

TOOL 11. CASE STUDIES IN SOLID WASTE MANAGEMENT

INTRODUCTION

This tool provides examples of successful Wyoming solid waste management programs. The seven case studies cover the following topics:

- Recyclables collection
- Recyclables processing
- Recyclables marketing
- Composting
- Biosolids
- Reducing disposal costs.

Four recycling case studies in Wyoming are presented. The first is a program that collects residential and commercial recyclables. This program hires public housing residents for the recycling jobs.

The second recycling case study illustrates that cooperation between local government and private business can result in a successful recyclables recovery program. The city, in this case study, contracts with private companies for curbside collection and processing of residential recyclables.

The importance of volunteers to recycling programs is demonstrated in a third case study. In this case, volunteers are responsible for both the collection and processing of recyclables. The importance of private enterprise is demonstrated in another case study where a private processing company provides recycling services for several Wyoming counties. This same company also provides recyclables marketing assistance.

A case study in composting illustrates a 10 year old composting program that has grown from composting a single waste stream to composting several different waste streams. These different feedstocks include straw, manure, yard debris, brush, wastewater treatment sludge and an industrial organic waste.

Although recycling and composting reduce the quantity of solid waste being disposed, solid waste disposal options will continue to be needed. Treated biosolids from a wastewater treatment plant are land applied as a soil admendment in one solid waste disposal district. This disposal program improves soil qualities while diverting solid waste from the landfill.

Due to increasing costs of landfilling, another solid waste disposal district has reduced costs by altering solid waste management options for the residents of that region. As a result, the SWDD is providing adequate solid waste disposal at an affordable price.

Case Study 1. Recycling Program

Rock Spring, WY
Recyclables collection and processing program

Service area: >20 businesses in Rock Springs
residential drop-off

Employees: 12

Contact: Peggy Webb (307) 382-5484

This unique recycling program in Rock Springs started July 1, 1996. The Sweetwater solid waste disposal district #1 is subsidizing this recycling and employment program. The recycling coordinator for the City hires the employees from public housing residents.

The employees collect recyclables from more than 20 businesses in Rock Springs. They also accept a limited amount of recyclables at the public housing project where they reside. Most residents wishing to participate in the recycling program deliver their materials to the drop-off recycling center that is operated by these same employees.

The materials collected include:

- newspapers (ONP)
- corrugated containers (OCC)
- office paper
- PET soda bottles
- HDPE milk bottles
- steel cans
- aluminum cans
- brown and clear glass.

The SWDD pays the salaries and provides the processing building. Two balers are provided by ARK Industries of Laramie. Other equipment includes 2 donated forklifts and a borrowed pick-up truck for collection.

Case Study 1. Recycling Program continued

The recycling center bales plastic and OCC. Newspaper and other paper grades are collected loose in large corrugated containers. Materials are shipped as needed through the use of a broker. The prices paid for recyclable materials varies from month to month. The prices paid in August 1996* were as follows:

newspapers	\$ 5/ton loose
Computer paper	\$90/ton
Whiter ledger	\$50/ton
corrugated containers	\$30/ton
Office pack	\$15/ton
Brown glass	\$15/ton
Clear glass	\$ 2/ton
Steel cans	\$15/ton
HDPE milk jugs	\$60/ton
PET soda bottles	\$40/ton
Aluminum cans	\$ 0/ton.

The revenues that the center receives for the materials are placed into a savings account for future funding of the program. It is the recycling center will become self-supporting.

*Note: Pricing information is available on a bi-monthly basis for different regions of the state and published in the Wyoming Recycling Association newsletter (The Recycler).

Case Study 2. Curbside Recycling Program

Municipal Program
Gillette, WY

Contact: Karen Lawson (307) 686-5280

Curbside recycling program Gillette
Campbell County

The city of Gillette, Campbell County and private enterprises have worked together to make recycling successful in Campbell County. Recycling has the support of the county commissioners, city council and the general public. The local press also provides support by publishing monthly recycling reports and special program coverage at no cost to the program.

The curbside recyclables collection program in Gillette began as a pilot program in early 1993. In October of 1994 the program was extended city-wide to serve 21,000 people. The City contracts with a private hauler for the curbside collection service.

Commingled recyclables are collected in blue bags the same day as refuse. In addition to the recyclable materials listed below, the curbside program also accepts batteries, oil, bicycles and large kitchen appliances.

- corrugated cardboard
- box board
- magazines & catalogs
- newspaper
- aluminum cans
- glass (clear, brown, green)
- plastics (1 & 2)
- steel cans.

The City of Gillette and Campbell County contract with a service provider to process all recyclables. All revenues received belong to the service provider. The materials are processed in a county owned pole barn. The center employs 10 to 12 people and is open five days per week. Recyclables are accepted from surrounding areas at no charge. The following equipment is used at to process the materials:

- pallet jack
- glass crusher
- sorting belt
- aluminum can densifier
- baler
- forklift.

