

Southwest Colorado Material Conservation Assessment

Archuleta, Dolores, La Plata, Montezuma and San Juan Counties

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September 30th, 2011*

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Executive Summary

This report provides an inventory and assessment of post-consumer material recycling services in Southwest Colorado in order to better understand the economics of current recycling efforts and to provide an inventory of available recycling services. The economic viability of recycling depends on many factors, including location of recycling facility, market location, transportation costs, market value of commodities, and cost of preparing materials for marketability.

Archuleta, Dolores, La Plata, Montezuma, and San Juan counties all offer recycling services. La Plata and Montezuma counties offer the widest spectrum of recyclable items collected, baled and sold on the market. Despite the obstacles of living in a remote area, recycling is a source of revenue for some entities. Although the municipal agencies offering recycling services consistently see a loss in revenue from recycling, privately owned companies are making a profit.

This report defines materials as post-consumer materials and conservation as recycling in order to gather and analyze information that would be useful to the Southwest Colorado communities. Further analysis of industrial and post-industrial materials (such as concrete and asphalt), and liquid waste materials (such as waste petroleum and sewage) would merit additional study.

Acknowledgments

This report was compiled with data from a variety of sources. Thank you to the following people and organizations that put their time and energy into keeping these local resources alive and thriving.

4CORE, Josh Kuhn
Archuleta County, Chris Tanner & Larry Walton
Baker Sanitation, Inc., Tayla Workman
Belt Salvage, Chris & Kelly Belt
Montezuma County Landfill, Deborah Barton
Bruin Waste, Chris Trospen
City of Cortez, Colby Early
City of Durango, Dale Cogswell
Durango Natural Foods
Four Corners Recycling Initiative, Ashton Hargrave
La Plata County, Susan Hakanson
Phoenix Recycling, LLC, Mark Thompson
San Juan County Visitor Center
Town of Rico, Julie Bain
Town of Silverton, Brian Carlson

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Introduction and Regional Overview

The purpose of this document is to provide an economic analysis of the viability of recycling as well as an inventory of the recycling services available in the five counties of Southwest Colorado. This document is also intended to contribute to the Resource and Energy Action Plan (REAP) in order to enhance awareness and understanding of recycling resources.

The Southwest Colorado region consists of Archuleta, Dolores, La Plata, Montezuma, and San Juan Counties and the Southern Ute and Ute Mountain Ute Indian Reservations. The Colorado State Demographer's Office estimates the population at 91,716 in 2010¹. The major municipalities located in the region include the cities of Cortez and Durango, and the towns of Bayfield, Dolores, Dove Creek, Ignacio, Mancos, Pagosa Springs, Silverton, and Towaoc.

Recycling Inventory

In Southwest Colorado, there are four landfills and seven transfer stations.² The Montezuma County Landfill offers both recycling and solid waste collection, while the Bondad, Cahone, and Pagosa Springs Landfills operate strictly as landfills. Montezuma County has approximately 250 more years until the landfill will be full based on current usage amounts, while the Bondad landfill will be at capacity in 40 years, and the Pagosa Springs landfill will be at capacity in 20 years.³ There are three recycling providers in the five counties: two in La Plata County and one in Montezuma County. This report defines recycling providers as those facilities that have the capacity to bale and ship recyclables.

In one year, this region has recycled approximately 15,000 tons of materials, equal to 30,000,000 pounds diverted from landfills. Colorado Department of Public Health and Environment (CDPHE) stated that the average per capita rate for municipal solid waste recycled is 1.7 pounds per day.⁴ Using the CDPHE per capita number and this region's population, 155,917 pounds would be diverted per day equaling 28,454 tons annually. With estimated regional recycling numbers, the Southwest region per capita recycling rate would be 42.36 pounds per year per person or 0.11 pounds per day, excluding construction materials, some commercial paper, and metals. Below is an inventory of the recycling services available in the five county region.⁵

¹ Census 2000 and 2010 Counts by Region and County, <http://dola.colorado.gov/dlg/demog/2010data/total%20pop%20change%20region.pdf>

² Colorado Department of Public Health & Environment: <http://www.cdphe.state.co.us/hm/transfer.pdf>

³ Phone interviews with Deborah Barton (9/13/11) Montezuma County Landfill Manager, Bill Rose (9/28/11) Bondad Landfill General Manager, Chris Tanner (9/27/11) Pagosa Springs Landfill Manager

⁴ Colorado Solid Waste and Material Management Program 2010 Annual Report to the Colorado General Assembly, Available: <http://www.cdphe.state.co.us/hm/sw/110201leg rpt.pdf>

⁵ This table may not be a comprehensive collection of recycling data in the five counties.

