

STATE OF COLORADO

Bill Ritter, Jr., Governor
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Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

February 1, 2010

The Honorable Brandon Shaffer, President of the Senate
The Honorable Lois Tochtrop, Senate Assistant Majority Leader
The Honorable Josh Penry, Senate Minority Leader
The Honorable Terrance Carroll, Speaker of the House
The Honorable Paul Weissmann, House Majority Leader
The Honorable Mike May, House Minority Leader
Colorado State Capitol
200 East Colfax
Denver, Colorado 80203

Dear Senators and Representatives:

Enclosed is a copy of the annual report to the General Assembly on the status of the Solid Waste and Material Management Program in Colorado. Senate Bill 07-1288 requires this report (CRS 30-20-101.5(3)).

Sincerely,

Gary W. Baughman, Director
Hazardous Materials and Waste Management Division

Enclosure

STATE OF COLORADO



Colorado Department
of Public Health
and Environment

**2009 Annual Report to the Colorado General Assembly
On the Status of the
Solid Waste and Material Management Program
In Colorado**

Submitted to the Colorado Legislature
By the Division of Hazardous Materials and Waste Management
Colorado Department of Public Health and Environment
February 1, 2010

DOCUMENT INFORMATION

Title: 2009 Annual Report to the Colorado General Assembly on the Status of the Solid Waste and Material Management Program in Colorado

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Subject: The report describes the status of the Solid Waste and Material Management Program and efforts to streamline the program so that it can be implemented at the lowest possible cost without jeopardizing the statutory intent.

Statute: Section 30-20-101.5(3), C.R.S.

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2009 Annual Report to the Colorado General Assembly On the Status of the Solid Waste and Material Management Program In Colorado

EXECUTIVE SUMMARY:

Colorado's Solid Waste and Material Management Program (the Program) is located within the Hazardous Materials and Waste Management Division (the Division) of the Colorado Department of Public Health and Environment (the Department). The Program is responsible for ensuring compliance with laws pertaining to the management of solid waste. Primary elements of the Program include compliance assistance; compliance monitoring and enforcement; remediation; permitting; and information management. The Program regulates approximately 493 facilities, including landfills, recyclers, composters, waste impoundments, waste tire monofills, and medical waste treatment facilities, as well as the associated waste management activities at these facilities.

The Program does not receive any support from Colorado's General Fund and is 100% fee supported. The Program has three fee components: 1) the Solid Waste User Fee (SWUF) which is a waste generator-paid fee based on volume/weight of waste disposed of at a landfill, also known as a "tipping fee," 2) the Hourly Activity Fee assessed for prescribed services rendered to facilities, and 3) the Annual Facility Fee which is an annual fee remitted by facilities that are not required to pay the SWUF.

Funding for FY 2011 and beyond is the Program's most critical need. The SWUF provided eighty-two percent (82%) of the Program's funding in FY09, but is scheduled to be repealed on July 1, 2010. In addition, the economic downturn has reduced SWUF revenues by 16% in FY2010 and these revenues are projected to decrease another 9% in FY2011. Because of the pending repeal date and the steep revenue decrease, the Department has proposed legislation for consideration in the 2010 session to resolve the problem. The proposed legislation will: 1) extend the SWUF to 2017, 2) transfer limited fee-setting authority for the SWUF to the Solid and Hazardous Waste Commission, and 3) provide interim funding support, if needed, for the Program. The Department and stakeholders believe the legislative proposal is a balanced approach that will assure the future viability of the Program. **It is imperative that this issue be addressed in the 2010 legislative session to maintain the future viability of the program.**

The Solid Waste Management Program implemented significant improvements in the areas of database management, compliance assistance, permitting, and monitoring and enforcement. In addition, data collected for the 2008 Colorado Recycling Report indicate that the total amounts of solid waste diverted from landfills and municipal solid waste recycled increased significantly from 2007 to 2008 to 28% and 16%, respectively. Energy savings resulting from recycling in Colorado during 2008 was the equivalent of over 6 million barrels of oil or the energy equivalent to removing nearly 350,000 average homes off the grid. The GHG emissions prevented by recycling are equal to removing over 695,000 average passenger cars from Colorado's roadways for the year.

SECTION 1:

INTRODUCTION

Colorado's Solid Waste and Material Management Program (the Program) is located within the Hazardous Materials and Waste Management Division (the Division) of the Colorado Department of Public Health and Environment (the Department). The Program is responsible for ensuring compliance with laws pertaining to the management of solid waste. The authority for this Program is in the Colorado Solid Waste Act, C.R.S. 30-20-100.5, et seq. (the Act), and the federal Resource Conservation and Recovery Act, Subtitle D (RCRA-D). The U.S. Environmental Protection Agency (EPA) has approved Colorado's solid waste management program and its supporting laws and regulations. **In order to maintain the near and long-term viability of the Solid Waste Program, it is imperative that legislation to address the funding issues presented on pages 4-6 of this report be passed in the 2010 legislative session.**

Primary elements of the Program include compliance assistance; compliance monitoring and enforcement; remediation; permitting; and information management. Each of these program elements is discussed in the following sections. This report is comprised of three major sections reporting on the Programmatic efficiency and effectiveness through the end of the state fiscal year 2009, the state of recycling in Colorado in 2008, and the state of composting in Colorado in 2008. Additional composting and recycling data, reports and presentations may be obtained from the Program's web site: <http://www.cdphs.state.co.us/hm/recycling/index.htm>.

As of December 2009, the Program regulates approximately 493 facilities and associated waste management activities including, but not limited to, municipal solid waste (MSW) landfills, industrial and special waste landfills, asbestos contaminated soil sites, incinerator ash disposal facilities, transfer stations, recycling facilities, scrap tire facilities, solid waste incinerator facilities, infectious waste facilities, waste impoundments, composting operations, spill responses, property reclamation and redevelopment projects and waste motor vehicle tire haulers. Facilities may have multiple active operations at their sites, such as an MSW landfill with an aggregate recovery area, a composting area, and a scrap metal recovery area all co-located at the same site.

In addition, the Program reaches out to the regulated community via facility technical assistance, training, partnering meetings, presentations at conferences, and active participation and support of professional organizations such as the Solid Waste Association of North America (SWANA) and the Association of State and Territorial Solid Waste Management Officials (ASTSWMO).

A unique aspect of Colorado's solid waste management framework is the construct of dual regulatory jurisdiction. The Act specifically gives both the local governing body (usually a county or municipality) and the Program complimenting jurisdiction over the location, design, and operation of a solid waste facility. The local governing body must issue a Certificate of Designation prior to operation unless the operation qualifies for one of only eight (8) exemptions identified in section 30-10-101(6)(b), C.R.S. The application must be forwarded to the Program for technical review prior to issuance of the Certificate of Designation. If the Program

recommends approval or approval with modifications of the application, then the local governing body may either approve or disapprove the application. If the recommendation includes an approval with modifications, the local governing body must incorporate the modifications into their final decision. If the Program recommends disapproval of the application, then the local governing body must disapprove the application, and they cannot overrule the Program's recommendation. In addition, the local governing body may revoke the Certificate of Designation, as they deem appropriate. The Program's authority ascribes to the design and operational aspects of the facility, while the local governing body controls the land use and also covers the operational aspects of the facility.

The Program does not receive any monies from Colorado's General Fund, and is 100% fee supported. The Act and the Regulations (6-CCR 1007-2) provide three means of collecting fees to support the Solid Waste Management Program:

- 1) Solid Waste User Fee: This is a fee paid by the waste generator based on volume/weight of waste disposed of at a landfill, also known as a "tipping fee,"
- 2) Hourly Activity Fee: This is an hourly fee assessed for prescribed services rendered by solid waste staff to facilities, and
- 3) Annual Facility Fee: This is an annual fee remitted by facilities that are not required to pay the Solid Waste User fee.

In 2007, the General Assembly passed House Bill 07-1288. The following report is submitted to comply with the requirement of that law to submit an annual report to the General Assembly on February 1st of each year. This report describes the status of the Solid Waste Management Program and the efforts of the Program to carry out its statutory responsibilities at the lowest possible cost.

CRITICAL FUNDING NEEDS:

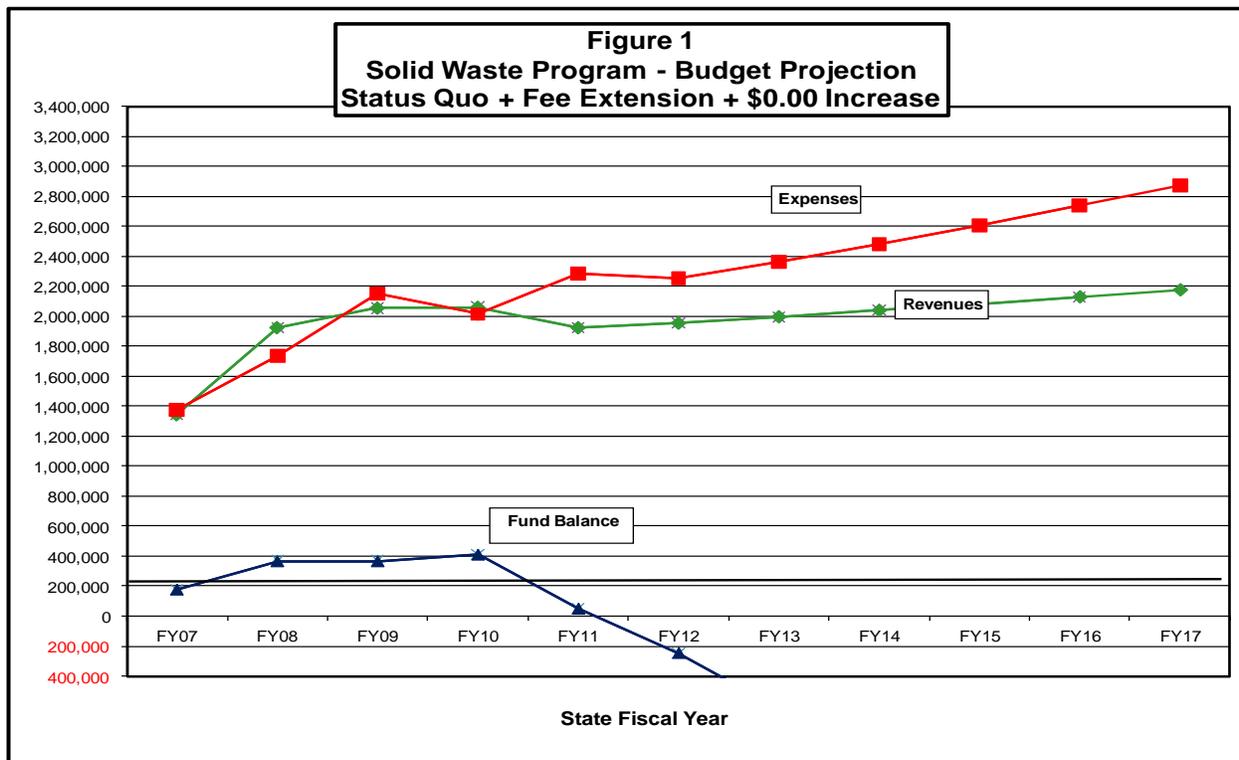
Adequate funding for FY11 and beyond is the Program's most critical need. The Solid Waste User Fee (SWUF), which is based on disposal volumes at landfills, will be repealed effective July 1, 2010, unless extended during the 2010 legislative session. The SWUF provided eighty-two percent (82%) of the Program's funding in FY09. If the SWUF is repealed, then the Program will lose an estimated \$1,650,000 of a \$1,920,000 budget in FY11. This loss will exceed the cumulative salaries of the solid waste technical staff, and result in elimination of the entire Program. Because of the precipitous funding shortfall, the Department has proposed legislation for consideration in the 2010 session to resolve the problem.

