



June 1, 2000

Mr. Robert Kibler
Recycling Coordinator
Borough of Lewistown
2 East Third Street
Lewistown, Pennsylvania 17044

Subject: Evaluation of Borough Municipal Waste and Recycling Collection System

Dear Mr. Kibler:

This letter is to provide the Borough of Lewistown with the results of R.W. Beck's evaluation of the Borough's municipal waste and recycling collection program costs. It also examines the cost of the Borough direct hauling municipal waste to an out-of-County facility versus transfer haul. The attached pages describe the methods R. W. Beck used to determine the cost of this Borough service and offers an analysis of the alternative management systems.

OVERVIEW OF CURRENT REFUSE AND RECYCLING COLLECTION SYSTEM

Currently, Lewistown Borough provides curbside municipal collection services for refuse and recyclable materials to its residents on a weekly and biweekly basis respectively. Recycled materials include: newsprint, aluminum cans, tin cans, clear and brown glass, plastic #1 and #2 bottles, cardboard, office paper and yellow Gallagher plastic milk jugs. The Borough also offers drop-off collection for brush and leaves and cardboard. Each spring, a one week clean-up is offered where residents are free to set out bulky items not collected on a regular basis, while in the weeks following Christmas, the Borough provides curbside collection of discarded Christmas trees.

The cost to the resident for refuse and recycling collection are primarily funded through a fee charged for bags sold by the Borough for residents to place refuse in for weekly collection. The Borough charges \$29.50 or \$34.50 a quarter for either 13 or 26 bags. Residents are billed automatically and must pick-up the bags or pay an additional \$2.00 per quarter for the Borough to mail the bags.

A secondary revenue source is from recycled material sales. The Borough markets all the materials directly except for plastics. Any costs incurred beyond those funded by the fee and material sales are made up through the General Fund. A summary of the tons of refuse collected, tons of material recycled and the revenue from material sales are presented in Table 1 for 1997-1999.

TABLE 1
SUMMARY OF TONNAGE AND MATERIAL REVENUE

ITEM	1997	1998	1999
Tonnage Disposed	4,806 tons	4,605 tons	4,456 tons
Tonnage Recycled	517 tons	998 tons	638 tons
Material Revenue	\$10,279	\$7,050	\$11,973

The Borough provides collections services with two twenty five cubic yard rear packers, one twenty cubic yard rear packer used as a backup, and one twenty cubic yard rear packer used for plastics. Refuse collected is delivered to the Mifflin County Solid Waste Authority Landfill for disposal, while recyclable materials are delivered to the municipal garage for processing and shipment to markets. The landfill is located approximately five miles from the municipal garage.

The primary issue facing the Borough is the future availability of the landfill as a disposal site. The facility is expected to close in the next two to three years, due to reaching its total designed permitted capacity. This will leave the Borough without a disposal site that is within a reasonable driving distance to collection areas. The next closest disposal or transfer facilities are approximately 40 and 60 miles away with the entire distance largely being accessible only by secondary roads. The Borough's existing collection equipment is not adequate to make the necessary trips on a regular basis. The Borough is at a point where the officials need to decide how to deal with this situation, as collection trucks are scheduled for replacement. The concern is whether to buy equipment set-up for long-hauls, or equipment that better accommodates the maneuverability required for collection in the Borough. Single rear axle trucks are more maneuverable and also generate less wear-and-tear on roads when making sharp turns.

The current disposal rate paid by the Borough to the Authority is \$49.50 per ton. Using an average annual tonnage of 4,622 and multiplying it by the tipping fee, the Borough's annual disposal rate is \$228,789. No cost is factored in for transportation to the landfill since it is within five miles of the Borough's Municipal Garage.

ANALYSIS OF OPTIONS

The Borough's integrated municipal waste management system fees are based on delivery of materials to the facilities located within and just outside the Borough's jurisdiction. Delivering materials collected by the system to facilities outside of the Borough and Mifflin County will impact the fees charged to sustain the program. It is the Borough's intent to minimize that impact to the greatest extent possible. Therefore, this report examines the costs associated with refuse being direct hauled versus transfer hauled to an out-of-County disposal facility.

Decisions by the Mifflin County Solid Waste Authority will have a bearing on what the Borough does since the Authority has already applied for and received a permit to operate a

transfer station on the landfill property. The Borough is delaying the scheduled replacement of collection vehicles to determine the direction the Authority will move with respect to continuing disposal services through a transfer system. If a transfer station is built and operated by the Authority, the Borough would opt to purchase single axle trucks rather than dual or tri-axle vehicles that are better equipped for direct haul to an out-of-County facility.