Case Study 2. Curbside Recycling Program continued

Funding for recycling is generated through landfill tipping fees with \$4.00 of each \$32.00 per ton tip fee being set aside for the recycling program. This amount pays for the coordinator position, special projects and building and equipment needs. The curbside collection of blue bags is funded through the city budget. The households are not charged directly for the recyclables curbside collection service.

Two Farm Loan Board grants were received by the county for the design and construction of a new processing building. The county's matching funds were taken from the set aside account generated through tip fees as mentioned above.

The pre-fabricated building will add 2,000 square feet to the existing 5,000 square foot transfer station. Residents will still place recyclables in blue bags, but after completion of the new processing area, the bags will be collected with the refuse in the same vehicle instead of separately.

The refuse and blue bags will be dumped into a receiving pit and moved onto an in-floor conveyor. The blue bags will be separated from the refuse and transferred to a sorting area by an incline conveyor. The refuse will continue to be baled for landfilling. The county and city will continue the contract with the private service provider for recyclables processing. The revenue from the sale of the recovered materials will belong to the service provider.

The City also has a drop-off compost program which accepts grass clippings, leaves, and small brush. Sixty-eight 2 cubic yard collection bins are located in neighborhoods within the city limits. The City collects the bins with a side-loading automated collection truck and a one person crew. Collection is 3 times per week or as needed throughout the growing season. The annual collection cost to the solid waste division is \$2,800. There is no tip fee at the yard debris composting site. In 1995, 272 tons of yard debris were collected from the drop-off sites.

Landfill staff and equipment (a front-end loader) are used to turn the compost pile. A local nursery monitors the pile for temperature and moisture in exchange for finished compost. The County contracts to have wood debris chipped at a cost of approximately \$20,000 per year. The chipped wood is used for landscaping needs by city and county park and recreation departments. Any remaining chips are used as a bulking agent for the compost pile.

Case Study 3. Recyclables Processing

Powell Valley Recycling
Powell, WY
Recyclables processing facility

Service area: Powell, Lovell and Greybull

Employees: one employee at 75% time
one employee at 37.5% time
volunteers

Contact: Myron Heny (307) 754-3552

Powell Valley Recycling and the City of Powell have formed a partnership to collect and process recyclables from Powell, Lovell, and Greybull. The City provides Powell Valley Recycling with the use of a building, truck and skid loader. The City also provides a limited amount of labor (48 hours per quarter). Most of the labor comes from the volunteers and the two paid employees. Powell Valley Recycling began in late 1993.

Myron Heny, one of the volunteers, drives as needed to Lovell and Greybull to pick up materials from those locations. Lovell and Greybull have drop-off, buy back, or curbside collection programs. Some aluminum cans also come from Cody, where citizens are not able to sell aluminum cans. Corrugated containers are collected once a week from commercial establishments in Powell such as convenience stores, liquor stores, the hospital and nursing home, fast food restaurants and downtown area businesses.

An employee of Powell Valley Recycling plus a city sanitation driver and truck collect the corrugated containers in two to three hours. The Powell Valley Recycling employee bales the corrugated containers. The city supplies the labor needed to load the baled corrugated containers, as well as the other recyclables, into trucks for delivery to market.

Additional equipment includes two balers, gaylords (large containers) and a truck which is borrowed. A rental agreement has been established with ARK Recycling for the balers based on a percentage of the material revenues. In 1995, the Powell sanitation department purchased a loader and loading dock for the recycling center.

Case Study 3. Recyclables Processing continued

The center is open three days per week (Tuesday, Thursday, and Saturday). The materials collected and the quantities of each recovered in the first seven months of 1996 were:

Newspaper (ONP)	72.0 tons
Corrugated containers (OCC)	61.5 tons
Office paper	9.4 tons
Aluminum cans	33.5 tons.

Powell Valley Recycling plans to construct a new building in two to four years. Funding for the straw bale building will be provided by the revenue received from the sale of recyclables.

Case Study 4. Recyclables Processing and Marketing

ARK Recycling Services
Laramie, WY
Recyclables processing and marketing facility

Service area: Albany County
City of Rawlins
cooperative processing and marketing for other
counties in Wyoming

Employees: projects supervisor
plant foreman
two equipment operators
one trainer
six or seven laborers

ARK Recycling Services is a division of ARK Industries and Rehabilitation Center, a nonprofit corporation providing services to developmentally disabled people in Albany and Carbon Counties.

ARK provides Laramie with multi-materials drop-off centers. The areas in the cooperative marketing program may receive, depending on the arrangements made with ARK, technical assistance, training, or the use of surplus equipment.

ARK receives unprocessed or partially processed materials from the participants in the cooperative program. If a program has the capability to process recyclables to end market specifications and has the storage capacity, ARK will coordinate direct marketing of those recyclables. ARK will also facilitate arrangements between programs; for example, a smaller program may ship recyclables to a larger program where the material is combined for shipment to ARK's facility in Laramie.

