New Mexico Organics Recycling Guide

Produced by the

New Mexico Recycling Coalition

With the New Mexico Organics Recycling Organization
This guide is also available online at www.recyclenewmexico.com

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New Mexico Organics Recycling Guide

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Cover photos courtesy of Santa Ana Pueblo.

Organics Recycling Overview

New Mexico Recycling Coalition

The New Mexico Recycling Coalition (NMRC) is a non-profit statewide professional membership organization that has a mission to lead New Mexico to value waste as a resource. This goal is reached primarily through education and advocacy projects. With 260 recycling members, the organization supports itself from dues, trainings and conference revenue. Several special projects are funded by grants. Joining NMRC helps support efforts such as this, to educate professionals and the public about the value of recycling.

New Mexico Organics Recycling Organization (NMORO)

- Supports development of organics recycling via private business and municipalities by providing technical assistance.
- Creates resources for the organics recycling community.
- Ensures organics recycling is included in recycling efforts throughout the state and in NMRC's mission.

New Mexico Environment Department: Solid Waste Bureau

The New Mexico Environment Department (NMED) plays a critical role in organics management support with the development of content and instruction of the New Mexico Compost Facility Operator Certification Course. All composting facilities must register with NMED in order to operate.

Compost Facility Operator Certification Course

- Three-day training course held twice a year
- Hosted by NMRC and NMED
- Required of all registered composting facilities to have a certified operator that has taken and passed the Compost Course test
- The best source of organics diversion training in the state

State of Organics Management in New Mexico

From the 2009 New Mexico Environment Department: Solid Waste Annual Report, 45,279 tons of brush and green waste were composted as well 6,488 tons of that material also being beneficially used (wood was chipped and used as daily landfill cover or landscaping).

Why Divert Organics Material from Landfills

- Extend landfill life span.
- To provide to the public and local businesses with a valuable locally generated and created product. Also useful for landscaping projects at the community level, e.g. parks & recreation and golf courses.
- Effective soil erosion, roadside, roadway and soil remediation product.
- Create a beneficial product for use at the landfill (e.g. mortality composting).

Organics Recycling Overview

Incentives to Recycle Organic Materials

In order to promote organics diversion in your community, choosing to set a lower tip fee than regular trash rates provides an incentive for customers to cleanly sort organic material for diversion and thus saves them money by doing so. Educating customers on the process, also reinforces clean material. The organics program benefits with increased and cleaner material. To ensure sustainability of your program, make sure that the tip fee for organic materials covers your operational costs.

Challenges to Organics Recycling in New Mexico

Besides start-up costs of equipment purchase (if not already part of the solid waste management program), handling organic material is relatively cost efficient. A small yard waste mulching program could run smoothly with a safe storage location and a rented grinder a couple times of year. As the material is handled locally, cost for transportation is minimized.

What About Greenhouse Gas Emissions and Composting?

Many times people have expressed the concern that composting organic material generates greenhouse gas emissions. When you use the EPA WARM calculator, organic material diversion shows an increase in emissions. But the emissions of organic material placed in a landfill (methane) is different and much more potent than the emissions created in the composting process (CO^2). Simply explained, one of the natural byproducts of decomposition is CO^2. That CO^2 is then absorbed by the trees and plants that need it for life, creating a "carbon neutral" situation. When 100 tons of yard waste are landfilled where it would decompose under anaerobic conditions, it produces methane, which is 21 times more potent than CO^2, and thus equal to adding 84 cars to the road.

Regulatory Requirements for Organics Programs

All composting programs are required to file a simple registration form with NMED: Solid Waste Bureau. If your program is only mulching material there is no registration requirement with NMED: Solid Waste Bureau. It is also recommended to check your local ordinances, as well as NMED: Air Quality, EPA, Fire Department, OSHA and DOT to ensure compliance. NMORO can advise which entities are relevant for your operation.

The Next Frontier: Food Waste Diversion

Food waste consists of almost 13% of the waste stream. The first place to start in your community is to link up large generators of still-consumable food with a local shelter or food bank. Check out the New Mexico Association of Food Banks for information: **www.nmfoodbanks.org**. A pilot project carried out by Cochiti Pueblo has matched residential food scrap donations to a pig farmer. Currently there is only a couple private business in the state that is collecting food scraps for composting. If your community were to look at diverting food scraps, please contact the NM Organics Recycling Organization to receive guidance on the how to's, dos and don'ts and challenges.