DIRECT HAUL ANALYSIS

The costs associated with direct haul include additional fuel and vehicle maintenance, additional staff-time for a driver and shorter vehicle life due to additional wear-and-tear. Estimates for quantifying these costs are presented below with the applicable assumptions for both Centre County Solid Waste Authority Transfer Station and the WSI Landfill in Bedford County. One basic assumption for both scenarios is that at least 20 tons per day is direct hauled to either facility. To ensure this load weight is achieved for each collection vehicle, the Borough would have to reconfigure collection routes.

Centre County Transfer Station

The Centre County Transfer Station is located just outside State College Borough in Centre County, which is approximately a 40 mile drive from the Lewistown area of Mifflin County. The primary transportation route between the two locations is State Route 322 west. The average travel speed for a loaded collection vehicle is estimated at 40 mile per hour. Therefore the trip time is expected to be at least one hour each way. The costs associated with this haul are developed as follows:

- Total average annual tonnage – 4,622 tons;
- Average daily tonnage based on five day work week – 18 tons;
- Average weight of load in collection vehicle – 10 tons;
- Number of trips per day – 2 trips;
- Total distance traveled per day (two 80 mile trips) – 160 miles;
- Average number of miles per gallon of gas – 5 miles per gallon;
- Cost of gasoline - \$1.50 per gallon;
- Time required per round trip – 2.0 hours;
- Average hourly wage rate for drivers, including benefits - \$14.50 per hour; and
- Tipping fee at the transfer station - \$48.00 per ton.

Applying the above assumptions, the cost of delivering refuse collected in the Borough to the Centre County Transfer Station is shown in Table 2.

TABLE 2
COSTS ASSOCIATED WITH DIRECT HAUL TO CENTRE COUNTY

ITEM	QUANTITY	RATE	COST
Disposal Costs	4,622 tons per year	\$48.00 per ton	\$221,856
Additional Labor	1,020 hours	\$14.50 per hour	\$14,790
Additional Fuel	8,160 gallons	\$1.50 per gallon	\$12,240
Additional Maintenance/Repairs	40,800 miles	\$0.10 per mile	\$4,080
Total Cost			\$252,966

Not factored into the costs figures presented in Table 2 is the costs associated with replacing the vehicles in a shorter period of time due to additional mileage to vehicles for direct haul. The total cost as shown in Table 2 translates to approximately \$54.75 per ton.

WSI Landfill in Bedford County

The WSI landfill located just outside of Hopewell in Bedford County is approximately 60 miles from Lewistown Borough. The primary transportation route between the two locations is State Route 522 west and several secondary roads. The average travel speed for a loaded collection vehicle is estimated at 30 mile per hour. Therefore the trip time is expected to be at least two hours each way. The costs associated with this haul are developed as follows:

- Total average annual tonnage – 4,622 tons;
- Average daily tonnage based on five day work week – 18 tons;
- Average weight of load in collection vehicle – 10 tons;
- Number of trips per day – 2 trips;
- Total distance traveled per day (two 120 mile round trips) – 240 miles;
- Average number of miles per gallon of gas – 5 miles per gallon;
- Cost of gasoline - \$1.50 per gallon;
- Time required per round trip – 4.0 hours;
- Average hour wage rate for drivers, including benefits - \$14.50 per hour; and
- Tipping fee at the transfer station - \$34.00 per ton (based on price quoted to Cambria County to deliver municipal waste to facility).

Applying the above assumptions, the cost of delivering refuse collected in the Borough to the WSI Landfill is shown in Table 3.

TABLE 3
COSTS ASSOCIATED WITH DIRECT HAUL TO WSI LANDFILL

ITEM	QUANTITY	RATE	COST
Disposal Costs	4,622 tons per year	\$34.00 per ton	\$157,148
Additional Labor	2,040 hours	\$14.50 per hour	\$29,580
Additional Fuel	12,240 gallons	\$1.50 per gallon	\$18,360
Additional Maintenance/Repairs	61,200 miles	\$0.10 per mile	\$6,120
Total Cost			\$211,208

Again, not factored into the costs figures presented in Table 3 is the cost associated with replacing the vehicles in a shorter period of time due to additional mileage to vehicles for direct haul. The total costs as shown in Table 3 translates to approximately \$45.70 per ton.