ARK pays communities for their materials based on market conditions, cost of processing/handling and transportation. ARK processes the materials and ships them to end-user markets

Case Study 4. Recyclables Processing and Marketing continued

ARK is processing 600 to 800 tons of recyclables per month. The materials processed include:

- newspaper (ONP)
- corrugated containers (OCC)
- office paper
- magazines
- steel cans
- aluminum cans
- HDPE bottles
- PET bottles
- clear and brown glass bottles.

The processing equipment includes a double ram horizontal baler with a conveyor system, two downstroke balers, a glass crusher, a can separator and forklifts. Similar equipment has been loaned to some communities in the cooperative marketing program.

Sources: Case Studies of Seven Rural Programs Cooperatively Marketing Recyclables. The Minnesota Project, April 1994. Wyoming DEQ. July 1996. Bob Chandler, ARK Recycling, October 1996.

Case Study 5. Composting Program

Sheridan municipal landfill

Service area: Sheridan County

Contact: Paul Shassetz, landfill supervisor, (307) 674-8461

The City of Sheridan has been composting at the landfill for approximately 10 years. The compostable materials initially consisted of grass clippings and materials collected from the fairgrounds such as straw and manure. Today, the compostables include yard and garden debris, sludge from the Sheridan wastewater treatment plant, beet seed from the sugar beet factory and brush. In the past, wood chips from the Sheridan saw mill have been utilized as a bulking agent in the compost pile. Since this source of wood chips is no longer available, the city is considering chipping the clean lumber that enters the landfill with construction and demolition wastes and using it as the bulking agent.

The City bans grass clippings from the solid waste collection during the growing season. The compostables are curbside collected weekly by the City at no additional charge. If a resident places the clippings in a plastic bag, the collection crew will split the bag and dump the material into the collection vehicle. Residents are also able to drop-off compostables any time during the year at the compost site. The landfill does not charge a tip fee for compostable materials.

The only equipment used for the composting operation is a D-7 CAT to push the raw material into piles, a front-end loader to turn the piles during active composting and a heat probe to monitor the process. The D-7 is used again to move the Class B end-product to the active landfill area where it is used for daily cover. Since wastewater treatment sludge is used as a feedstock, there has not been a need for watering equipment. The City is planning to purchase a chipper for the brush which at this time is being stock piled.

Since March 1996, the landfill operator has been recording the weight of the incoming compostables. Since March the quantities received equal:

yard and garden debris	715 tons
beet seed	200 tons
wastewater treatment sludge	1,500 tons (estimated)
brush	424 tons
clean lumber	1,500 tons (estimated)

Case Study 6. Biosolids Reuse

Sweetwater County Solid Waste Disposal District & the Rock Springs
POTW
Sweetwater County Solid Waste Disposal Facility

Contact: Bob Johnson (307) 362-7519

In a cooperative effort with the Rock Springs public wastewater treatment facility, the Sweetwater County Solid Waste Disposal District has used treated biosolids from the facility as a soil amendment.

Class B sludge from the wastewater treatment facility was spread over closed portions of the district's landfill. The biosolids provided moisture, nutrients, and additional cover for previously drilled vegetation. One year after the treatment, the site is doing well. Another growing season will determine if the biosolids have enhanced reclamation.

The project was contracted to Jim Maines & Sons Reclamation. The equipment used for the project included a seed drill and sludge spreader. The project was considered a successful cooperation between the city of Rock Springs and the Solid Waste Disposal District.

Case Study 7. Solid Waste Management

Fremont County Solid Waste Disposal District

Contact: Don Connell (307) 332-7040

Fremont County SWDD, in 1993, had 10 landfills. In response to changing regulations, the district started to implement changes in the solid waste management system.

A 1991 cost survey determined that the annual cost at the 10 landfills ranged from \$17.00 to \$346 per ton disposed. Since new regulations would increase the cost of landfill operation, the district made the decision to utilize transfer stations and eventually close 7 of the 10 landfills. A private engineering firm estimated the cost to close the landfills would be approximately \$25,000 each.

Currently the district has closed 3 landfills and located a transfer station at each. The Lysite landfill (operating at a cost of \$346 per ton disposed) was closed and the refuse is being transferred to the Shoshoni landfill. Other landfills will close as soon as each has reached the permitted disposal capacity. Some of the district's transfer stations are located away from the landfills and closer to the generators.

Shoshoni transfer station is an example of a transfer station located away from the landfill. The district determined that the economics of the Shoshoni landfill could be improved by siting an unmanned 40 cubic yard container in the city of Shoshoni. Residents drop-off their refuse and a district employee transfers the full container to the Shoshoni landfill. The same employee can be used to transfer full containers from other district sites to the Shoshoni landfill. This allows the landfill operator to control which days the landfill is open. The result is that the landfill is open fewer days than before and the operator is receiving more refuse.