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Type of Material	Archuleta County	Arboles	Pagosa Springs	Dolores County	Dove Creek	Rico	La Plata	Bayfield	Durango	Marvel	Montezuma County	Cortez	San Juan	Silverton
Aluminum (Cans, Cars, etc)	✓	✓	✓			✓	✓	✓	✓	✓	✓			✓
Appliances (Refrigerators & Freezers)											✓			
Batteries (AA, AAA, D, etc.)	✓		✓				✓	✓	✓					
Car Batteries	✓		✓					✓						
Compact Florescent Lightbulb*							✓	✓	✓					
Recyclable Construction Waste									✓					
Corrugated Cardboard	✓	✓	✓			✓	✓	✓	✓		✓	✓		✓
Electronics									✓		✓			
Glass - Mixed (Clear & Green)			✓			✓	✓	✓		✓		✓		✓
Glass - Brown						✓	✓	✓		✓		✓		✓
Mixed Metals**								✓			✓	✓		✓
Paper (includes newspapers)	✓	✓	✓			✓	✓	✓	✓		✓	✓		✓
Plastics***														
#1	✓		✓			✓	✓		✓					✓
#2	✓		✓			✓	✓		✓					✓
#3						✓								✓
#4						✓								✓
#5						✓								✓
#6						✓								✓
#7														✓
Steel												✓		✓
Tires							✓				✓			
Waste Oils							✓	✓						
Yard Waste								✓			✓			

Figure 1: Acceptable recyclables by County

* Including Fluorescent Tubes, U-shaped fluorescents, and circline fluorescents

** Includes appliances, other than refrigerators and freezers.

(Washers, dryers, hot water heaters, cook stoves, barbed wire, propanel and corrugated roofing, lawn mowers, metal kitchen sinks, etc.)

*** Currently, Durango Recycling Center is not accepting any plastics at the drop off sites due to an unknow illness two employees experienced after working with them. Curbside is continuing this service.

Economic Analysis

Recycling has the potential to be a source of revenue for recycling facilities. That potential depends on the current market value of the material, location of the market in relation to the recycling facility, dependable transportation, and a steady flow of market-worthy materials. Some of the most common places to ship our commodities are Arizona, Oklahoma, and California. Local recycling facilities receive materials, prepare them for sale by baling them, and then contract with a transportation company to have them delivered to market.



Picture 1 & 2: Before and after of cardboard at the Montezuma County Landfill Picture 3: Baled cardboard being transported to market

Each step has a cost. A few years ago, corrugated cardboard sold at \$10 a ton, which meant that every recycling facility in Southwest Colorado was losing money recycling cardboard because baling costs about \$30 a bale excluding transportation costs. Commodity markets can be volatile, especially when large fluctuations in the national economy occur. Listed below are the average rates for commodities in 2007, 2008, and 2009 with transportation costs subtracted.

Commodity	PPP	PPT	PPP	PPT	PPP	PPT
	2007		2008		2009	
Aluminum	\$0.837	\$1,674.71	\$0.73	\$1,460.00	\$0.602	\$1,204.00
Cardboard	\$0.059	\$119.41	\$0.058	\$117.46	\$0.028	\$57.52
Brown Glass	\$0.011	\$23.53	Not Available	Not Available	\$0.0075	\$15.06
Mixed (Green/Clear/Other) Glass	\$0.004	\$9.34	Not Available	Not Available	\$0.0097	\$19.49
PETE Plastic (#1)	\$0.187	\$375	\$0.191	\$383.17	\$0.114	\$229.66
HDPE Plastic (#2)	\$0.256	\$512.58	\$0.37	\$740.00	\$0.305	\$611.01
Mixed Paper	\$0.045	\$91.53	\$0.066	\$1331.16	\$0.038	\$76.96
Steel cans	\$0.048	\$96.38	\$0.091	\$183.90	\$0.025	\$50.32

