. The task of motivating schools districts to act on waste reduction programs should be approached incrementally, building on small successes over time. It is clear that to expect too much too soon is bound to result in disappointment, if not failure, in institutionalizing waste reduction practices in the district. To initially ask school districts to understand, let alone implement, an entire suite of waste reduction, hire a recycling coordinator, or create a team of personnel to focus on waste reduction is unrealistic and likely to result in a lack of action by administrators.

The technique of “dumpster diving”¹ is not required to determine the elements of the waste stream that represent the greatest potential for recycling or waste reduction. In fact, the statewide waste characterization data for schools contains sufficient information for this purpose. The primary purpose of the interviews and facility tours is to ascertain the physical and procedural aspects of the district’s waste management practices.

The pilot project team found department heads and school principals to be most knowledgeable of their facilities, albeit less familiar with the details of waste management practices. Interviews continued during the facility tours with the department heads, principals and facility staff provided an adequate understanding with which to make reasonable judgments regarding the types and quantities of wastes, the degree of employee participation in waste reduction practices, equipment utilization and other information useful for the assessment.

However, calculating cost savings for moving materials from the trash bins, which the districts must pay for, to the recycling bins for which they typically do not pay², proved more difficult due to the limited time spent by the assessment teams on site. To the extent this information is necessary to sufficiently motivate school administrators to initiate recycling programs, more detailed observations over a longer time is required.

Careful attention should be given to make a confident estimate of actual utilization of both disposal and recycling bins. Obviously, the longer the observation period, the more accurate the

¹ A waste characterization technique requiring the dumping of waste dumpsters on a tarmac and methodically sorting the refuse to estimating the type and volume of the waste generated.

² Recycling bins were supplied and serviced by the waste haulers in all but one of the pilot districts at no additional cost.

estimate of utilization. However, basing conclusions on the disposal and recycling bin *capacity* rather than *estimated utilization* will still result in a reasonable estimate of the waste stream and the rate of recycling.³

It is suggested that this method of calculation accomplishes the desirable purposes of (1) reasonably estimating disposal and recycling rates, and (2) providing adequate information with which to convince school administrators that closer attention to waste management and waste reduction practices can provide substantial savings.

Disposal and recycling capacity in the pilot districts was calculated by multiplying the number by the size of disposal and recycling bins. It was presumed that the waste hauler provided no more or no less than adequate capacity to appropriately service the customer. It is possible, however, that a waste hauler might supply more disposal bins than required because revenue is generated from this service. On the other hand, haulers typically supply recycling bins and service them at no additional charge. Presumably, it would not be in the hauler's interest to over supply this non-revenue-producing equipment.

The result of this methodology is sufficient information upon which to justify the design and implementation of districtwide waste reduction and recycling programs.

³ The project assessment teams used the capacity method for analysis.

Model Waste Assessment Methodology

- An assessment team led by the local jurisdiction recycling coordinator and accompanied by the waste hauler, if possible, should conduct the assessment.⁴
- Purchasing, disposal, and recycling records including level of service and cost data for a year should be obtained from the district or the waste hauler and reviewed in preparation of the assessment activities.
- An introductory meeting of about one hour should be conducted with the superintendent, chief business official, and department heads explaining the assessment objectives, procedure, timing, demands on district personnel, and the nature of the report. The superintendent should be asked at this meeting to designate one of his managers to assist the assessment team in making appointments with managers, obtaining documents, and directing questions to the appropriate district staff.
- Documented interviews with all department heads and selected principals should be conducted. The interviews should be conducted with a common questionnaire that takes approximately one half hour to conduct.
- Tours of each type of facility, accompanied by the appropriate department heads and if desirable, operational personnel, should be conducted. Facilities include at least one of each school type (elementary, middle, high). The interview process should continue during the facility tour as observations are made and recorded.
- Observations about the district's waste management practices, disposal and recycling bin utilization, equipment utilization, and activities and machinery that produce waste should be discussed and recorded during the facility tour.
- Information gathered from the interviews and facility tours is compiled and analyzed to ascertain primary and secondary opportunities for waste reduction and cost savings. The CIWMB's resources for school district waste reduction (www.ciwmb.ca.gov/Schools/WasteReduce/) is a useful source of information.
- Prepare a waste assessment report of the facts and observations, and recommendations for an initial set of easily implemented waste reduction opportunities and a list of other opportunities for waste reduction for future implementation.
- Always include a recommendation for the adoption of districtwide waste reduction and environmentally preferable purchasing policies.
- Conduct an exit interview to discuss the draft report and its recommendations with the district superintendent, chief business official, and managers that attended the introductory meeting.
- The exit interview provides an opportunity to stress that the local jurisdiction is available to assist the district in implementing the initial and secondary opportunities and any financial, technical or other resources available to the district. The local jurisdiction should take the

