

Examples and costs of successful waste baling systems

For communities OVER 700 residents

Below are examples of a few communities, with populations over 700 people that are currently operating successful waste baling facilities. For communities under 700 people, see our baler section on our website.

	Community		
	Kotzebue	Naknek/King Salmon	Unalakleet
Population	3,082	1,200	900
Contact	Tom Graham, Harry Bates, or Herman Reich, City of Kotzebue, 442 3401.	Jeff Currier, Manager, Bristol Bay Borough 246-4224	Peter Jackson, Baler Operator, City of Unalakleet 624-3531
Description	When Kotzebue was looking into waste management options, lack of available space was a big concern. They chose to buy a baler and construct a balefill, saving them valuable land space compared to a regular landfill. Trash is taken to the baler facility, located in town. Kotzebue's baler operation has been running for three years.	Naknek and King Salmon share a baler and balefill, located about 8 miles out of town. Their baler facility has been in operation for about 9 years. They have been happy with the baler's performance. Their one complaint with the system is that the conveyor doesn't drain very well because it wasn't installed correctly. The poor drainage causes a mess and that can freeze up in the winter.	Unalakleet's baler facility and balefill have been operated since 1993. The baler facility is centrally located in town where community members can easily self-haul their waste to dumpsters just outside of the facility. Unalakleet had previously had a big problem with wind blown trash - baling their trash has significantly reduced this problem.
Operation Plan	Bales of trash are shrink-wrapped and strapped at the bale facility. Shrink-wrapping prevents trash from flying around on the journey to the balefill, and keeps the birds and animals away. The wrap also acts as a liner underneath the trash, helping to protect the permafrost. The bales are covered with fill to freeze them over, creating a "freezeback" balefill.	At Naknek/King Salmon's baler facility, a Bobcat is used to lift the bales into a specially made box that is closed on all sides but has a hinged screened top. The box holds 24 bales. When filled the box is lifted with a hooklift onto a flat bed truck. The truck hauls the box to the balefill about $\frac{3}{4}$ miles away. The bales are then unloaded and covered daily with imported gravel.	The operator transfers waste from dumpsters outside the building to the baler each day. During winter, when access to the balefill is difficult, bales are stored in a cold storage room located in the baler building. During the summer months, bales are transported to the landfill 5 miles away and are placed in trenches that are covered with fill material.
Staff Required	5 full-time employees staff the baler facility and balefill. A private contractor hauls the garbage.	Two full-time employees staff the balefill and baler facility yr-round. In the summer a temp. is hired to help for 10 weeks. A private contractor hauls the garbage.	One person full-time operates the bale facility and balefill. It' is quite a labor intensive system - often more than 1 person is needed to handle all the work.
Maintenance	Baler maintenance is performed daily. Kotzebue's baler is quite new and they haven't had any problems thus far. Their baler has a built-in computer modem. The modem connects to the manufacturer's control center. The connection allows the manufacturer to troubleshoot any operation problems.	Naknek's baler has a built-in modem troubleshooting system also. After 9 years of operation, they've had few problems (although last yr they had to pay to get their conveyor belt fixed). Naknek's baler staff were trained by the manufacturer. The staff found the training very helpful, and recommend it. Naknek also budgets for manufacturer staff to come up every 5-8 yrs to perform general maintenance.	Maintenance on Unalakleet's baler has been quite minimal over the years. The baler generally runs well, although they have had some problems with the wire strapper. The baler operator's duties include performing daily maintenance and fixing the baler when there are problems.

Start-up and annual baler costs for communities over 700 residents



Listed below are the types of costs associated with starting up and operating a baler and baler facility. Costs for constructing a balefill are not included. Startup and operating costs will vary depending on the size of the community. For costs for smaller communities, see further down the page. (Where a range is given, the low-end value corresponds to a community of about 900 people, and the high-end value corresponds to a community of about 3,000 people).