Figure 2: 2007, 2008, 2009 Average Commodity Revenue after Transportation

PPP=Price per Pound, PPT= Price per Ton

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Currently, the only places that accept more than Polyethylene Terephthalate (PETE or #1) and High Density Polyethylene (HDPE or #2) plastics are the towns of Rico and Silverton. Durango Natural Foods, a local health food store, accepts Polypropylene (PP) or #5 plastics for no-charge⁶, then transports the plastics out of state to be recycled. There are four other types of plastics that are currently being discarded into the landfills, although there are plans to accept them at the Durango recycling center and Archuleta County collection center within a year. Plastics consume a high volume of space but weigh very little. Since commodities are paid based on weight, it takes larger amounts of plastic to generate revenue. Glass is the opposite in weight, but also has a low payback. Glass in large volumes becomes very heavy, making transportation challenging and costly. For this reason, Montezuma County does not accept glass at this time.

Archuleta County

Archuleta County, including Pagosa Springs, operates one landfill, two transfer stations, and a recycling collection center. Archuleta County began offering recycling services in 1991. They collected mixed glass, #2 plastics, aluminum and tin cans, all of which was then hauled to Denver.⁷ This initial program was unsuccessful due to lack of funding and volunteers, as it wasn't fully supported by the County or the Town at the time. In recent years, the County re-introduced a recycling program that accepts cardboard,⁸ paper, tin cans, aluminum, and #1 and #2 plastics. Before the end of the year, Archuleta County will be taking all materials, except cardboard which will continue to go to Phoenix Recycling, to Farmington, New Mexico.

The 2009 budget for recycling services was \$43,440, the 2010 recycling budget totaled \$39,450, and for 2011 \$39,200 was allocated to collect and transport 140 tons of recyclables per month. Over 99% of the 2010 and 2011 budget was allocated to the administration of 1.5 full time employees. The recycling facility consistently loses revenue, but is subsidized by the County's solid waste enterprise fund (money from solid waste service supports the recycling initiatives). Recyclables are hauled once a day to Durango, except for cardboard, which is taken to Phoenix Recycling LLC about three times a week. The County does not receive any compensation for these commodities. When issues arise with the Durango Recycling Center's equipment, Archuleta is left stock piling their recyclables. They don't have the capacity to hold materials for long periods of time, and if they run out of space, recyclable materials end up in the landfill. Since recycling is consistently a loss of revenue for the County, and the landfill revenues that support the recycling program have shrunk to half of what they were in 2006 and continue to decrease, there is an imminent possibility that Archuleta County will not continue to offer recycling services.

Dolores County

Dolores County has one transfer station and one recycling drop-off center. There are a few groups in Dove Creek that collect aluminum cans and bring them to Belt Salvage, in Cortez for \$0.50 a pound.⁹ These groups of people are volunteers and the amount and frequency of recyclables they bring is unknown. There is the potential for a large recycling bin to be provided by the end of this year to the town of Dove Creek by Baker Sanitation, Inc., which would allow cardboard, metal, and paper to be collected and taken to Montezuma County for recycling. This would be provided through a Recycling

⁶ To drop off #5 plastics at no charge, a coop membership is required.

⁷ A brief history of recycling in Archuleta County, available <http://www.archuletacounty.org/Publicworks/recycling.asp>

⁸ All cardboard in this report is referring to corrugated cardboard

⁹ Phone interview with Oma Fleming, CSU Extension Administrative Assistant, Sept. 20, 2011

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Resources Economic Opportunity (RREO) grant, administer by Baker Sanitation, Inc. Rico is recycling aluminum, glass, #1 through #6 plastics, paperboard, paper, and cardboard through one central drop-off location in town. They've offered recycling for almost a full year through a grant from the Rico Center for \$7,860. A resident applied for and has managed this grant as a volunteer. San Juan Uncompahgre Natural Resource Recovery Industrial Services for the Environment (S.U.N.R.I.S.E. Inc), in Telluride accepts and processes Rico's materials for \$300 a month with weekly pickup service. The grant ends when the money runs out, which is near, and Rico residents are currently deciding if and how they will continue these services. All monies from the commodities go back to S.U.N.R.I.S.E. Inc.