⁴ In the pilot project, state staff led the assessment. The assessment teams consisted of a minimum of two and a maximum of six assessment staff, depending on the size of the district being assessed. The teams included local jurisdiction staff and occasionally the waste hauler.

opportunity to make appointments with managers to begin implementation following the meeting.

- Finalize the waste assessment report and present it to the district and local jurisdiction recycling coordinator.
- The local jurisdiction should follow up within a month of the exit interview to begin implementation of the recommendations.

Appendix K: Glossary

California Integrated Waste Management Act (IWMA): Also known as AB 939 (Chapter 1095, Statutes of 1989), the IWMA created the Integrated Waste Management Board, required each jurisdiction in the state to submit detailed [solid waste planning documents](#) for Board approval, set [diversion](#) requirements of 25 percent in 1995 and 50 percent in 2000, established a comprehensive statewide system of permitting, inspections, enforcement, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types or amounts of solid waste generated.

(Reference: <http://www.ciwmb.ca.gov/LGCentral/Summaries/glossary.htm>)

Cardboard: Paper product made of unbleached craft paper, with two heavy outer layers and a wavy inner layer to provide strength.

(Reference: www.ciwmb.ca.gov/projrecycle/modelplan/Glossary.htm)

Commercial Sector (Nonresidential): Commercial sector waste comes from all businesses, small and large, including wholesale and retail sales, restaurants, manufacturing, and transport. The commercial sector also includes government, schools, institutions, fairs and expositions, and other special events. It may also include the subdivision of commercial self-haul, which would include any waste generated by a business and hauled by that business to a [CIWMB-permitted landfill](#) or [transformation facility](#) (e.g., a roofing company that routinely hauls to the landfill old roofing materials removed from job sites). Commercial self-haul would also include small businesses that haul odd loads for a living. The commercial, [residential](#), and [self-haul](#) sectors make up the complete waste stream.

(Reference: <http://www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm>)

Composting: The process of collecting, grinding, mixing, piling, and supplying sufficient moisture and air to [organic materials](#) to speed natural decay. The finished product of composting operations is compost, a soil amendment suitable for incorporating into topsoil and for growing plants. Compost is different than mulch, which is a shredded or chipped organic product placed on top of soil as a protective layer.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Construction and Demolition (C&D) Debris: Building materials and solid waste from construction, [deconstruction](#), remodeling, repair, cleanup, or demolition operations that is not "hazardous" (as defined in [Public Resources Code Section 40141](#)). This term includes, but is not limited to, asphalt, concrete, Portland cement, brick, lumber, wallboard, roofing material, ceramic tile, plastic pipe, and associated packaging.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/glossary.htm)

Deconstruction: The process of taking apart a structure with the primary goal of preserving the value of all useful building materials, so that they may be reused or recycled.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Disposal: For diversion purposes, disposal is all waste created by all businesses and residents which is disposed at [CIWMB-permitted landfills](#) or at [transformation facilities](#), or is exported from the state. The CIWMB tracks tons of waste disposed by each jurisdiction using its [disposal reporting system](#).

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Diversion: For waste measurement purposes, diversion is any combination of waste prevention (source reduction), recycling, reuse and composting activities that reduces waste disposed at [CIWMB-permitted landfills](#) and [transformation facilities](#). Diversion is achieved through the implementation of diversion programs.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Generation: The total amount of waste produced by a jurisdiction. The basic formula is [disposal](#) plus [diversion](#) equals generation.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Grasscycling: The practice of leaving grass clippings on the lawn while mowing allowing the nutrients to return to the soil.