ORGANICS PLANNING WORKSHEET

Step 1 - Assess Situation

How Much Does It Cost You To Landfill Organic Material? $ _____/ton

- Tip Fee: Include in the cost per ton items such as transport, labor, equipment, maintenance costs
- Costs if Landfill Owner: Assess all costs, including labor, equipment, overhead, insurance, compliance, long-term landfill costs (air space), etc.

What is Your Cost of Operation if Operating a Transfer Station to Manage Materials? $ _____/ton

What is Your Cost to Handle Biosolids/Waste Water Sludge? $ _____/ton

What is Your Cost to Haul Waste from Transfer Station to Landfill? $ _____/ton

Managing organic material for recycling saves landfill air space, reduces methane creation, creates a valuable resource and in most cases is cheaper per ton to recycle it.

Determine All Organic Materials To Be Managed – Check All That Apply & Include Estimated Annual Tonnage/Cubic Yards of Material:

- Yard Waste _____ tons or cu yds
- Scrap Lumber _____
- Forest Slash _____
- Agricultural Waste _____
- Biosolids _____
- Manure _____
- Food Waste _____
- Animal Mortality _____

Will You Mulch or Compost the Material? _____

Mulch can be created with an exclusive yard waste/scrap lumber/forest slash collection program or a mixture of appropriate feedstocks for composting.

Evaluating Site Needs for Mulching and Composting

- Does site have water source? Can it be trucked in to add to compost mix and/or prevent fire?
- Does your entity own a grinder or chipper? Can your entity purchase, rent or borrow a grinder or chipper?
- Do you have space to collect the material safely? Estimate space needed by assuming 50% of organic matter now landfilled will be diverted to composting/mulching area.
- Do you have access to a front loader?
- For composting, do you have access to wet material, water or biosolids?
- For composting, do you have space for windrows or other method? Have you evaluated the time frame for material to complete process? Assume 10 ft^2 of windrow area for every cubic yard of material to be composted.
- If composting, have you planned outreach to neighbors to ensure they are informed and know about possible odor issues and neighbor issues?

ORGANICS PLANNING WORKSHEET

Evaluating Site Needs for Mulching and Composting

- Have you reviewed state and local solid waste ordinances in regard to mulching and composting?
- Will you charge a reduced fee for clean green waste in order to incentivize customers to bring in properly sorted green material? Ensure that you determine fees necessary to cover the organics operations' cost.
- How much will you sell the material for?

Step 2 - Determine Costs

Start-Up:

$_____ Planning, Designing, Reporting and Registration of a Certified Composting Facility

$_____ Property Improvement to Handle Organic Material Recycling

$_____ Grinder /Chipper Purchase

$_____ Grinder Rental (Consider quarterly or semi-annually)

$_____ Grinder Borrowing (Estimate fuel and maintenance costs)

$_____ Screen Purchase or Rental

$_____ Windrow Turner Purchase or Rental (Note: Loader can be used for this purpose)

$_____ Front Loader

$_____ Water Line Installation or Water Trucked In

$_____ Consider Replacement Cost for Equipment Per Life Span

$_____ Consider Compliance Costs (Zoning, OSHA, Fire, EPA, DOT)

Ongoing Costs:

$_____ Cost of labor to operate composting or mulching program

$_____ Fuel costs for machinery

$_____ Ongoing maintenance, repair, and supply costs for machinery

$_____ If charging a reduced fee for organic material, will this reduce your program income?

$_____ Cost of water and other supplies

$_____ Depreciation & Overhead

Step 3 – Benefits

Diversion Benefits:
Annual Amount of Material Entering Landfill or Transfer Station
_____ **Tons/Cu Yards**

National Averages Predict the Following:
12.4% of Waste is Represented in Yard Trimmings
5.5% is Wood Scrap
12.4% is Food Waste

Estimate the % of Material You Expect to Divert with your Organics Program (Note: You can use a baseline of 50% of organic material now landfilled that will then be diverted)
_____ **%**

Avoided Material Entering Landfill in Tons
(multiply annual tons/cu yds before organics program by percentage)
_____ **Tons/Cu Yards**

Environmental Benefits:

- By reducing organic material in our landfills, a major source of methane is reduced. Methane is a greenhouse gas that is 21 times more potent than CO^2.
- Landfill life can be greatly expanded by reducing a bulky item.
- Valuable End-Product – If Used by Community for Landscaping = Cost Saving to Community by Avoidance of Mulch/Compost Purchase, And value of implementing erosion control practices, water savings, electrical/ heating savings, etc. Sales prices range from $\$5/yd^3$ to $\$40/yd^3$ (depending on market) .