The Department initiated a stakeholder process during November 2009 to assist in developing a legislative initiative to address these funding needs. The proposed legislation will: 1) extend the SWUF to 2017, 2) transfer limited fee-setting authority for the SWUF to the Solid and Hazardous Waste Commission, which has formal public rulemaking requirements and already sets the Program's hourly and annual fees, and 3) provide interim funding support, if needed, for the Program. Under this legislation, the Department would work with stakeholders to develop proposed adjustments to the SWUF for the Commission to consider in the fall of 2010. Any

increase in the fees authorized by the Commission would not become effective until the early part of calendar year 2011.

Stakeholders in this process included, but were not limited to, county and privately owned landfill owners and operators, representatives of Colorado Counties, Inc, Colorado Municipal League, Colorado Association of Commerce and Industry, state legislators and others. We shared multiple versions of the proposed legislation, met with the stakeholders three times and engaged in multiple conference calls to develop a legislative proposal that is acceptable to all parties. It is important to note that business and industry values the Program’s role in leveling the playing field for compliant owners and operators.

Simply extending the SWUF will not provide sustainable Program funding. As stated, the SWUF is based on disposal volumes. Because of the economic downturn, the solid waste disposal volumes decreased by sixteen percent between FY08 and FY09, and are expected to decrease another nine percent during FY10. Extending the SWUF without providing for a future fee increase will result in a negative fund balance by the end of FY11 as depicted in Figure 1.



Not increasing the SWUF will have the following consequences:

- 1) Program Staffing
 - a) FY 2011: Leave 3.5 FTE vacant; understaffed by 23%.
 - b) FY 2012: Layoff additional 1 FTE, understaffed by 4.5 FTE or 31%.
 - c) FY2013 and beyond: Layoff additional 1-2 FTE/yr.

- 2) Layoff/Understaffing Consequences
 - a) Each year, further reduce inspection activities at disposal facilities, which is our best deterrent to illegal dumping and other illegal solid waste operations.
 - b) Each year, further reduce permitting activities and, by FY2014, eliminate permitting program, which will:
 - i) Slow and end the permitting process for new facilities and those seeking significant modifications,
 - ii) Result in CDPHE non-compliance with statutorily mandated permit processing times,
 - iii) Cause inadequate disposal capacity for solid waste in Colorado,
 - iv) Cause large increase in uncontrolled disposal and illegal dumping, and
 - v) Cause loss of disposal revenue to local government and business.
 - c) No inspection of medical waste generators and disposal facilities potentially causing unsafe exposures of public health workers and the public.
 - d) No independent audits of payments to the Solid Waste Users Fund and Hazardous Substance Response Fund by landfills and other solid waste facilities

It is imperative that legislation to address funding needs of the Program be passed during the 2010 legislative session. The Department believes that its legislative proposal is a balanced approach that will assure the future viability of the Program.

ORGANIZATION AND STAFFING:

The Solid Waste and Material Management Program had the equivalent of 9.5 staff during most of state fiscal year 2008-2009. One additional staff with very strong geotechnical expertise and industry experience was added during the last quarter of the fiscal year in the Denver office. Staff resources are divided into three functional groups: 1) the Solid Waste Permitting Unit, 2) the Inspection and Enforcement Group and 3) the Data Collection and Management Group. The Data Management group serves the entire state. Their data collection, analysis and presentation efforts are detailed in sections two and three of this report dealing with the state of recycling and composting in Colorado. The Permitting Unit and the Inspection and Enforcement Group also serve the entire state, but are allocated based on defined territories. Maps depicting the staff assignments are located on the Program's web site. Future growth in the Program will be needed to better serve the ever-increasing numbers and demands of Colorado's solid waste facilities. The staff share duties and responsibilities including, but not limited to, customer and facility technical assistance, conducting inspections and subsequent follow-up activities including necessary enforcement, and permitting. Of these activities, customer and facility technical assistance continues to occupy the largest amount of staffs' time. During 2009, the Program continued its efforts to improve efficiency and effectiveness following the passage of HB 07-1288. Examples of the types of activities being pursued to improve the program and their status are presented below:

- 1) Improved facility assistance delivered on inspections: Ongoing.
- 2) Streamlined inspection and reporting process: Revised and pilot tested new inspection forms that will be used as a template in the new database.

- 3) Increased team training to remain current with industry practices: Training included short courses to selected staff on solid waste composting, medical waste, and innovative cover and lining techniques. Additional training was offered to educate the Data Collection and Management staff on recycling data collection and metrics development.
- 4) Development of workload tracking tools: Ongoing.
- 5) Improved database evaluation techniques: The facility identification and project management portions of the database are nearing completion and should be launched during the spring of 2010. Staff has already begun structured training and is pilot testing on the new software; with phased in utilization as modules are deployed.
- 6) Improved data collection (e.g., waste tires, recycling, and compost facilities): The recycling survey forms were revised and improved to be more user friendly, while facilitating the collection of more detailed information.
- 7) Improved customer and facility outreach: Outreach efforts included hosting three meetings at various locations around the state catering to the needs of solid waste professionals and interested citizens. The meetings were tailored to community interests and included updates on the solid waste regulations and statutes, and recycling and composting activities. In addition, each meeting included a town-hall style feedback/suggestion session to get direct input from the participants. The input is used to help improve our solid waste activities and better serve the needs of our customers.
- 8) Cross-media integrations with:
 - a) Air Pollution Control Division: Regarding asbestos contaminated soil, manufactured home disposal issues and Title V permitting and solid waste facilities.
 - b) Water Quality Control Division: Regarding waste impoundment management issues.
 - c) Colorado Oil and Gas Conservation Commission: Regarding the regulation of oil and gas waste residuals mostly related to brine pit facilities and drilling pit liner disposal issues.
 - d) Colorado Department of Agriculture: Regarding compost regulations and avian influenza response planning and agricultural composting activities.
 - e) Mined Land Reclamation Board: Regarding solid waste activities at mining facilities and the appropriateness of terminating post-closure care and funding.
 - f) Colorado Department of Transportation: Regarding spill response interactions and coordination.
- 9) Continued refinement of workplans:
 - a) Annual workplan
 - b) 2-year workplan, and
 - c) 5-year workplan.
- 10) Upgrading of the Solid Waste Management System and supporting database.

During 2009, the Program continued implementation of the activities noted above and several new efficiency improving activities including: a) the use of revised inspection forms to provide more direct and comprehensive in-field feedback to facility owners and operators , b) multi-discipline pre-project scoping meetings with facilities to manage expectations and streamline the

submittal and review processes, and c) the refinement and implementation of a document review effort matrix to help evaluate our review efficiencies.

ACCOMPLISHMENTS, IMPROVEMENTS, AND INNOVATIONS

Even before passage of HB 07-1288 in 2007, the Division initiated efforts to streamline processes and develop innovative ways to improve the Solid Waste and Material Management Program. These efforts continued through 2009 and will continue into the future. The Program's goal is to be "efficient and effective" as described in the legislation. Each of our program elements must demonstrate its efficiency and effectiveness through a series of metrics, some of which continue to evolve as our data tracking and management capabilities improve. Some of these efficiency and effectiveness metrics are reported in the following sections. The intent of this report is to present a snapshot of the Program's 2009 achievements. In addition, this report describes efforts and activities to be implemented in the future to improve the effectiveness and efficiency of the group. These planned activities will continue to be developed into measurable quantities for future reports.

Information Management

In order to measure Program activities, it is critical to have a good data system for data collection, storage, analysis and reporting. The Program uses the Solid Waste Management System (SWMS) as its primary database, but is transitioning into a new Share-point database system. The older SWMS system is antiquated, limited in capability, storage and function, and is also unstable. In addition, some of the data used by the Program is housed in two other separate and distinct databases. The separation of information causes pronounced work delays related to information integration and inconsistencies in information.

During 2009, the Program, along with other programs in the Division, used the data collected from an exhaustive data needs assessment and gap analysis to continue the development of a new database system. The new database system underwent initial development, training and module deployment during 2009. However, these efforts were hampered by contracting delays, which have been resolved and the project is back on track. The facility identification and project management portions of the system are nearing completion and should be ready for full scale testing and use during 2010. In fact, staff began collecting detailed facility activity inventory information during 2009. This information will be used to provide detailed facility activity information to the public. The existing system is not capable of providing this data to our customers. Staff has already begun structured training on available portions of the new system. This will enhance staffs' familiarity with the new system, ease the transition to the new system, and expedite staff utilization of the system. The new system will go far beyond the simple data collection, storage, analysis and reporting currently available by allowing us to collect, analyze and report on the following types of information:

- 1) Type of facility and location
- 2) Number of Certificate of Designation applications
- 3) Compliance statistics
- 4) Self certification results
- 5) Customer and facility outreach

- 6) Effort and resources
- 7) On-lining billing and invoice system
- 8) On-line document and data submittals
- 9) On-line availability of electronic submittals

This system enhancement will be an appreciable resource commitment in 2009 and 2010 including time and funding. The results should be a single fully integrated data and information system that will enhance and improve many of the administrative, functional, reporting, and outreach aspects of the Program.