La Plata County

La Plata County, including the City of Durango, has one landfill (private), four transfer stations, and two recycling centers. Two of the transfer stations are maintained by a private company, one by Waste Management, and one by La Plata County. The recycling centers are maintained by the City of Durango and Phoenix Recycling LLC, a private recycling company. The City started recycling in 1996 and their program has been growing since, collecting 2,962 tons (almost 6 million pounds) in 2010 by curbside collection and multiple drop-off locations.¹⁰ Curbside collection represents only 15% of the total, with the majority of recyclables collected at drop-off locations.¹¹ The City's 2011 budget for recycling and the recycling center is \$651,649 and the recycling revenue is listed as \$375,000 (this is a \$50,000 increase in revenue from 2010) solely from commodities, not including the \$95,000 commercial collection fee, bringing the revenue total to \$470,000.¹² Based on these numbers, the City is operating at a \$181,649 loss. The City's 2011 Residential Enterprise Refuse Revenue Fund, totaling \$815,000, will subsidize this loss.

2011 Recycling Budget	Proposed Commodity Revenue	Proposed Commercial Collection Fee	Proposed Total Revenue	2011 Recycling Budget – Proposed Total Loss
\$651,649	\$375,000	\$95,000	\$470,000	\$181,649

A recent Durango Herald article stated that, based on a three-year average, the City's recycling center was losing around \$245,000 a year,¹³ or \$20,000 a month, which is subsidized through the solid waste enterprise fund.¹⁴ This loss is said to be due to the economy and the volatile commodities market.¹⁵ Paper, as a commodity has sold for \$150 a ton and dropped with the economic recession to \$40 a ton, while cardboard was valued at \$155 a ton and went down to \$25 a ton.¹⁶ The same amounts of materials were being collected, but the profit received was dramatically reduced.

Durango is currently working on moving to single stream recycling, where each curbside member will be able to mix all their recyclables in one container. By doing this, they will be able to start accepting all plastics (#1 - #7), chip board, egg cartons, aluminum foil, and more. All drop-off locations will be closed, aside from the main recycling center, to assist in the initial screening process of acceptable materials. Since all materials will be baled and shipped together, initial scrutiny will ensure only acceptable

¹⁰ Phone interview with Dale Cogswell, City of Durango Solid Waste & Recycling Manager, Sept. 20, 2011

¹¹ ibid

¹² City of Durango Finance Webpage available: <http://www.durangogov.org/finance.cfm>

¹³ Durango Herald Article *Profitable Recycling Comes with a Cost*, August 22, 2011

¹⁴ Phone interview with Dale Cogswell, City of Durango Solid Waste & Recycling Manager, Sept. 20, 2011

¹⁵ ibid

¹⁶ ibid

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materials are received. Once the materials are baled together (aluminum, paper, cardboard, glass, etc.) they will be shipped to a company that will sort and separate the combined bales, and then sell the individual commodities. The City will receive a “per ton” profit for each bale, while the company separating and re-baling will collect the market profit. The City also holds a biannual electronic and every other year hazardous chemical recycling drive. In 2009, they collected almost 175,000 pounds of electronics, which Natural Evolution, Inc. recycles.¹⁷

Phoenix Recycling LLC, which will be discussed in more detail in a later section, chose not to disclose financial information. They did disclose that as a private company they are making a profit.¹⁸

Montezuma County

Montezuma County, including the City of Cortez, has one landfill that also accepts recyclables, no transfer station, two drop-off locations, and curbside pickup within City limits. The City of Cortez began its recycling program in 1991 and implemented curbside pickup in early 2000. During that time they were baling their own cardboard, but currently take it to Montezuma County Landfill, where much of the County’s cardboard is taken to be baled and shipped off to be sold at market. Glass is currently being shipped to Durango and aluminum is taken to Belt Salvage, who pays per ton. In 2010, 375 tons (747,270 pounds) of materials were recycled through the City of Cortez ECortez, free curbside pickup program.¹⁹ Like all the other municipally-run recycling programs in Southwest Colorado, Cortez is able to provide free recycling services through their enterprise fund. The City has budgeted \$128,812 for the recycling program and they hope to bring in about \$60,000 in 2011 by selling their recycling commodities.²⁰ The refuse fund will then subsidize the recycling program with \$70,000 this year. This is a common practice among rural recycling facilities that don’t collect enough recyclables or revenue to sustain their programs.