City of Las Cruces

Photo courtesy of City of Las Cruces

Project Details
Project Name: Foothill Landfill Yard Waste/Compost Program
Contact Person: Jim Maese
Phone/Email: 575-528-3532 or rjmaese@las-cruces.org
Materials Accepted: Grass, leaves and tree trimmings (less than 5' long, less than 5" wide)
End-Products:: Compost is used by residents and businesses and mulch is used for erosion control
Drop-Off Cost: Free for residents, $20/ton for businesses
Material Pricing: Non-screened composted material and mulch $6/cu yd, screen material (1/2") $14/cu yd. Residents can load themselves unscreened material for free.
Equipment: A CAT 966 Loader or John Deere444j; Water truck; Morbark Wood Hog Model 3600 or Universal Tub Grinder; Rental of a screen once a year: Orbits Screener Model 68AD or McCloskey 616
Staff: 2 FTE
Annual Organic Material Volume Handled: 2979 Tons (2009), 4087 Tons (2008), 3928 Tons (2007)

Collection and Processing
Yard waste has been collected for 15 years and the composting program started about 8 years ago. All material is accepted at the yard waste facility, is weighed and scanned for contaminants. Yard waste is chipped and set in rows approximately 8 feet wide, 8 feet high, and in various lengths for composting. Water is added and temperatures are monitored with appropriate probes until the composting process is completed. This is typically performed over a 3 to 6 month period in which moisture and oxygen are re-introduced as temperatures reach the lower ranges of 115°. The optimum temperature is approximately 140°. Loaders are used to turn the material and to load finished product for customers. A water truck is used to maintain moisture. The loader buckets are used to estimate the cubic yards for charging at scale house.

Lessons Learned
At the present time, the City is unable to meet the compost requirements imposed by the NM Department of Transportation for use on their projects because neither the chipper nor the screener can produce the final product. Our finished product is about 85% passing the ¾ inch and 93% shorter than 4 inches and 100% less than 2 inches diameter. Plastic and metal trash containers are located at the site for residents to drop off small volumes of trash (bags for leaves & grass).

Soilutions Inc. and New Mexico Compost Products

Project Details
Project: Private Business Entity
Contact Person: Walter Dods
Phone/Email: 505-877-0220 or walter@soilutions.net
Materials Accepted: Clean green waste, food waste, sod and soil, construction waste, horse manure. Web site has specifics at www.soilutions.net
End-Products: High quality compost, topsoil, potting soils and mulches
Drop-Off Cost: $5/cu yd for green waste, bulk food waste, soil and sod. $8/cu yd for construction material. Clean horse manure accepted for free. Residential food waste is $2/container, up to 96 gallons.
Material Pricing: $24-$40 per cu yd depending on end product, level of screening, etc. See website Pricing List for details.
Equipment: Front Loaders, Horizontal Grinder, Dump Truck, Shaker Screen
Staff: 5 FTE