With the new system, the Division will be able to track how much time and effort is spent on different aspects of work. Improvements in the billing system will allow tracking of staff time spent reviewing specific documents. This will improve managers' ability to identify areas that are consuming inordinate amounts of time, and will facilitate workload balancing among staff. The system will also improve the Division's ability to be accountable to those paying fees by providing a detailed invoice of our activities. This information will greatly improve our work measures, efficiency, effectiveness and accountability.

Improved effectiveness and efficiency metrics and measures will be developed and reported on prior to and following implementation of the new database system. In addition, one of our strongest outreach features is anticipated to be an internet-based, interactive, customer-oriented solid waste and material management mapping and information capability. This system was developed during 2008 to present Colorado's available recycling resources using existing software capabilities, and will be migrated to the new system once it is fully operational. This service will provide the types of solid waste disposal and/or material management facilities located within a designated radius including facility contact information and types of materials managed. The recycling web page is being upgraded to be more user friendly and make the reports and data more readily available. In addition, the Data Management Group is developing a Beneficial Use Directory to facilitate the reuse of materials such as concrete, fly ash, asphalt, and tires throughout the state. The new system will develop into an on-line electronic material swapping system with material types, available volumes and contact information.

Compliance Assistance

Another goal of the Program is for all regulated facilities to be in compliance with state laws and regulations. The traditional inspection and enforcement program serves as one primary mechanism for reaching that goal. However, compliance assistance is another integral element for obtaining and maintaining compliance. The General Assembly recognized the value and importance of compliance assistance in that expectations were established in two different locations within the Act and again in the Regulations as follows:

C.R.S., 30-20-101.5(2): The Program shall develop, implement, and continuously improve as necessary policies and procedures for carrying out its statutory responsibilities at the lowest possible cost while satisfying the legislative intent expressed in subsection (1) of this section. At a minimum, the policies and procedures shall, to the extent practicable, include the establishment of the following:(f) A preference for compliance assistance with at

least ten percent of the annual budget amount of the program being allocated to compliance assistance efforts;”

C.R.S., 30-20-111: The Program and local health Programs shall render technical advice and services to owners and operators of solid wastes disposal sites and facilities and to municipalities and counties in order to assure that appropriate measures are being taken to protect the public health, safety, and welfare. In addition, the Program has the duty to coordinate the solid wastes program under this part 1 with all other programs within the Program and with the other agencies of state and local government which are concerned with solid wastes disposal.

6 CCR 1007-2, Section 1.3.8: Technical guidelines, including specific technical factors, may be developed and issued by the Program to assist applicants, local governments, and the public.

While the Program does not have any staff dedicated solely to facility assistance activities, we are still very active in our outreach efforts. These activities include participation in professional organizations such as SWANA and the ASTSWMO, hosting training activities, and engaging in local associations such as the Northeast Colorado Landfill Organization. Trainings offered by the Solid Waste Management Program during 2009 included sessions on:

- 1) Section 5.5 of the regulations; Participation in an ongoing Asbestos Contaminated Soil workgroup,
- 2) Hosting a geotechnical work group to develop guidance for consistency of landfill operations,
- 3) Hazardous Waste Identification,
- 4) Town Hall style outreach meetings to share updates regarding solid waste information and receive input from interested parties on how we can better serve their solid waste and recycling needs,
- 5) Presenting the State of Recycling in Colorado data and information at the 2009 Recycling Summit and the Colorado Hazardous Waste Management Society,
- 6) Presenting at the Environmental Protection Agency’s Resource Conservation Challenge conference, and
- 7) Participating in the Colorado State University’s compost training school.

The solid waste staff is one of our strongest outreach assets. They continue to provide valuable “on-the-ground” advice to owners and operators during sites visits and inspections.

The Solid Waste and Material Management Program continues to improve and implement several compliance assistance services to assist the regulated community in managing solid waste. These compliance assistance services include the following activities:

- 1) A limited, but growing, range of solid waste and recycling guidance documents and compliance bulletins all of which are posted to the Program's web site;
- 2) An ever improving Web site (<http://www.cdphe.state.co.us/hm/solidwaste.htm>);
- 3) Compliance assistance information dissemination during inspections and site visits;
- 4) Waste management training to industry provided by our staff, and
- 5) Stakeholder forums to receive input and direction from interested parties.

During FY 2007, the Program initiated a four-year regulatory review and revision process. The goal of this process is to create an up-to-date set of regulations that better represent the current status of the solid waste industry, are more understandable, and more concise. Another aspect of new regulations will be to add clarity and definition to new laws passed by the legislature. Revising and updating the regulations will facilitate their consistent and more expeditious implementation both internally and among our facilities.

New and Proposed Regulations

During 2009 the Program worked to develop implementation strategies for three new portions of the solid waste regulations promulgated in 2008. The new regulations included: 1) new fee regulations (Section 1.7), 2) Composting Regulations (Section 14) and 3) the EP Waste Impoundment Regulations (Section 17). The fee regulations were revised to update the Program's hourly activity fee and adopt new annual facility fees. The Program is 100% self supporting and does not receive any General Fund money.

The Program is currently working on re-writing the following existing regulations:

- 1) Compost facility financial assurance,
- 2) Material management and recycling,
- 3) Waste impoundments, and
- 4) Medical waste

The waste impoundment regulations are being developed with input from stakeholders including the Colorado Water Utility Council and the Colorado Energy Council.

We also envision proposing new solid waste regulations to facilitate completing an overall regulatory framework. New regulations may include sections on the following topics:

- 1) Corrective action/remediation/cleanup of contamination,
- 2) Construction and demolition debris,
- 3) Non-municipal waste haulers (e.g., septage, grease, and sand trap waste), and
- 4) Spill reporting.

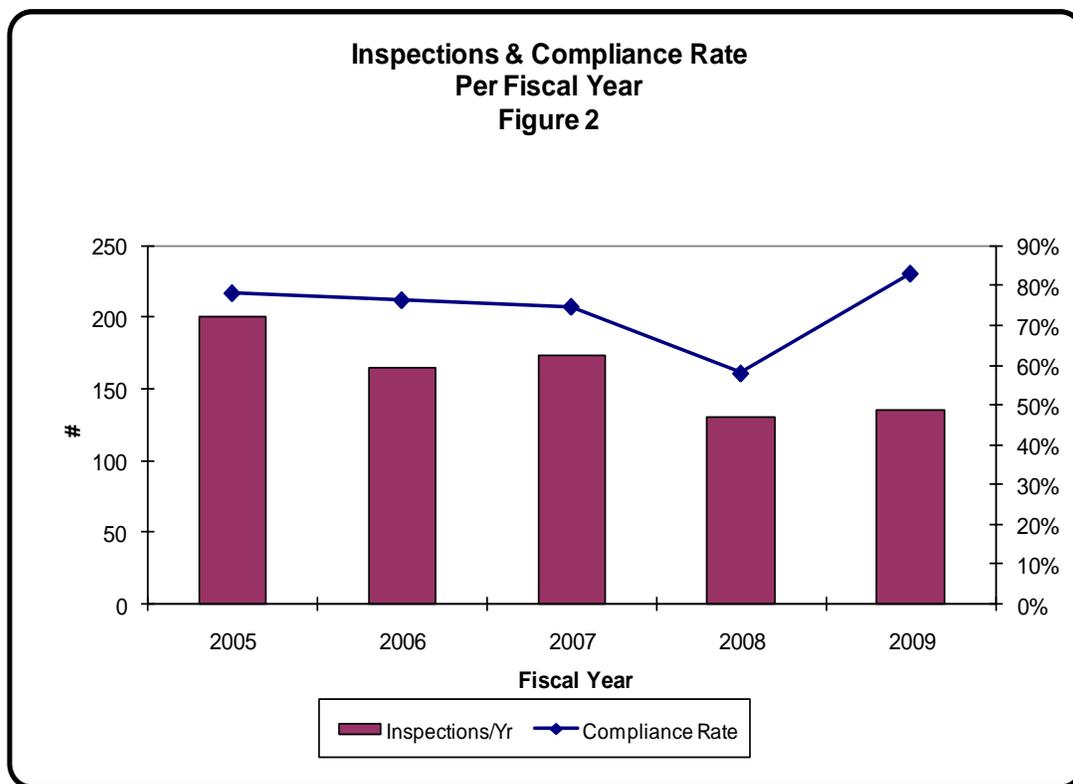
Compliance Monitoring and Enforcement

Efficiency and effectiveness are very important in compliance monitoring (inspections) and enforcement. Efficiency allows adequate coverage of the regulated universe - compliance assessments can be completed and deterrence of non-compliance occurs. Efficiency measures include such items as work output per employee and timeliness of inspection and enforcement

activities. Effectiveness ensures that inspection and enforcement activities protect public health and the environment. Effectiveness measures include improving compliance rates within the regulated community.