Montezuma County Landfill (MCLF) accepts recyclables as well as solid waste. In 2010, they recycled 474.9 tons of material (949,800 pounds, not including 2,105 cubic yards of reclaimed and reused asphalt and cement).²¹ They accept cardboard, paper, and metals for recycling. They have their own baler which bales much of Montezuma County’s cardboard and paper which is then shipped to market. Cortez and other private businesses pay MCLF to process (bale and ship) their cardboard at a fixed rate per ton, and the City and private businesses receive the market value. MCLF also accepts wood, which they mulch into wood chips and sell. They also accept tires that are generally reused as MCLF building protection (many large trucks navigate the yard), landscaping, and the creation of a new ramp. Twice a year they hold an e-waste event, where they collect electronics at a cost to the customer. In the 2011 budget, the Landfill Charges and Fees, including revenue from baling and shipping recyclable commodities totaled \$971,499. In the past, MCLF has broken even with their recycling costs (transportation to market, equipment, and staffing) and if markets stay where they’re at, they project a profit this year.²²

¹⁷ Electronic Volume History available: <http://co.laplata.co.us/sites/default/files/departments/sustainability/documents/VolumeHistory.pdf>. Natural Evolution: <http://www.naturalevolution.com/main.htm>

¹⁸ Phone interview with Mark Thompson, Owner of Phoenix Recycling, LLC. On Sept. 15, 2011

¹⁹ Phone interview with Colby Early, ECortez Manager, Sept.13, 2011

²⁰ *ibid*

²¹ Phone interview with Deborah Barton, Montezuma County Landfill Manager on Sept. 13, 2011.

²² *ibid*

San Juan County

San Juan County, including the town of Silverton, has one transfer station. They accept plastic (#1 - #7), tin, aluminum, cardboard, paper, scrap metal, and appliances. Their current budget for recycling services is \$23,000. All of Silverton's solid waste and recyclables are transported to Telluride by a private company. That company then sorts, bales and sells the commodities, keeping the profit. Even with a small population, Silverton still generates and recycles 25 tons a month or 300 tons a year. The recycling program is combined with the solid waste fund, which is supported by the residents who utilize the transfer station.

Barriers to Recycling

Many of the barriers for recycling materials in Southwest Colorado relate to the remote location of this region. Distance to markets is far increasing the cost of transportation, which is deducted from the revenue. If there were closer markets, revenue would stay in the region and there wouldn't be losses from high fuel costs. Fluctuations in a volatile market also make it difficult to plan a budget. Utilizing commercial trucks or trains that are leaving or passing through the area empty after delivering materials to haul recyclables to a process plant could potentially save money and fuel. Also, combining the regions recyclables for one large pickup could reduce each provider's transportation costs.

Southwest Colorado landfill rates are lower than the 2009 national average of \$43 per ton.²³ Montezuma County charges \$35.90 per ton, while Bondad charges about \$35.15 per ton. With lower landfill rates and 310 combined years of landfill life, many residents don't see why they should recycle, especially at a cost. Another challenge that Montezuma County landfill has experienced is that people don't often follow directions about keeping materials separated.²⁴ Materials brought to the landfill are generally already comingled, making separation for recycling near impossible, which contributes an added cost. Encouraging higher landfill costs while educating residents on how to recycle and its benefits could boost recycling participation.

Education and awareness are also barriers to recycling. People don't know where their materials go and how they are used if they do recycle. The lack of connection to the process keeps people from understanding the potentials of recycling, leading to no initiation or commitment.

Highlights of Material Conservation in Southwest Colorado

Belt Salvage Company, Cortez



Picture 4: Scrap Steel Pile

Belt Salvage Company is a privately owned salvage yard, including new and used steel sales, that have operated in Montezuma County since 1930 as a family owned and operated business. They have approximately 70 large bins placed throughout the five counties to collect mixed metals for reuse and recycling.²⁵ They pay individuals, businesses,



Picture 5: Balers

²³Information on national landfill costs available: <http://www.chartwell-wasteinfo.com/chartwell-municipal-solid-waste-trend-studies.html>

²⁴ Phone conversation with Deborah Barton Sept. 13, 2011

²⁵ Interview with Chris Belt, Sept. 14, 2011

and municipalities by the ton for their mixed metals. Belt Salvage sits on 8 – 12 acres, where cutting, crushing, bending, and baling take place to prepare the metals for resale onsite or to be sent to market for profit. An example of this can be seen in the pictures provided. Picture 3 is showing a pile of steel scraps that will have all the magnetic pieces removed (screws) before being placed in the baler (Picture 2), and prepared for market (Picture 4)²⁶.