(Reference: www.ciwmb.ca.gov/bizwaste/FactSheets/Define.htm)

Jurisdiction: A city, county, a combined city and county, or a [regional agency](#) with the responsibility for meeting [Integrated Waste Management Act](#) requirements.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Materials Exchange Program: Programs in which two or more companies exchange materials that would otherwise be discarded. Programs may also be managed by organizations using electronic and/or catalogue networks to match companies that want to exchange their materials.

(Reference: www.ciwmb.ca.gov/ProjRecycle/ModelPlan/Glossary.htm)

Materials Recovery Facility: More commonly called a MRF (pronounced "murf"). An intermediate processing facility designed to remove recyclables and other valuable materials from the waste stream. A "dirty MRF" removes reusable materials from unseparated trash. A "clean MRF" separates materials from commingled recyclables, typically collected from residential or commercial curbside programs.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Organics: Materials that are or were recently living, such as leaves, grass, agricultural crop residues, or food scraps. Please see the waste characterization [materials page](#) and the CIWMB's [Organics Web site](#).

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Precycling: Making purchasing decisions that will reduce waste such as buying goods with less packaging (e.g., goods in bulk or concentrated form), choosing products that will last longer, and avoiding single-use or disposable products.

(Reference: www.ciwmb.ca.gov/BizWaste/FactSheets/Define.htm)

Procurement Program: Programs that encourage the purchase of recycled-content products and environmentally preferable products by companies, [jurisdictions](#) and others. Joint recycled-content product purchasing pools and buy-recycled campaigns are two examples.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Recycled-Content Product (RCP): A product that has been manufactured using preconsumer or postconsumer recycled material.

(Reference: www.ciwmb.ca.gov/projrecycle/modelplan/Glossary.htm)

Recycling: Per [Public Resources Code Section 40180](#), 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 material for new, reused, or reconstituted products that meet the quality standards necessary to be used in the marketplace.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Reuse: The recovery or reapplication of a package or product for uses similar or identical to its originally intended application, without manufacturing or preparation processes that significantly alter the original package or product.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

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 non-recyclable 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 waste tonnage generated, and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic, and other materials. The term "source reduction" is synonymous with waste prevention.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Tipping Fee: The fee charged for unloading solid waste at a landfill or transfer station.

(Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Transfer Station/Processing Facility: A facility which receives, handles, separates, converts, or otherwise processes solid waste, whose activities are governed by the Registration Permit tier or Full Solid Waste Facility Permit requirements. Such facilities typically transfer solid waste directly from one container to another or from one vehicle to another for transport, or temporarily store solid waste prior to final disposal at a [CIWMB-permitted landfill](http://www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm) or [transformation facility](http://www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm). (Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Transformation: Incineration, pyrolysis, distillation, gasification, or biological conversion of waste by means other than composting. (Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Vermicomposting: The process whereby worms feed on slowly decomposing materials (e.g., vegetable scraps) in a controlled environment to produce a nutrient-rich soil amendment (also referred to as “worm composting”). (Reference: www.ciwmb.ca.gov/BizWaste/FactSheets/Define.htm)

Waste Assessment: An on-site assessment of the waste stream and recycling potential of an individual business, industry, institution or household. (Reference: www.ciwmb.ca.gov/ProjRecycle/ModelPlan/Glossary.htm)

Waste Characterization: The act of determining the types and amounts of materials in the disposed waste stream. Waste characterization studies typically involve the sorting and weighing of samples of disposed waste. (Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Waste Diversion: Please see [Diversion](#).

Waste Generation: Please see [Generation](#).

Waste Prevention: Please see [Source reduction](#).

Waste Reduction: The combined efforts of waste prevention, reuse, recycling, and composting practices. (Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Waste Stream: Waste material output of a business, industry, institution, community, region, or state. (Reference: www.ciwmb.ca.gov/LGCentral/Summaries/Glossary.htm)

Xeriscaping: The practice of landscaping using slow-growing, drought-tolerant plants. (Reference: www.ciwmb.ca.gov/BizWaste/FactSheets/Define.htm)