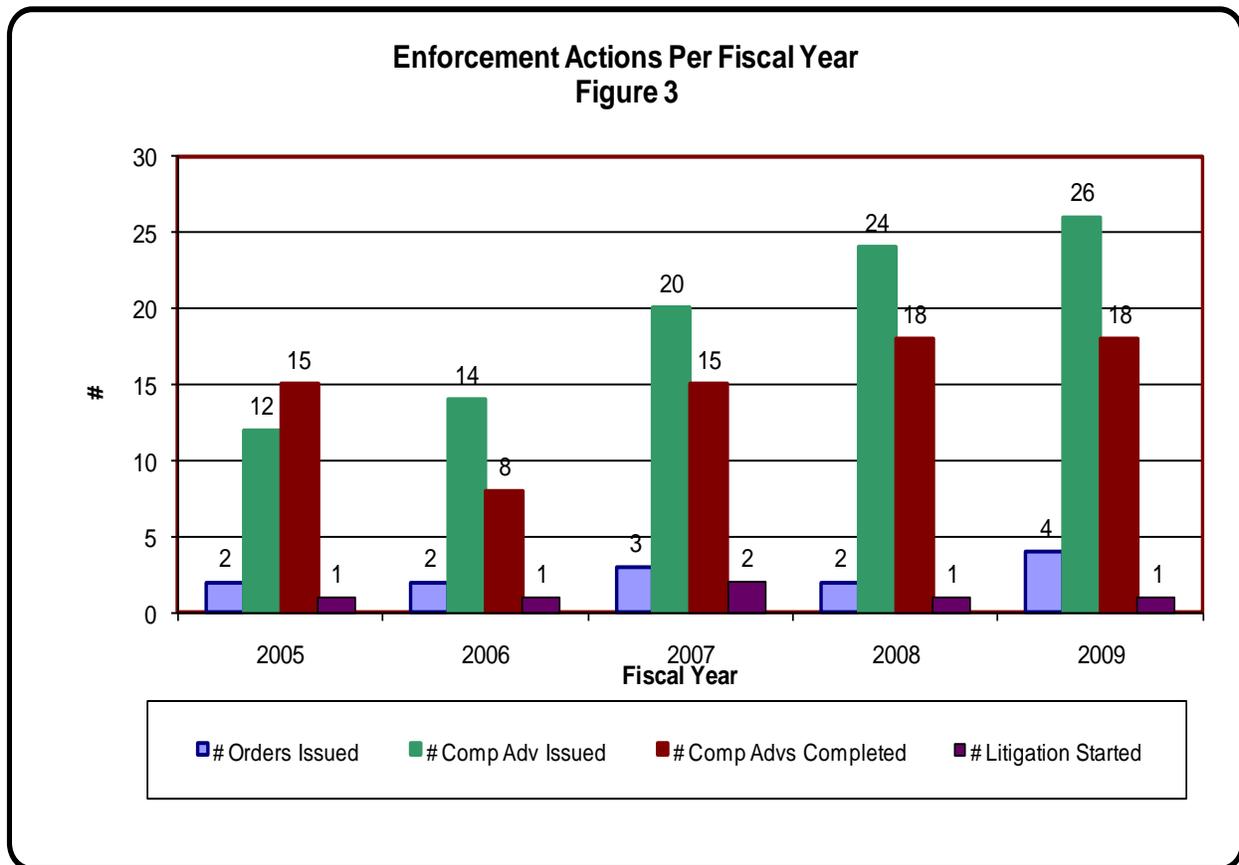
It should be noted that every inspection carries administrative responsibilities, such as preparation of a report and follow-up letter, potential informal and formal enforcement actions, litigation and tracking and data entry, all of which are also required to be performed on time and effectively. New for 2008 and carried forward for 2009, the facility specific financial assurance reviews were performed by the Program staff. These duties were previously performed by staff outside of the Program, but due to resource reallocations these duties were reassigned to Program staff. Prior to performing a field inspection, Program staff conducted a review to determine the solvency of the facility's financial mechanism and the appropriateness of the financial assurance amount. These additional duties increased staff workload on a per inspection basis.

During 2009, the Program conducted 135 inspections resulting in 26 compliance advisories, four orders and one litigation. The inspections documented an industry-wide 83% compliance rate, which is higher than 2008, and discussed in detail below. The annual compliance rates and number of inspections are depicted in Figure 2 below.



The increased number of industry submittals for review by staff during the last three years has created a project backlog. The 2008 inspection strategy focused on sites and facilities that had not been inspected in the past two or more years or that were identified as noncompliant based on information collected during the 2007 inspections.

The 2008 inspection strategy was implemented by deferring inspections of facilities that were fully compliant for the past two years until 2009. This strategy generated several results. First, we performed fewer, but better targeted inspections. Second, the apparent industry-wide compliance rate dropped from 2007 to 2008 because more historically non-compliant facilities were inspected. During 2009 more of the traditional solid waste facilities were inspected. The overall industry-wide compliance rate increased, but so did the number of compliance advisories. Fewer violations were identified, but the identified violations warranted an elevated response in the form of a compliance advisory.



The number of Compliance Advisories (informal enforcement actions) issued between 2005 and 2009 increased from 12 to 26 (See Figure 3). One litigation was initiated during 2009. In addition, 13 compliance advisories were resolved without the need for further enforcement. The remainder of the advisories are pending as we are working with the facilities to return to them compliance. Ninety-six compliance advisories were issued between 2005 and 2009, with 93 being resolved either as compliance advisories or after being elevated to an order or through litigation. The increased number of advisories issued and litigation actions initiated had a significant impact on staff because the advisories take more time and effort to generate. This is true because they require a more detailed analysis to: a) verify and document the apparent violations, b) develop actions and schedules to return the facility to compliance, c) work with facilities to implement the requested return-to-compliance activities, and d) ultimately verify and document completion of the requested actions and the facility's return to compliance. In addition, the litigation actions are a significant resource commitment by the Program. We

anticipate that the modified inspection approach of targeting facilities with compliance problems will provide long term benefits by addressing some of the more problematic solid waste facility sectors, and helping to improve their ability to operate in and maintain compliance. If the data generated by the alternating inspection strategies confirms that this approach works, then we will adopt this methodology as a part of our routine inspection strategy.

Remediation

The Solid Waste Management Program conducts remediation activities through: 1) the investigation and clean up of asbestos contaminated soils at the request of the property owner in accordance with Section 5.5 of the Regulations, 2) a response to an imminent and substantial endangerment in accordance with the Act, or 3) an intra-divisional partnering relationship with the Voluntary Cleanup Program. During 2009, the Program provided oversight at 11 asbestos contaminated soil remediation sites.

The asbestos contaminated soil sites take a considerable amount of time and effort. The larger asbestos contaminated sites are similar to large hazardous waste corrective action remediation projects. The work at these sites falls into the Program's jurisdiction because of the asbestos contaminated soil regulations promulgated in 2006. We are currently participating in a workgroup comprised of asbestos contaminated soil owners and operators to update our guidance document. The result of this effort will add clarity and definition to the implementation of the regulations and expedite the investigation, management or remediation and redevelopment of the asbestos contaminated soil sites. In addition, we are working with the stakeholders using our recent experience implementing the regulations at a variety of sites to provide a more practical implementation strategy for the regulations.

We are endeavoring to expedite the review and approval process of workplans and project completion reports. This will facilitate owners and operators returning properties to productive service as quickly as possible. One methodology to expedite our activities incorporates using pre-workplan submittal technical working sessions. We continue to encourage developers to participate in pre-workplan submittal scoping meetings. These meetings are used to explain the regulatory requirements, gain a better understanding of the developers' projects, and offer innovative approaches to resolve administrative, regulatory or implementation and strategy issues. These meetings are resulting in higher quality workplans being submitted that are easier to review with fewer issues being identified leading to quicker approvals.

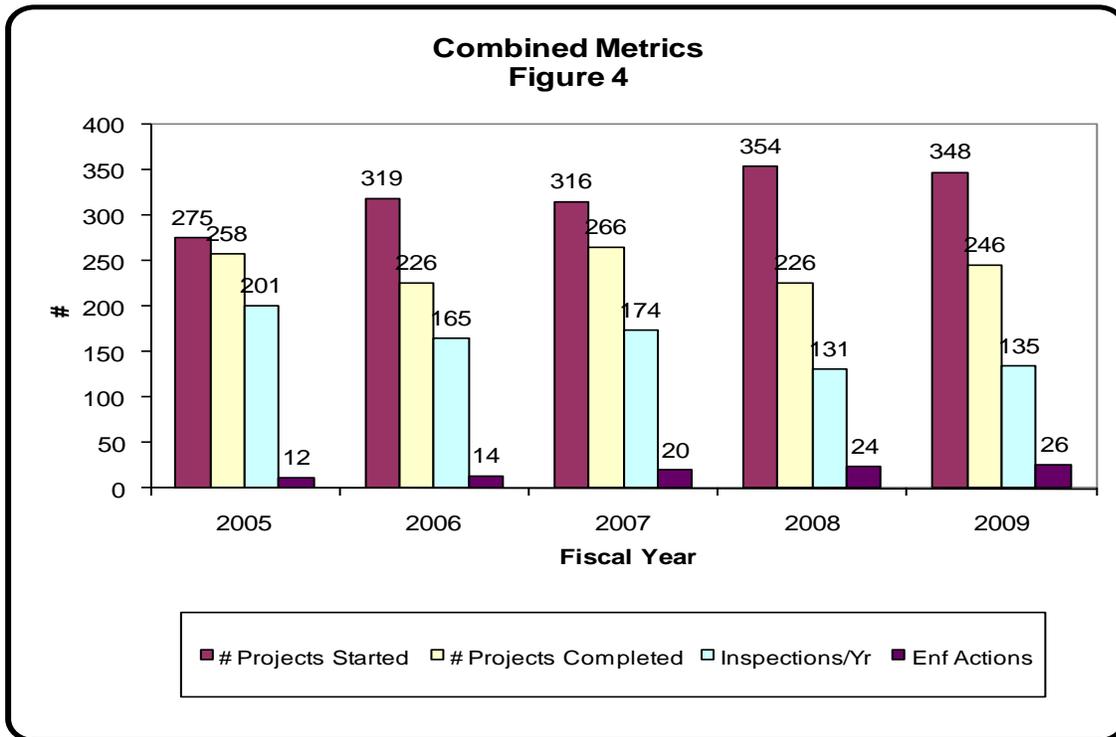
Permitting and Document Reviews

A variety of facility types manage solid waste in a manner requiring oversight by, and reporting to, the Program. In fact, more and more facilities are becoming material management facilities. Material management facilities are not simply solid waste disposal sites, but combine a variety of solid waste disposal and/or recycling activities at the same location. In addition, these facilities may have both open and closed areas of similar activities. An example of a material management facility might include management areas for:

- 1) Municipal solid waste disposal,

- 2) Non-friable asbestos disposal,
- 3) Friable asbestos disposal,
- 4) Residential tire, waste battery and used oil collection,
- 5) Green/Yard waste management,
- 6) White goods and scrap metal collection,
- 7) Household hazardous waste collection,
- 8) Used oil collection,
- 9) Compost treatment, storage, and distribution operations.

We believe that these multi-function facilities will become the norm in the near future. The current SWMS database is not able to track multiple operations at a single facility, nor the open and closed status of specific operations. We believe the ability to capture this information will be very beneficial to informing the marketplace regarding material reuse and management opportunities by improving waste management and efficiency for the entire state. As discussed in the data management section above, we very much look forward to collecting, analyzing and disseminating this information.



During 2009, 348 projects were initiated by the Solid Waste and Material Management Program for review. Figure 4 depicts an increasing trend in the number of projects submitted by customers for our review and final determination between 2005 through 2008, with a slight decrease from 354 to 348 between 2008 and 2009. The graph also depicts a steady number of certificate of designation (CD) applications and design and operation (DO) plan submittals. Approximately 270 projects were completed between 2008 and 2009 with almost 40 more projects completed in 2009. Transitioning between the older SWMS to the new Share-Point database system has involved double entry into both systems, which is requiring data clean-up

for consistency. Staff training on these systems and their requirements will also improve data and project completion tracking. The database clean-up project will continue throughout 2010, and likely result in reducing the difference between the number of projects initiated and completed each year.