Belt Salvage also buys cars. They first gut the metal interior of the car and then either combine these parts or separate out the larger metal parts, like the transmission and the engine. What isn't separated out is baled together. This combination of metals is sent off to be



Picture 6: Baled Steel ready for market

separated out into ferrous (materials containing iron – are magnetic) and nonferrous materials, which will then be melted and made into new materials. The skeleton body of the car is also recyclable. Belt Salvage has a car crusher on site. Picture 8 demonstrates the results of this piece of equipment.



Picture 7: Metal scraps baled for sale

Belt Salvage ships around 13,000 tons of metal to different steel mills and shredders annually, not counting what they resell at their salvage yard.²⁷ They are the only salvage yard in Southwest Colorado that recycles and reuses such high volumes of materials. All five counties either drop off or have mixed metal picked up by Belt Salvage. Empire



Picture 8: Cars, gutted and smashed, ready for sale

Electric Association holds an annual inefficient refrigerator drive, where Belt Salvage recycles over 50 refrigerators.

Without this vital resource much of the regions metal would be filling up the landfills. Belt Salvage, as a private company is making an undisclosed profit with out any subsidy.

Conceptual Resource Recovery Park, Durango

A resource recovery park (RRP) is a colocation of reuse, recycling, compost processing, manufacturing, and retail businesses in one central facility, where the public can bring all their wastes and recoverable materials at one time.²⁸ The picture below is an example of what a RRP can look like. This concept is currently being developed by a local private company and partners. The City of Durango's current recycling center is getting close to capacity with no option to remodel the current site.²⁹