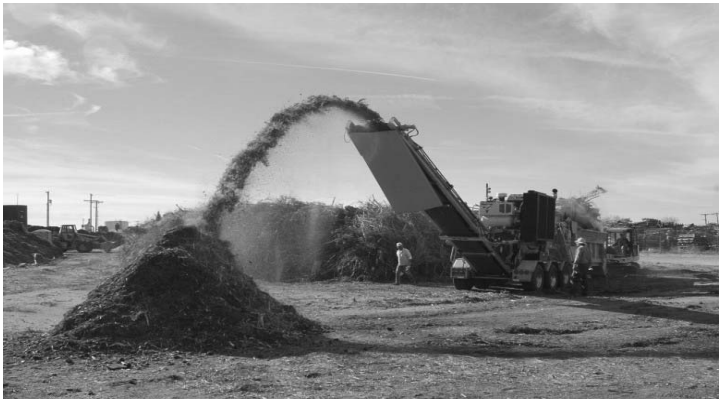


Photo courtesy of Soilutions

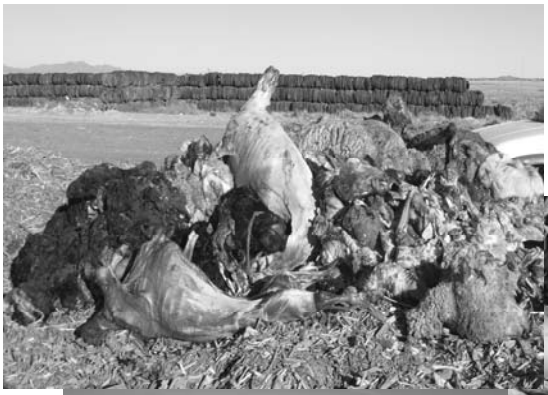
Collection and Processing
Soilutions is a green waste recycler established in 1997. It was created to produce quality materials that would help resolve environmental and ecological issues in the Albuquerque area. Throughout the 14 years of existence, we have based business on honesty, integrity, and education. Material is collected and stored on site until ground with a horizontal grinder. Then it is blended and left to compost for 24-30 months, screened and sold. We also blend the compost with soil and compost for another 12 months, then screen and sell it. Mulches are made from the ground feedstocks, composted to kill pathogens and weed seeds, then screened and sold .

Lessons Learned
Respect your customers; they are smarter than you think. Prepare yourself for compliance issues. Charge what you need to charge to stay in business. Respect your employees.

Estancia Valley Solid Waste Authority

Project Details
Project Name: Mortality Composting
Contact Person: Joseph Ellis
Phone/Email: 505-384-4270 or josephe@lobo.net
Materials Accepted: Green waste, large and small animals, butcher waste, cow and horse manure
End-Products:: Compost for use at the landfill
Drop-Off Cost: Free for green waste, $25 for large animals, $5 for small animals, and $45/ton for manure
Material Pricing: Not for sale. Used beneficially at landfill.
Equipment: Caterpillar Loader and Compost Thermometer
Program Staff: 1/2 FTE

Collection and Processing
The program was launched November 2009 to save landfill airspace. Green waste is mulched and laid into a bed 12' X 50' and 18" deep. Animals are laid in place as they come into the landfill for disposal, and are covered with more mulch. Two tiers of animals are laid in and covered to form a static pile. Water is added as needed to facilitate the composting process. It is anticipated that finished compost will be generated in about a year.



Photos courtesy of Estancia Valley SWA

Albuquerque Bernalillo County Water Utility Soils Amendment Facility

Project Details

Project Name: Compost del Rio Grande
Contact Person: Joe Bailey
Phone/Email: 505-205-5721
Materials Accepted: Landscape materials, green waste, wood products and horse bedding. Biosolids produced onsite.
End-Products: Compost and mulch, wood chip material
Drop-Off Cost: No tip fee.
Material Pricing: Depending on product type, $25/ton, $18.50/ton and $10/ton. Customers are mostly large volume users, but products is sold to public as well.
Equipment: 2 Front Loaders, 4 Compost Mixers, 1 Scarab, Auto Temp System, 6 Semi Trucks and Dump Trucks and 2 Trommel Screeners
Staff: 5 FTE with 2 PTE Operations Managers
Daily Organic Material Handled: 9 tons/day average green waste, bedding 5/tons per day, biosolids 10 tons/day, Ferric Chloride 6 tons/day
Cost to Operate Program: $19.50/ton

Collection and Processing

The program was established in 1982 with the original purpose of this facility being to manage biosolids from the City of Albuquerque Sewer Plant and utilize biosolids to develop a useful product. Since the beginning we have increased production rates to utilize 30% of the total volume of biosolids in our compost, we have increased sales by 60%, tripled our customer base, and produce over 3 Million lbs/month of compost on an average. We have a recipe developed by Dr. Steven Glass, placing four waste streams inside a mixer, then applying the material in a windrow (300 cu yds/windrow) which will then cook approximately 3-4 weeks at a temperature above 145^0, turning the windrow every 3 days. At the end of the cooking time we test and hold the windrow for another 2-3 weeks. At this time a screener will remove all the larger mulch pieces not broken down from the compost (1/4" minus). Moisture in the compost is maintained at 40 to 68%. Products will have a useable temp. of 95 to 105^0.

Lessons Learned

Lessons learned are always to look for opportunities for more compost uses and improvements in product manufacturing.