Because of the very heavy workload generated by more asbestos correctives action projects and certificated of designation applications or modifications, staff spent an increased amount of time completing larger more complex projects. There was an increase in the total number of projects completed in 2009 compared to 2008, and staff worked on more major projects, in conjunction with providing an increased level of enforcement support.

The average facility response time was approximately 85 calendar days. This is the number of days between a requested action by a facility owner (for instance, reviewing and approving a document) and the Program's final response. This response time is, on average, approximately 9 days slower than 2008. The number of hours spent formulating our response also increased slightly. We are continuing to track data on time spent reviewing documents and have used it to develop a document review matrix. The matrix contains a list of the different types of documents that we receive for review. Each document type is then divided into a simple and complex document category. The Program then developed an estimated number of hours that should be required to review either a simple or complex submittal for each document type. This information is used by staff to evaluate their own review efficiency. In addition, the information is evaluated with staff during monthly workload evaluation meetings with management. This is a new process and will likely evolve over the next several years, but should yield a very powerful performance metric.

We are continuing to improve our ability to review documents and respond to the regulated community in a more timely manner. The program has implemented "two pass reviews" for the last two years. This is a review technique that staff and facilities alike are getting used to. The goal of the two-pass review process is to expedite the final approval of a given document. The methodology includes both reducing the number of reviews per document and the number of hours required to reach final approval of a submittal. The two-pass review operates as follows:

- 1) Receive and perform the initial review of the document,
- 2) Generate comments, if needed, related to clarifications or deficiencies in the document,
- 3) Send the comments to the facility,
- 4) Receive and review the facility's responses to the comments,
- 5) Meet with the facility to work through remaining issues,
- 6) Create an approval-with-modifications letter related to the responses and the path forward agreed upon in the meeting,
- 7) Send the draft approval-with-modifications letter to the facility for review and discussion of the proposed modifications, and
- 8) If the facility agrees with the modifications, finalize the document.

There are several advantages and options associated with this process. If the initial review indicates that the document may be approved without comment or modifications, then we do so.

If the initial document may be approved with minor modifications, then we do so following discussions with the facility to ensure they agree with the changes. The two-pass review process is much more proactive and efficient than more traditional iterative correspondence process. Not all documents are amenable to this process; however we are endeavoring to use the two-pass review process whenever appropriate. In addition, if substantial issues still need to be resolved we can opt to issue comments, for further response and discussion, instead of modifications. We hope that the combined processes of pre-submittal scoping meetings and the two pass reviews will reduce the number of iterations, actual number of hours and the number of days to reach final document approval.

The number of certificate of designation applications received for new facilities and major modification to existing facilities has increased the total number of hours per review. This in turn is delaying our response times to individual submittals. We continue to evaluate our Program for efficiency savings. Certainly hiring additional experienced staff should help with workload issues.

CONCLUSIONS

A snapshot of the Solid Waste and Material Management Program is presented in Section 1 of this report. We started on effectiveness and efficiency improvements prior to the passage of HB 07-1288. However, we are still working on developing the new database system, which will include data cleanup and reconciliation, and believe that this is only a limited demonstration of what we hope are positive impacts of these measures. We do believe that significant improvement has occurred and is continuing to occur to further improve efficiency and effectiveness.

As discussed in this report, the Hazardous Materials and Waste Management Division has implemented significant improvements to the Solid Waste Management Program to satisfy the expectations set out by HB 07-1288 (Section 30-20-101.5(3), C.R.S). This report explains how these statutory expectations have each been met:

- 1) maintaining a program that is credible and accountable;
- 2) maintaining a program that is innovative and cost-effective;
- 3) developing level-of-effort guidelines for inspections, enforcement, permitting, and remediation;
- 4) streamlining the permitting and document review process; and
- 5) emphasizing compliance assistance efforts.

While this report covers only our first full year of reporting under HB 07-1288 we expect future accomplishments to include the following

- initiating a new data management system,
- reporting on a variety of new efficiency and effectiveness metrics,
- continuing our high level of customer and facility technical assistance,
- improving our facility response time,
- dramatically increasing inspection efficiency,

- improving the timeliness of enforcement actions, and
- streamlining the document review and permitting process.

SECTION 2

STATE OF RECYCLING IN COLORADO 2008

INTRODUCTION AND EXECUTIVE SUMMARY

This section details the results for the State of Colorado’s 2008 Annual Recycling Facility Report as required for recycling facilities in the State solid waste regulations. All recycling facilities are required to register with the Program and submit an annual report each year on or before the first of May detailing the types of material collected, and the amount by weight of each material recycled. The following report is intended to satisfy the obligation in HB07-1288 that requires the Program to collect and report data on the following criteria.

- The proportion of solid waste generated in the state that has been diverted to other uses that may be based upon a model established by the Federal Environmental Protection Agency for the purpose of calculating a recycling rate
- State-wide and regional solid waste stream components such as type of material, quantities of each material, and flow of each material
- A state-wide inventory of sites and facilities performing recycling or other solid waste processing or diversion

For 2008 the State of Colorado diverted 35% or 3.9 million tons of the total solid waste generated, and recycled 20% or 1.6 million tons of the municipal solid waste (MSW) generated.¹ The amount diverted and MSW recycled in 2008 shows a significant increase from 2007 rates of 28% and 16% respectively.²

Energy savings resulting from recycling in Colorado during 2008 totaled approximately 35 trillion BTUs equaling over 6 million barrels of oil or 288 million gallons of gasoline conserved. Recycling in Colorado also saved the amount of energy equivalent to removing nearly 350,000 average homes off the grid.³

In correlation to energy savings, using recyclables as raw material feedstock in manufacturing significantly reduces greenhouse gas emissions on many levels when considering a material lifecycle approach. The total savings by recycling in Colorado for 2008 resulted in a net reduction of greenhouse gas emissions equaling 3.8 million metric tons of carbon dioxide. The GHG emissions prevented by

¹ The annual diversion rate is often referred to as the “recovery rate” in the 2007 report.

² For the calculation formulas and differences between the diversion rate and MSW recycling rate, see the methodology section.

³ Energy savings calculations using NERC “Estimating the Environmental Benefits of Source Reduction, Reuse, and Recycling” model. April 2009

recycling are equal to removing over 695,000 average passenger cars from Colorado’s roadways for the year.⁴

Methodology

To properly analyze recycling in Colorado, much time and effort has been devoted to proper data collection and management. The data used in this report was collected through the annual recycling facility reporting forms required to be submitted by all Colorado recycling facilities. The Program spent an extensive amount of time and effort to ensure the most comprehensive and reliable data.

Reporting Requirements-

Under 6 CCR 1007-2 Section 8 of the Colorado Regulations Pertaining to Solid Waste Sites and Facilities, recycling facilities must register with the Program and report annually to the Program on or before May 1st of each year, reporting on their recycling activities of the previous calendar year. The reporting form can be viewed at <http://www.cdphe.state.co.us/hm/forms/recyclingformstandard.pdf>.

Data Sources & Collection

All data collected in this section was provided in the annual recycling facility reporting forms either submitted online or mailed in to the Program. The Program has identified 80 operations qualifying as recycling facilities requiring a submittal of the annual recycling facility report. In 2007, 64 recycling facilities were registered in Colorado. Recycling facilities and drop-off locations have been mapped and placed into an interactive application of sites across the state which is accessible online at <http://recycle4colorado.info> using the “find a recycling center” page.

Preventing Double Counting

It is not uncommon for recyclable material to flow from one recycling operation to another. To be sure the data was accurately recorded; facilities were asked to provide information on where recyclable material came from, and where it was sent. This reporting process helped eliminate material volume double counting, and it also provided information on material flow.

Material Classification	
MSW Recyclable Materials (MSW recycling rate)	Non-MSW Materials (included in diversion rate)
Paper (includes cardboard)	Aggregates
Plastic	Oil
Glass	Construction & Demolition
Metals (non-ferrous and ferrous scrap metals)	Compost (non-MSW feedstock)
Electronics	Antifreeze
Organics (yard waste and composted food scraps)	
Batteries	
Tires	
Commingled (mixed glass, aluminum, paper, plastics)	
Other (textiles, cooking oil, other small quantities)	

⁴ Greenhouse gas savings results using the US EPA “GHG Equivalences Calculator”; Updated March 2009

Material Classification

Not all recycling data collected applies towards the municipal solid waste (MSW) recycling rate. In order to accurately compare Colorado's MSW recycling rate with other states and get a true idea of municipal material recycled, the Program adopted the US EPA's scope of materials accepted as MSW. Additional materials reported exempt from the EPA's MSW list will be included in the state recovery rate but not the MSW recycling rate.

Results and Analysis

The 2008 data is presented below is a series of tables and graphs. The following table presents the tons of MSW recycled, the total amount diverted, and the total amount disposed.

$$\text{MSW RECYCLING RATE (\%)} = \text{MSW RECYCLED} / \text{MSW GENERATED}$$

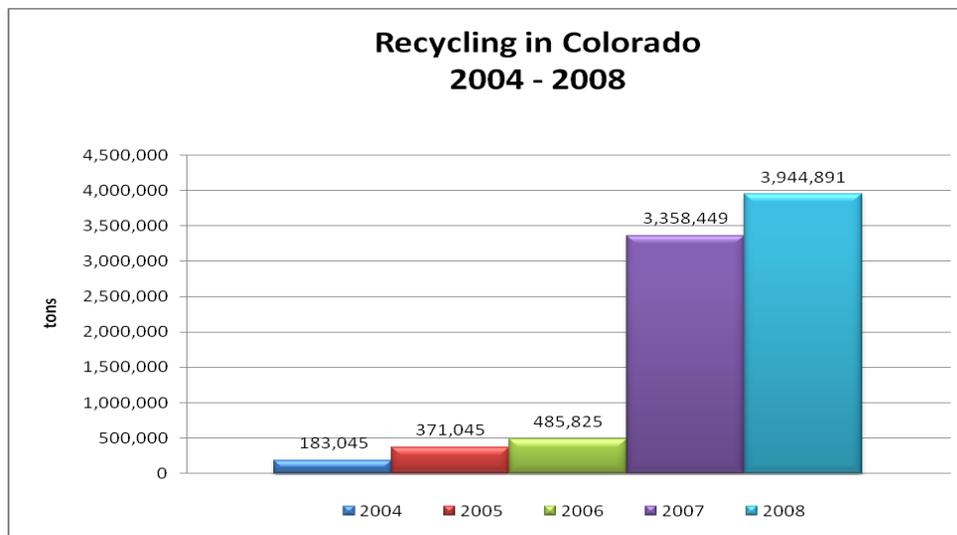
$$\text{DIVERSION RATE (\%)} = (\text{MSW RECYCLED} + \text{OTHER RECYCLED}) / \text{TOTAL WASTE GENERATED}$$

Total MSW Recycled	1,667,616 tons
Total MSW Disposed	6,824,960 tons
Recycling Rate	20%

Total Diverted Material	3,944,892 tons
Total Solid Waste Disposed	7,259,898 tons
Diversion Rate	35%

Figure 5 indicates that in 2008, 3.94 million tons of material were diverted from Colorado's landfills and recycled into new products. The rate of diversion is an increase of 15% from the 2007 state diversion rate. As shown in the graph below, the data captured from recycling in 2007 and 2008 illustrates a much more complete picture of Colorado's total diversion efforts than previous years due to an increased effort in data management. Additionally, the number of registered facilities has increased from 64 facilities in 2007, to 80 recycling facilities in 2008.