²⁶ Interview with Chris Belt, Sept. 14, 2011

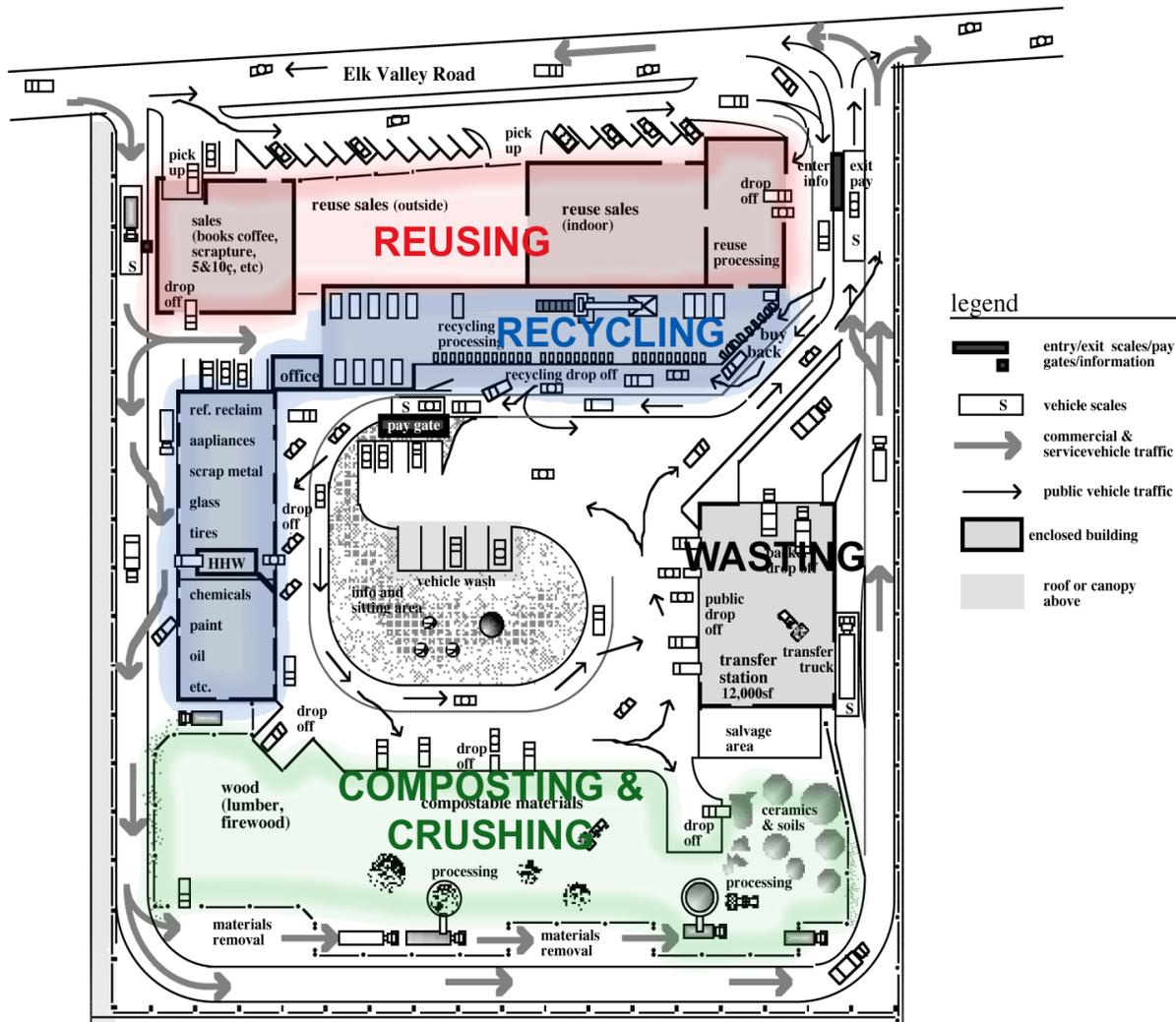
²⁷ ibid

²⁸ A Model for Local Government Recycling and Waste Reduction, Available: <http://www.calrecycle.ca.gov/LGCentral/Library/innovations/recoverypark/>

²⁹ Concept Paper for a Resource Recovery Park; A Smart Community Project, available upon request

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Mark Thompson of Phoenix Recycling said “waste is actually a resource, an under-utilized resource. It could be an asset instead of a liability.”³⁰ The RRP site could be anywhere from 30 – 60 acres and include two current recycling centers, a buy-back facility, a compost center, a compost powered green house, business waste consulting, a center for hard to recycle materials (CHARM), and a green business incubator program.³¹ The RRP plans to create many green collar jobs, boosting the local economy while building a community network of green innovation, in addition to diverting resources from landfills



Picture 9: Resource Recovery Park Example

across the five counties.³²

Orca Bottle Digester, Durango Silverton Narrow Gauge Railroad, Durango

The Durango Silverton Narrow Gauge Railroad (DSNGR) recently purchased an ORCA Green Machine, by *Totally Green* to decompose their plant based plastic bottles as well as compost food waste. When the

³⁰ Durango Herald, Trash a thing of the past?, Article, May 17, 2011
³¹ Concept Paper for a Resource Recovery Park; A Smart Community Project, available upon request
³² *ibid*

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plant based plastic bottles are added to food waste in the ORCA Green Machine, the end result is harmless grey water.³³ This all started because the train was utilizing a high amount of one time use plastic water bottles and wanted more of a solution then recycling them.³⁴ They are working with *Totally Green* on some experimental processes to find the best mix of food (food waste from local restaurants) to plastic bottle ratio.³⁵ They are also working on specific machine modifications to increase the amount of plastic bottles the machine can digest at once.³⁶ The plant based bottles that the train is utilizing are also from *Totally Green*, created by plant materials and decompose in 30 days in an industrial grade compost pile.³⁷ The DSNGR is always looking for ways to work with others in the community and to increase their sustainability.³⁸



Pictures 10 & 11: ORCA Totally Green Digester & Plant Based Plastic Bottles

Conclusion

Recycling in Southwest Colorado has the potential to be profitable. Private companies are generating revenue while municipal agencies are continually subsidizing their local, no-to-low cost recycling programs. Municipalities are providing a service without charge to their constituents. Recycling won't survive on subsidy alone in Archuleta County but seems to be for the time being in Montezuma, La Plata, and San Juan counties. The survival of each recycling program is dependent on the revenue generated from solid waste services. Since the economic recession, solid waste facilities have seen a decrease in construction waste, affecting their revenue. Although many large urban cities don't charge for recycling services, a modest fee implemented in this region could ensure the consistency of long term recycling services.