City of Albuquerque

Project Details
Project Name: Solid Waste Management Composting Project
Contact Person: Johnny Pena
Phone/Email: 505-761-8326 or jpena@cabq.gov
Materials Accepted: Green waste collected at convenience centers and landfill. Horse bedding is also accepted.
End-Products:: Mulch and compost
Drop-Off Cost: Standard $28.55/ton tip fee at landfill and $9.50 per load for businesses and $3.60 per load for residents at convenience centers
Material Pricing: $15/ton for compost and mulch for commercial customers at landfill. $7.50/cu yd for compost and $5.50/cu yd of mulch at Montessa Park convenience center for residential customers.
Equipment: 2002 Vermeer Brush Grinder, 2005 Caterpillar Wheel Loader, 2008 Wild Cat Trommel Screener, plus misc equipment at landfill
Staff: 2 PTE
Annual Organic Material Handled: 2025 tons collected at landfill and convenience centers, 873 tons collected via twice a year residential curbside collection and 510 tons of horse bedding = 3408 tons total for 2009.

Photo courtesy of City of Albuquerque

Collection and Processing
The Composting Project was started in 2005 as an effort to divert material entering the landfill. The program has been beneficial not only from a diversion standpoint but also as an end-product the general public is in need of and a product that will be used to augment the final cover design for the landfill cell closures. We basically grind the green waste and provide it as a mulch product. The processed green waste (carbon source) is also mixed with the horse bedding (nitrogen source) and composted in windrows. We then water the material frequently to maintain moisture content, testing periodically with a specialized composting digital thermometer and moisture indicator, turning the windrows as needed. The total process can take 3 to 6 months.

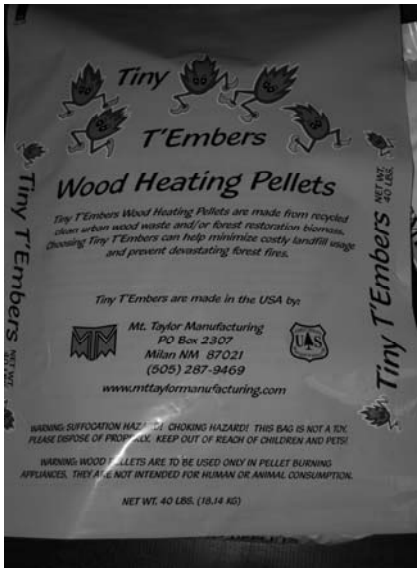
Lessons Learned
Most important aspects have been ensuring moisture content and proper product mixture.

Wood U Recycle!

Project Details
Project Name: Tiny T'Embers Wood Heating Pellets Manufacture
Contact Person: Brett or Jason Kramer
Phone/Email: 505-877-0890
Materials Accepted: Clean dry wood waste including construction wood scrap, OSB, plywood and particle board
End-Product: Wood Pellets
Drop-Off Cost: Depends on the material
Material Pricing: $210/ton
Equipment: Wood Grinders, Wheel Loaders, Pelleting Equipment, Semi Tractors and Walking Floor Trailers
Annual Organic Material Handled: About 5000 dry tons
Program Staff: 8 FTE

Collection and Processing
Recycling of clean wood waste has been in effect for three years. Production of wood pellets has been occuring for eight years. This program has prevented over 24 million pounds of wood waste from being landfilled. We convert waste material into renewable, clean burning energy. The clean wood waste is ground to sawdust/chips, transported to the pellet plant where it is processed through an extrusion process to make wood pellets.

Lessons Learned
If you are going to get into this business, bring lots of money. It is expensive.



Photos courtesy of Mt. Taylor Machinery/ Wood U Recycle!

Organics Resources

Technical Guidance Resources

NMRC Organics Recycling Organization webpage:
http://www.recyclenewmexico.com/nmoro.htm

- Resources on this page include:
- Compost Testing Facilities
- NM Compost Facilities List
- Compost Mix Calculators
- Compost Thermometer Sources
- Grinder Rentals

NMED Solid Waste Bureau Composting Page:
http://www.nmenv.state.nm.us/swb/compostingmulch.htm

EPA Composting Page: http://www.epa.gov/osw/conserve/rrr/composting/index.htm

On-Farm Composting Guide: Available for purchase from NM Recycling Coalition and is provided as part of the Compost Certification class. Or you can purchase it online at www.nraes.org

City of Albuquerque Climate Action Plan: Organic Waste Management section (page 45) www.cabq.gov/cap

Assistance to Implement an Organics Diversion Program

NMORO: Walter Dods (walter@soilutions.net or 505-877-0220), English Bird (english@recyclenewmexico.com or 505-983-4470), Tim Gray (tim.gray@state.nm.us or 505-827-0129)

NMSU WERC IEEE Pollution Prevention Program: Specially targeted at business diversion. Chris Campbell (chriscam@nmsu.edu or 505-843-4251)

Master Composters: Located in Bernalillo, Sandoval, Valencia, Cibola and McKinley Counties. Contact John Zarola at johnzarola@comcast.net

Training and Certification

NMRC and the New Mexico Environment Department host two Compost Facility Operator Training Courses annually. Cost is $125 for members and $150 for nonmembers. Go to www.recyclenewmexico.com/cert_classes.htm.