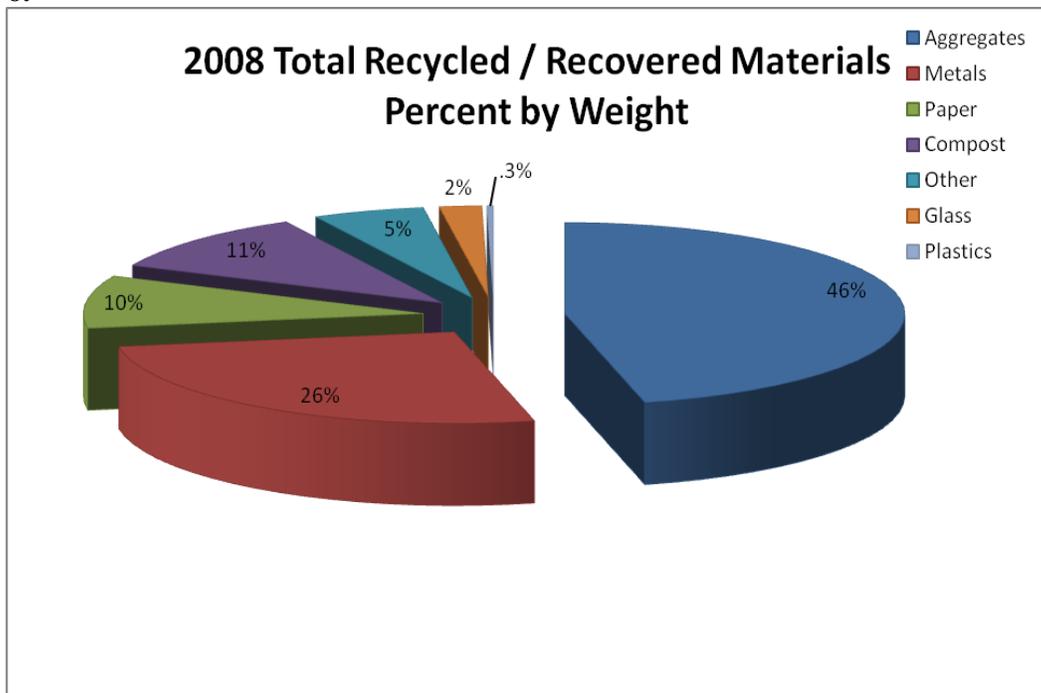
Figure 5.



MSW Recycled Material	(tons)
Metals	1,036,512
Paper	366,990
Organics	110,719
Glass	81,050
Tires	40,807
Other ⁵	12,545
Plastics	11,912
Electronics	8,083
Diverted Materials	
Aggregates	1,820,195
Compost	404,193
C&D	24,471
Oil	27,416
Total	3,944,892

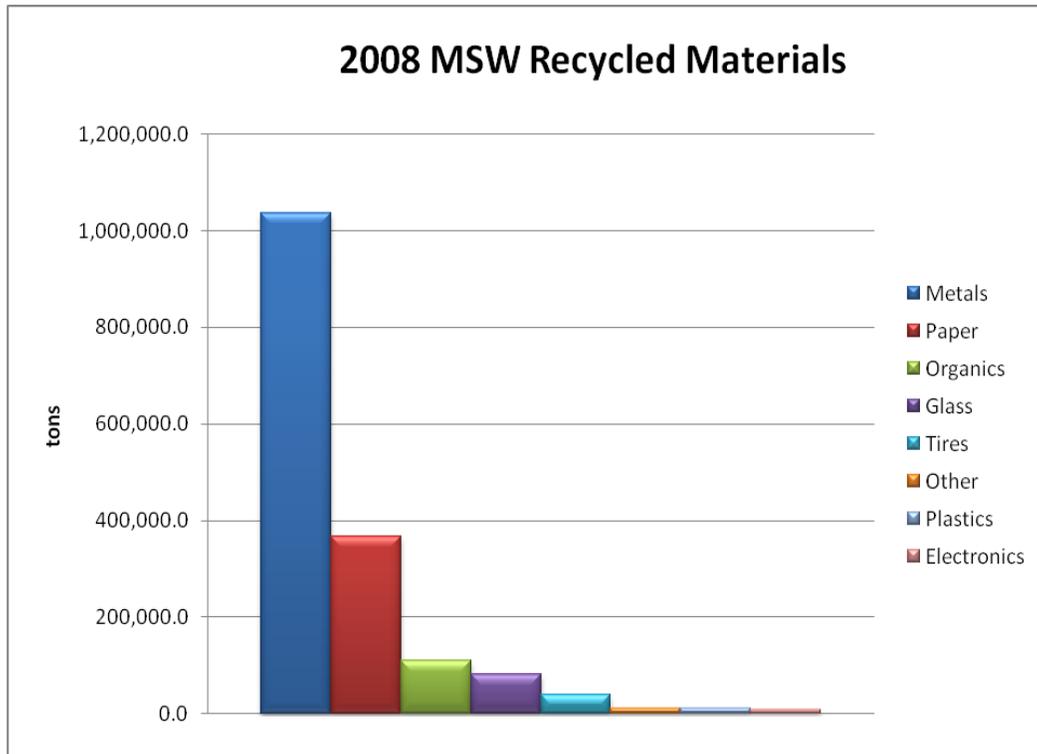
Figure 6 indicates that the majority of diverted materials by weight for 2008 were aggregates followed by metal recycling and composting. Paper, glass, and plastics totaled just over 11% of the entire diversion rate based on tonnage recycled. As noted in Figure 6, there is a significant amount of non-MSW material recycled which often goes unnoticed and without credit.

Figure 6.



⁵ "Other" materials recycled include biofuels, batteries, paint, antifreeze, styrofoam, textiles and other miscellaneous recyclable commodities.

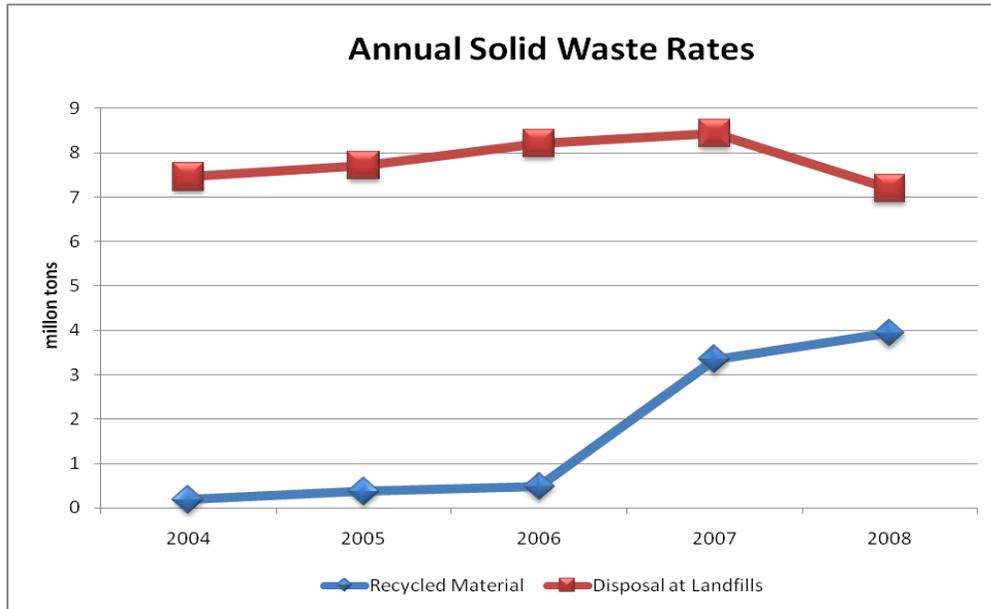
Figure 7.



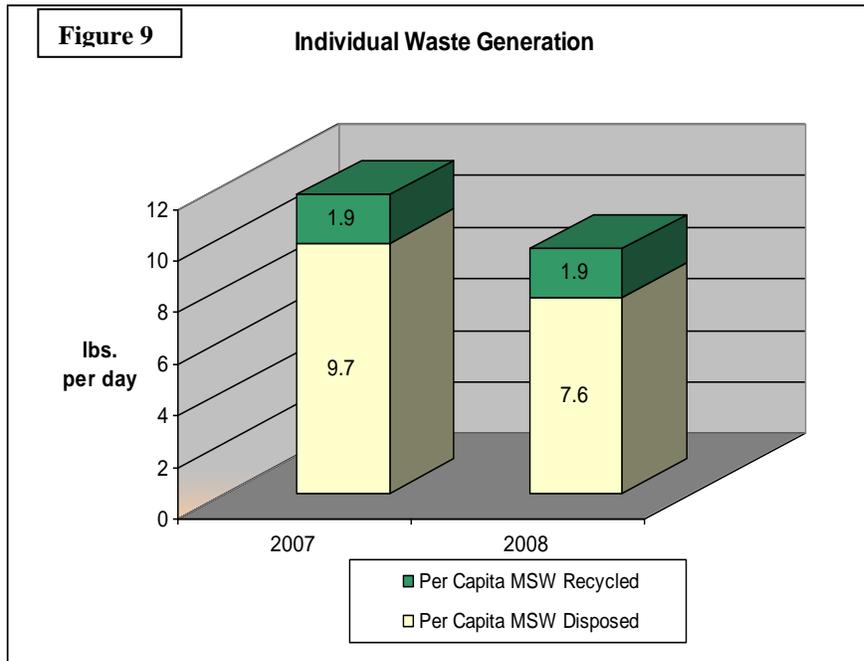
Recycling of metals, as depicted in Figure 7, leads all MSW materials significantly due in part to the strong pull by local market end users. All materials other than glass and metals are sent out of state as raw materials for remanufacturing. Colorado has a strong infrastructure in electronic recyclers but tonnages of electronics recycled are dwarfed next to other large volume materials. Organic materials hold the most potential for increasing the quantity of MSW materials recycled currently being disposed. While organic material recycling does not provide the energy saving benefits of other materials like metals, it does provide many benefits including reducing greenhouse gas emissions, prolonging the life of landfills, and providing a needed product in compost soil and landscaping mulch.