Many of the agencies that completed the 4CORE survey³⁹ said that they would accept more recyclable materials if there were requests from the community. If each agency collected more, less would be placed in a landfill and more money would go back into the community through the sale of commodities. Montezuma County landfill has interest in integrating a composting area for yard and food

³³ Totally Green Website: <http://www.totallygreen.com/products/orca-green-machine>

³⁴ Phone interview with Gary Keil, Business/HR Manager for DSNGRR, Sept. 29, 2011

³⁵ ibid

³⁶ ibid

³⁷ Totally Green Website: <http://www.totallygreen.com/products/green-bottle-spring-water>

³⁸ Phone interview with Gary Keil, Business/HR Manager for DSNGRR, Sept. 29, 2011

³⁹ Survey is located at the end of the document.

waste, and wood chips that can eventually be sold back to the community as soil amendments. They also have interest in crushing glass locally and using it as alternative daily cover for the landfill, instead of actual sand or soil. Phoenix Recycling and partners have researched the idea of a resource recovery park that would accept all materials and determine their next best use; sell to market for a profit, create compost for the community, or create a new item for sale, generating a job. The RRP also has a goal of changing the way people view materials, capitalizing on the 2nd R, reuse.

Living in a rural area, transporting the commodities to market infringes on the profit. The farther the materials need to go, the less the profit is. Glass is one of the only items being shipped to Denver. Most of the trucks that transport the recycled materials are larger semi-trucks that use diesel fuel. Using railways could potentially decrease the cost and utilize a structure already in place. Another way to decrease transportation costs is to use commercial semi-trucks leaving the area empty after delivering materials, such as Wal-Mart trucks. Having all the recycling providers use the same transportation sources could cut down on each provider's individual costs and ensure efficiency in transporting our regions materials.

Recycling cannot be done solely on a consumer level. In order for recycling to be a closed loop, large scale, profitable process, manufactures need to be utilizing recyclables in the production of their products. This will help encourage confidence in products made of recyclable materials while sustaining market commodity prices.⁴⁰ If all participants in the life-cycle of a product were active in recycling, it would be a much more common, economically viable resource. Encouraging more people to be knowledgeable and participate in recycling will increase the knowledge of recycled products, will demand cost effective transportation options, will increase landfill life, generate more local revenue, and create a large system of reuse and recycling that could transform our entire commodities system.

Next Steps

From this assessment of recycling services in Southwest Colorado, a couple next steps are suggested. Continuing and increasing recycling education in this region. While much has been done, increased recycling education is necessary. Many people don't understand what happens to their materials when they are "recycled" and why recycling is important. Once people know more about recycling and how many others are recycling, including local operations (grocery stores, printing businesses, restaurants), they will be more likely to participate. Encouraging people to know what happens with their recyclables once they're either dropped off or picked up at their curb will help people to understand the full cycle of recyclables and encourage the purchase of products made from recycled materials. Implementing hands on education in the schools will also have a large impact on our community. Generally children take home what they've learned, teaching the parents. Another key step is to bring this regions recycling providers together to talk about where recycling is going, how can they be recycling more, how can they consolidate their transportation needs, and how can they work together to help this region recycle more than it throws away. Through these steps, the Southwest Colorado region will become fluent in recycling and demand more services be provided.

⁴⁰ Leverenz, Harold, Krieth, Frank. "Markets and Products for Recycled Material." *Handbook for Solid Waste Management*. 2004. The McGraw-Hill Companies. 9/26/11 http://www.accessengineeringlibrary.com/mghpdf/007145019x_ar010.pdf

Economic Viability of Regional Recycling Survey Questions

1. What services do you provide?
2. Where do you provide these services? What's the frequency of your pick-ups?
3. What are the barriers that you experienced during the start-up phase/currently?
4. Did any of your start-up funding come from grants/state?
5. How many people are employed by your company? Are they all located in this region?
6. What is the annual cost/budget of this recycling/waste collection program?
7. Does this recycling program generate or lose revenue?
8. Do you have an estimate of the amount of recycling/waste you collect weekly/monthly/ or annually?
9. What and where is the market for this recyclable/waste material? How much does each material sell for?
10. What other materials would you like to be recycling?
11. What are the barriers to expanding recycling here?
12. Should recycling be mandatory?
13. Should recycling be a private or government program?