	Comments	Range of costs for 900 - 3,000 residents (Yr 2001)
Startup Costs		
Balers	Balers are available in many different models depending on the use and need. There is a choice of getting a baler which will automatically tie the bales for you (more expensive and more maintenance) or one which requires manual strapping (less expensive). Once the baler has been purchased, the manufacturer will often come to install the machine free-of-charge. It is a good idea to find out whether installation is included with baler purchase.	\$85,000-\$115,000 for manual tie (horizontal closed door) \$150,000 - \$200,000 for automatic tie (2-Ram)
Baler facility	The building size varies with community size and the waste operations plan (e.g. whether any bales or trash are stored there). For 900 to 3,000 people, building sizes can vary from 30'x30' to 120'x120'.	\$75,000-\$400,000
Shipping	Shipping costs vary considerably depending on location and type of baler. The smaller manual tie balers weigh from 16-27 tons. The larger automatic tie balers weigh from 20-50 tons.	Depends on location. Harris balers are manufactured in Georgia: baler shipping from Georgia to Seattle costs \$5,000 - \$9,000.
Heavy Equipment	Equipment requirements vary with community size and waste operation plan. Basic equipment used by communities with balefills includes a Bobcat with forks to load the waste and unload the bales, a flatbed truck to transport the bales to the landfill (if it is not adjacent), and a loader/backhoe for use at the balefill.	Depends on equipment types.
Annual Costs		
The total annual costs for operating a comprehensive SWM program using a baler facility/balefill average around \$180,000/yr/1,000 people (\$60 per month for a 4-person household). Electricity, supplies, heating etc. should be correspondingly lower for smaller villages.		
Electricity	Electricity costs for running a baler can be quite high depending on location.	\$15,000-\$30,000/year
Heating Fuel	Baler buildings are often heated 24 hours a day in cold temperatures to ensure that the oil in the machine won't freeze. Insulation and waste oil heaters can help bring down this cost.	\$8,000-\$25,000/year
Supplies	Tie wire, also called metal strapping, to tie the bales is a necessary component of the baler system but also a costly one. Tie wire comes in 1000-1,600 lb spools that cost around \$0.36/lb (not including shipping). Wire can be ordered from several vendors including Pioneer Supply (907) 373-5337 and Recycle Systems (888) 453-9300. Also, balers use around 300 gallons/yr of hydraulic oil.	\$8,000-\$45,000/yr for spools of wire & shipping. Manufacturers estimate tie wire to cost \$1/bale (not including shipping). \$1,000-\$3,000/yr for hydraulic oil plus shipping.
Maintenance	Baler maintenance costs can vary considerably from depending on how well the machine is running and if any breakdowns occur. Daily maintenance is often performed by baler operators. Several communities budget money for the manufacturer to perform on-site general maintenance every 5 or so years. Now-a-days most balers have built-in phone/modem troubleshooting which allows problems to be diagnosed at the manufacturer's control center. Generally, the on-line support is free, and results in lower maintenance costs.	\$5,000-40,000/yr (could be higher or lower depending on specific breakdowns) Manufacturer maintenance staff on-site visits: around \$80/hr plus travel expenses
Training	During baler installation (and included in the cost of baler purchase), most manufacturers will take a day or two to train the operator/operators on how to use the baler, and will go through the initial first test to ensure that proper operation. Most communities budget for annual landfill operator training and sometimes for baler operation training. Some manufacturers, including Harris, offer baler operation and preventative maintenance programs each year.	\$3000-\$10,000/yr Harris' annual baler training courses cost approximately \$300/person plus travel expenses to their facility
Equipment	Maintenance and fuel for equip. depend on # and types of equip.	\$3,000-\$15,000
Labor	One to five employees depending on community size and operation plans.	\$60,000-\$270,000 depending on local salaries
Miscellaneous	In addition to the items listed above, there are various miscellaneous items that can add to the annual costs such as administration costs, insurance, safety gear, backhaul of hazardous waste and/or other solid waste management programs.	\$60,000-\$140,000