Recycling in Colorado continues to increase even with the drop of commodity market prices and material demand following the economic downturn while solid waste generation dropped for the first time since 2003. The stable rate of MSW recycled with a drop in solid waste landfilled is the primary reason for the increased MSW recycling rate for the year. The significant increase in recycling tonnage from 2006 to 2007 is due to increased data collection efforts not directly because of an increase in participation or generation of material. While the total amount of MSW recycling did not increase in 2008, non-MSW recycling increased by 26% this past year in all industrial sectors including aggregates, compost, oil, and construction and demolition (C&D) recycling. With the increase of non-MSW recycling and a drop in solid waste disposal at landfills results in an increase of the annual diversion rate this year from 28.5% to 35%. Figure 8 shows the annual totals of solid waste disposed compared to solid waste recycled dating back to 2004 when recycling data collection began.

Figure 8.



As shown in Figure 9, the waste generation rate in Colorado of 9.5 pounds per person per day continues to be significantly higher, even with the major drop this past year, compared to the national average of 4.6 pounds per person per day.



Colorado does, however, recycle slightly more material than the national average of 1.5 pounds per day.⁶ Colorado’s total Per Capita waste generation is not far from the states of Washington and Oregon who have the lowest per capita total generation rates of 7.8 and 8.4 pounds per person per day respectively. Interestingly, while Colorado has a slightly higher recycling per

capita rate than the national average, the per capita recycling compared to Washington and Oregon is much less than the recycling rate totals of 3.4 and 3.6 pounds.⁷

⁶ National average data from the U.S. EPA document “MSW Generation, Recycling, and Disposal in the United States: Facts and Figures for 2007”.

⁷ Data from Washington DEQ’s “17th Annual Solid Waste in Washington State” report using 2007 data and

ENERGY SAVINGS

One of most notable recycling benefits is the energy saved by using recyclable material as feedstock in manufacturing rather than virgin raw materials. Each recyclable material has a different range of energy savings determined by the many aspects factored into a materials lifecycle. Using the North East Recycling Coalitions “Energy Savings as a Result of Recycling” model it has been determined that in 2008, Colorado recycled enough material to yield an energy savings of 35 trillion BTUs equaling over 6 million barrels of oil and 288 million gallons of gasoline. The recycled materials generated in Colorado

for the year is also equivalent to the energy savings of taking 350,000 average homes off the grid for the year. Of the energy savings 33 of the 35 trillion BTUs saved were on the re-manufacturing side by supplementing recycled material for new material including the avoided energy required to extract virgin materials. The remaining 2 trillion BTUs saved would be from the energy required to properly dispose of the recyclables in a landfill.

Reporting Year	Tons Recycled 2008	Net Energy Consumption from Recycling as Compared to Disposal (Million BTUs)
Glass	81,049.50	-215,380.94
Whole Computers	8,082.80	-355,379.70
Ferrous Scrap Metal	1,009,572.00	-20,693,601.11
Tires	40,807.00	-2,141,853.33
Construction & Demolition	24,471.00	NA
Aggregate	1,820,195.00	-1,160,192.29
Mixed Paper, Broad Definition	366,990.00	-8,509,796.02
Mixed Metals	26,939.00	-2,192,764.56
Mixed Plastics	11,912.00	-631,781.51
Mixed Organics	514,912.00	102,795.80
Other Recyclables	39,960.00	NA
Total as a Result of Recycling	3,944,890.30	-35,797,953.66

GREENHOUSE GAS EMISSIONS

Proper management of solid waste includes not only minimizing direct environmental aspects but also secondary impacts of waste. In addition to saving energy, recycling is a significantly beneficial action to facilitate minimizing climatic impacts by reducing greenhouse gas (GHG) emissions. When considering the entire lifecycle of a product, GHG emissions are avoided through recycling on many levels by: 1) conserving raw materials extracted for products, 2) reusing material which uses considerably less energy, and 3) avoiding decomposition and GHG release from discarded organic materials in landfills.

To determine how much GHG emissions were prevented by Colorado's 2008 recycling efforts, the Program adopted the U.S. EPA's Waste Reduction Model (WaRM). The model was used to calculate the metric tons of carbon dioxide equivalent (MTCO₂E) emissions avoided. Greenhouse gas emissions vary significantly by material composition and disposal type.

3.79 million metric tons of CO₂E emissions avoided from recycling for the year equals:⁸

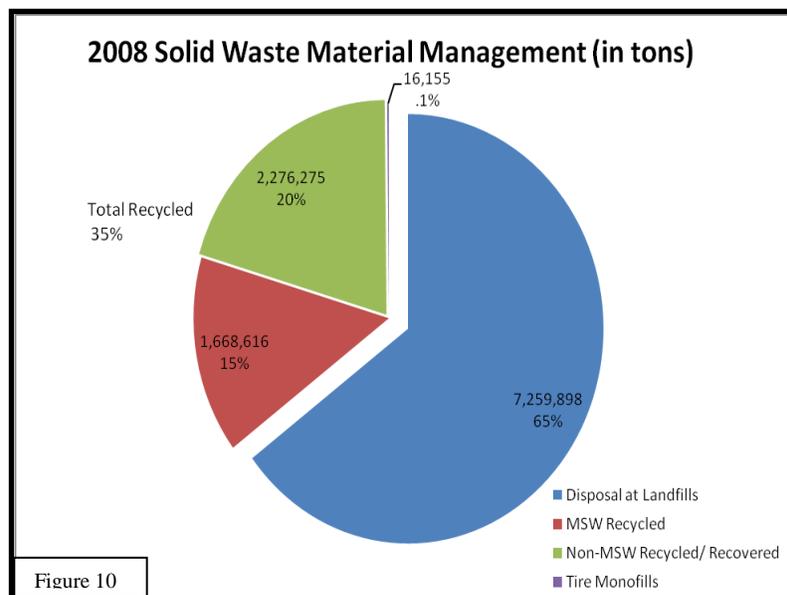
695,000 passenger cars removed from the road for the year

82% of an average coal fired power plant's annual CO₂ emissions

A total of 3,795,631 metric tons of CO₂ greenhouse gas emissions were avoided by Colorado's 2008 recycling and composting activities. In more understandable measurement terms, the amount of material recycled and composted is equal in greenhouse gas reductions to removing over 695,170 average passenger cars from the road per year. The materials recycled in 2008 are also equivalent to the following environmental benefits noted in the following table.

Material Flow and Quantity

One of the primary hindrances to recycling in Colorado is the distance to recycling/remanufacturing end markets. Of the few end markets within Colorado, material demand results in high yields of material captured for recycling. Colorado's primary recycling markets include scrap metal, glass, composting/organics recycling, and dismantling electronics for recycling. All



⁸ Calculated with the US EPA GHG Equivalences Calculator; Updated March 2009

other materials are sent out of state for remanufacturing/ reprocessing.

CONCLUSION

For the first time, Colorado has obtained a 20% MSW recycling rate and an all time high diversion rate at 35%. Most notably (Figure 10), the state per capita waste generation rate per capita decreased while recycling remained steady with the previous years rate; even with the economic downturn. Colorado still has a ways to go towards getting recycling rates to levels competitive with the national rate, but many municipalities are taking significant strides to improve recycling efforts. Some municipalities are even setting goals of zero waste. Additionally, the Department looks to continue the development and promotion of recycling in hopes of advancing as a national leader in the recycling field.

SECTION 3

THE STATE OF COMPOSTING IN COLORADO 2008

Pursuant to Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Section 14), permitted composting facilities are required to submit annual reports listing the quantity of finished product produced (used onsite, sold, or distributed), and the types of feedstock and bulking material used and remaining onsite. These reports provide a detailed look at the amount and type of degradable materials collected by commercial composting operations. The last year of information collected is from calendar year 2008 as 2009 reports have not yet been submitted to the Department.

Permitted composting facilities in the State of Colorado collected 1,080,795 yd³ of degradable materials during 2008. This is equivalent to 476,955 tons of materials which is approximately 12% of the total materials diverted from landfilling in Colorado during 2008.

IN 2008, COMMERCIAL COMPOSTING FACILITIES COMPOSTED 76,925 TONS OF FOOD and YARD WASTE. THIS IS EQUIVALENT TO THE FOLLOWING SAVINGS:

- The greenhouse gas emissions from 2,914 passenger vehicles; or
- CO₂ emissions from the electricity use of 1,979 homes for one year; or
- CO₂ emissions from 1,714,511 gallons of gasoline consumed; or
- CO₂ emissions from burning 79 railcars worth of coal¹

Residents in the cities of Boulder, Louisville, and Loveland are provided curbside collection of organic waste (including food waste in Boulder and Louisville). An organics curbside collection pilot project is underway for selected residents of Denver. Initial results of the pilot show that residents have removed up to 50% of the remaining waste in their trash bins (waste remaining

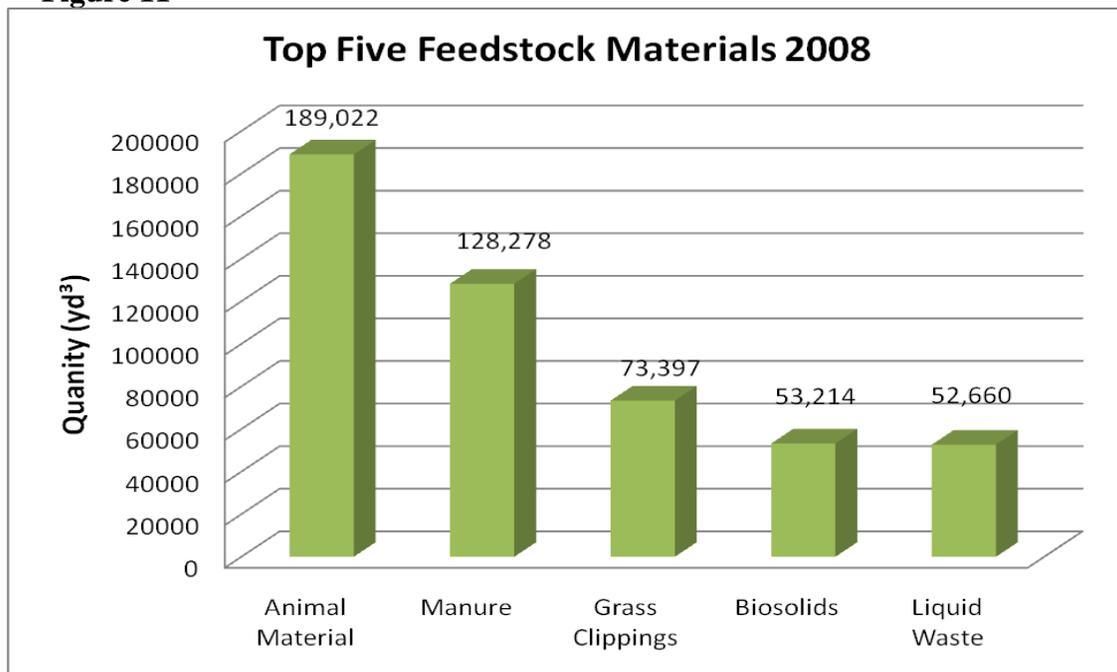
after recyclables are removed). Collecting organics at the curb is crucial to increasing municipal solid waste diversion above 60%.