NM Organics Recycling Organization List Serve

Join the NMORO Listserve: email nmoro-owner@yahoogroups.com

APPENDIX A: POSITION STATEMENT

New Mexico Organics Recycling Organization

Organics Position Statement

April 27, 2010

Also adopted by the New Mexico Recycling Coalition

Issue Background

Organic materials comprise a significant portion of our waste stream and are one of the most readily diverted materials, with little processing expense and the ability to manage the material on a local level as two immediate benefits. In 2008, according to the New Mexico Environment Department Solid Waste Annual Report, 45,279 tons of brush and green waste were composted as well 6,488 tons of that material also being beneficially used (wood was chipped and used as daily landfill cover or landscaping). Using U.S. EPA figures, 12.4% of waste generated comes from yard trimmings, wood waste represents another 5.5% and 12.9% comes from food scraps. Yard trimmings typically take up a large volume of space with tree and limb trimmings. This of course varies slightly by site and state.

As stated in a 2010 report in response to SM 60, a memorial requesting the investigation of increased woody material utilization by state agencies, there are a myriad of benefits to diverting organic material waste.

> "Enormous landfill and atmospheric benefits can be realized through utilizing wood chip resources by saving landfill space and reducing quantities of methane produced by the uncontrolled decomposition of the wood in landfills. Methane is an explosive gas and is 21 times more potent as a greenhouse gas than is CO2. Numerous watershed health benefits can also be reaped by wood chip utilization.
>
> Each organics recycling alternative approach offers benefits beyond the diversion of solid waste away from landfills. Horticultural reuse of stabilized organic matter improves soil stability, inhibiting erosion, and enhances soil fertility, reducing requirements for costly water, pesticides and fertilizers. Mulch is a commodity that can also be marketed with very limited processing costs for erosion control, weed control water retention, or beautification to generate direct revenue."

Appendix A: Position statement

NMORO Position
The New Mexico Organics Recycling Organization encourages local communities to develop cost-effective programs to divert organic material (including yard, food, manure, mortality, agricultural and biosolids waste) from landfills. Removing organics from the waste stream has the following benefits: conserves landfill space, enables utilization of a valuable resource, and avoids greenhouse gas (methane) creation. These programs should consider the following components:

- Develop Local Ordinances to Encourage a Soft Ban Of and Provide Price Incentives to Reduce and Divert Organics From Landfills. A soft ban requests customers to voluntarily comply with a material ban. The ban can be written into local ordinance or simply added to signage and does not have penalties or enforcement. Price incentives would provide a reduced tip fee for sorted organic material.
- Don't "Ban without a Plan" e.g. have a stable organics diversion program in place first
- Reduce Organic Material Tipping Fees at Disposal Sites as an Incentive to Divert
- Collaborate with public and private sector stakeholders to develop regional organics diversion plans that may include the following:
  - Identify Targeted Organics Types. Estimate Current Generation and Diversion Rates. Use the percentages above as baseline percentages of your waste stream to identify targeted organic materials.
  - Encourage Homeowner Diversion Type Options (e.g. backyard composting). Refer to New Mexico Environment Department: Solid Waste Bureau brochure (online), Bernalillo County Extension Office Master Composter program (online)
  - Identify and Develop Community Collection and/or Processing Centers (a complete list of currently registered Composting Facilities is located at NMED:SWB website)
  - Identify and Develop Surrounding Composting Facilities (private and/or public)
  - Identify and Develop Public/Private Partnerships
  - Develop Local End Use Programs
  - Develop Public Outreach/Public Relations Program Regarding Reasons to Keep Organics out of Landfills (list existing web sites & Master Composters)
  - Adopt "Best Management Practice" Guidelines (Refer to EPA Composting Website, On-Farm Composting book, and NMED/NMRC Compost Facility Operator Certification Course)
  - Review and Update State and Local Solid Waste Ordinances, Registration Regulations and Zoning Requirements to Eliminate Obstacles to Composting (NMORO can assist with compliance issues)

NOTES