TYPES OF MATERIALS COLLECTED

Composting operations require two types of materials to create a quality compost product. The first “feedstock” has a high nutrient value that typically provides a source of nitrogen to the composting process. Examples of nitrogen rich feedstock materials include, but are not limited to, green wastes (yard wastes), animal material, food wastes, manure, biosolids, and other organic solid waste. The second feedstock, also known as “bulking material,” such as wood chips, and straw or hay, provides a source of carbon to the composting process. Compost piles are most productive when bulking and composting materials are mixed in specific ratios developed for the types of materials being composted. Also, appropriate moisture and oxygen content are essential for the microorganisms that expedite the breakdown of the materials.

Figure 11 depicts the five largest types of feedstock materials identified by composting companies in Colorado during 2008. Animal material (eg. mortalities, offal waste, bedding materials, or other materials directly associated with livestock), manure, grass clippings, biosolids (sewage treatment sludge), and liquid waste are the five most used types of feedstock.

Figure 11

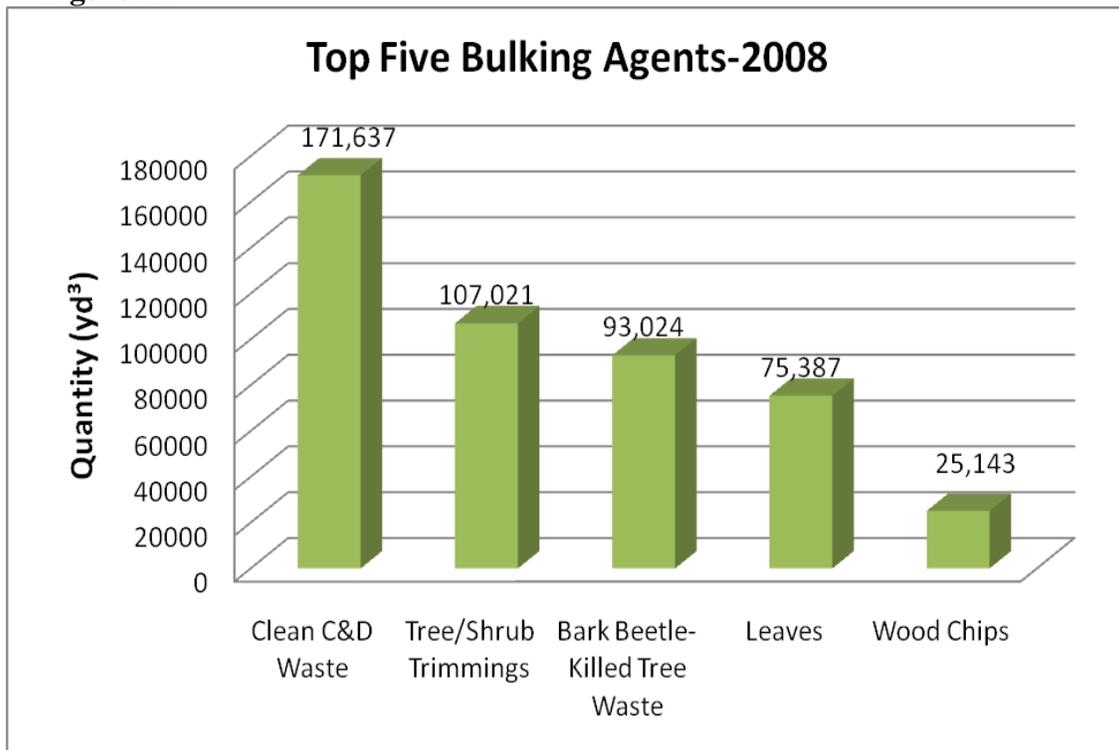


The most abundant feedstock used in the composting industry is animal material, which is primarily composed of mortalities, based on survey data. Both animal mortalities and manure are an inevitable part of the livestock and poultry business. The average mortality rate is approximately fifteen percent annually. Animal wastes (mortality and manure) can be costly to manage and dispose. Composting animal carcasses has become a safe alternative to landfill disposal. Universities around the country have developed methods that ensure pathogen

destruction, and the methods allow farmers and producers to use materials that are readily available onsite.

Figure 12 shows the five most processed types of bulking materials identified by commercial composters in Colorado this past year. Clean construction and demolition waste was the most frequently used bulking agent, with tree and shrub trimmings, Bark Beetle killed tree waste, leaves, and wood chips following in volume processed. Diverting yard waste from landfills is important because of its bulky nature, and it provides quality nutrients and energy to the composting process. (Yard waste may not be a viable bulking agent if the compost feedstocks already contain sufficient nitrogen for the composting process.) Adding yard waste to an already nitrogen-rich feedstock would be neither necessary nor appropriate. In fact, adding yard waste to some compost processes may be considered inappropriate disposal of solid waste. In addition, yard wastes must be managed carefully because they can spoil or rot releasing nitrates into the environment. Nitrates can contaminate soil, groundwater and surface water and can cause significant odors if not managed appropriately.

Figure 12

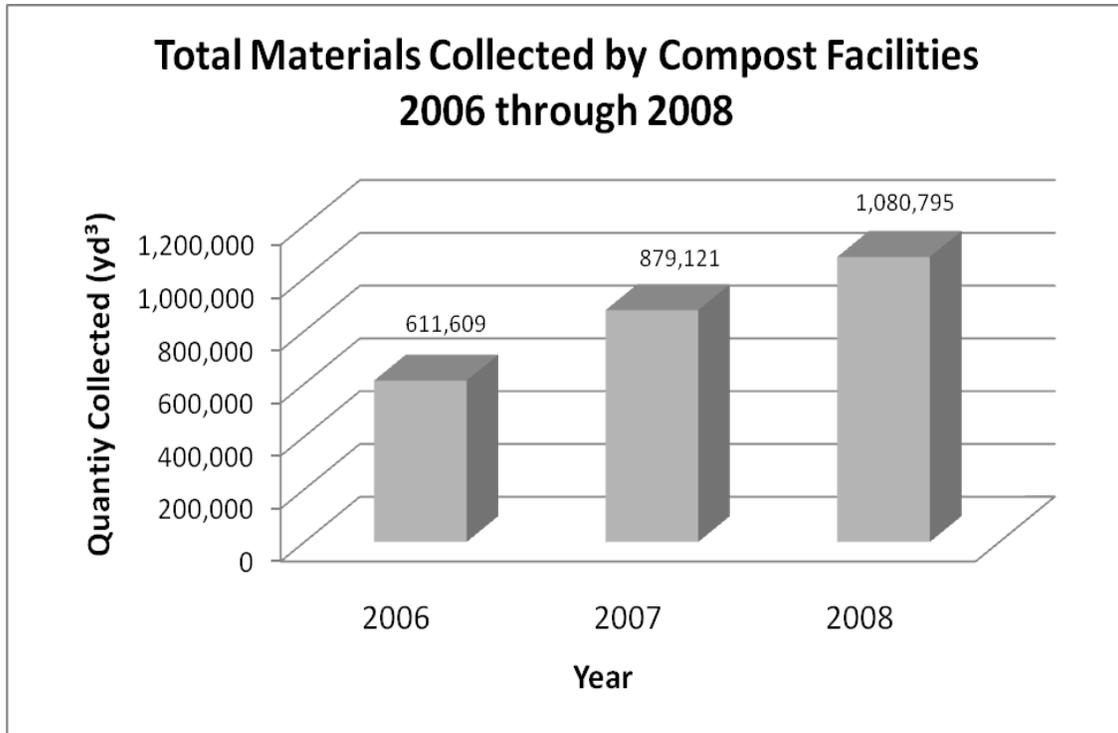


ANNUAL COMPARISON

Composting facilities began reporting volumes of materials received in 2006. During 2006, 18 composting facilities reported a total of 611,609yd³ of materials were collected. In 2007, 20 composting facilities reported a total of 879,121yd³ of materials were collected. In 2008, 22 composting facilities reported a total of 1,080,795yd³ of degradable materials collected.

Figure 13 shows the increase in volume of materials accepted at permitted composting facilities from 2006 to 2008. An additional 200,000yd³ of compostable materials was reported to enter composting facilities each year since the inception of the reporting program.

Figure 13



CONCLUSION

The composting industry in Colorado is rapidly expanding due to many factors including rising transportation costs, increased landfill maintenance costs, the high cost of petroleum-based fertilizers, and consumer demand. Several publicly owned landfills have begun to compost their organic waste to extend the active life of the landfill and in turn provide a soil amendment product for landscaping companies, residents, and farmers. The addition of compost to soil has been proven to increase the permeability of fine soils, decrease the permeability in sandy soils, increase crop production, and decrease storm water run-off. These are qualities that have exponential benefits for an entire ecosystem because they reduce the need for water, and they reduce the reliance for synthetic fertilizers and pesticides that often have deleterious environmental effects.

The Solid Waste and Material Management Unit inspectors identify additional nonpermitted commercial composting operations each year. Composting facilities are required to operate in compliance with Section 14 of the Solid Waste Regulations to ensure the environmental, health, and welfare of the surrounding area is protected. Facilities that distribute their product for use offsite must operate under controlled conditions and perform regular testing to ensure pathogen destruction and safe constituent levels.