IN-COUNTY TRANSFER STATION ANALYSIS

If the Borough or the County Solid Waste Authority were to build and operate a transfer station to consolidate collection loads into trailers capable of handling up to 20 tons per trip, the Borough could use smaller collection vehicles with a single rear axle. This would provide municipal collection crews with vehicles that maneuver more easily and tear up the roads less on sharp turns common on collection routes in the Borough.

The costs associated with a transfer station include permitting and constructing a building, operating the facility and transfer hauling material to a designated disposal site. A Borough representative indicated that if the Borough developed the project it would be sized to handle up to 100 tons per day and could accommodate accepting material collected from other Mifflin County municipalities. Additionally, the facility would be designed to handle recyclable materials to expand on the space currently used for that purpose. It would also allow both refuse and recycling activities to take place under one roof.

An open-top technology would be applied where material is directly dumped into the transporting trailer or on a tipping floor than pushed into the trailer with a loader. Figure 1, is a diagram of a direct dump operation. Both refuse and source separated recyclable materials could be consolidated into transport trailers or containers in this manner. The annual costs associated with this operation to handle up to 100 tons per day are summarized below.

- Facility permitting and construction (7,200 square feet at \$75 per square foot) capitalized over ten years at eight percent – \$81,100 per year;
- Facility labor cost based on one individual - \$25,000;
- Maintenance, insurance and utilities - \$12,000; and
- Transfer haul costs factored at five trips per working day at \$1.50 per mile to WSI - \$229,500.

Total cost associated with transferring waste is estimated to be \$347,600 or \$13.65 per ton figure at 100 tons per day, five days per week for 51 weeks. The adjustment to 51 weeks is to accommodate for Holidays.

If the rate for tipping at the WSI Landfill is \$34.00 per ton and the \$13.65 for transfer is added, the total estimated cost per ton for the Borough is \$47.65.

Generally, transfer costs add between \$10.00 to \$20.00 per ton to the disposal cost. For instance, the Centre County Solid Waste Authority charges a \$48.00 per ton tipping fee. An Authority representative reports that \$36.00 of the \$48.00 pays for disposal, the balance of \$12.00 per ton is transfer haul and transfer station related costs. The estimate then for this scenario appears to be reasonable and is expected to be higher than Centre County's since it is handling a smaller volume of material. Centre County is permitted for 600 tons per day and handles on average 300 tons per day.

COMPARISON OF SYSTEM COSTS

Table 4 summarizes the costs for each of the scenarios presented in this report.

**TABLE 4
COMPARISON OF COSTS FOR DIFFERENT OPTIONS**

OPTION	TOTAL COST	COST PER TON
Current System	\$228,789	\$49.50
Direct Haul to Centre County	\$252,966	\$54.75
Direct Haul to WSI	\$211,208	\$45.70
Transfer Haul to WSI	\$220,240	\$47.65

Direct and transfer haul to the WSI Landfill show the lowest costs for the Borough. However, for the values in Table 4 to hold true for these two scenarios certain conditions must exist. For one, the tipping fee charged at the landfill would have to be no more than \$34.00 as quoted to Cambria County. Also, for the transfer haul scenario, the transfer station proposed is expected to handle up to 100 tons per day on a five-day per week basis (currently the Mifflin County Landfill handle just over 100 tons per day). If the actual tonnage handled was less, then the capitalized cost of the facility (fixed cost of \$81,100 per year) would be divided over a smaller number and would increase the per ton cost. But, all things staying consistent with the assumptions, when the Mifflin County Landfill closes, either direct or transfer haul to WSI appear to offer an economically competitive alternative.

While direct haul to WSI shows a slightly lower cost than transfer haul, there are non-cost factors that should be considered in this analysis. For one, the collection routes in the Borough would have to be reconfigured to accommodate maximizing the loads to ensure

that each load transported is at least ten tons. Secondly, transfer haul allows the Borough to purchase collection vehicles that are better suited for the collection routes through the Borough. Additionally, the transfer station would also be available for other haulers serving Mifflin County communities to use. Finally, the transfer station provides the Borough or County the flexibility to utilize capacity at other regional disposal facilities particularly if it is available at a lower tipping rate than the \$34.00 per ton assumed for WSI.

From a recycling prospective, the transfer station could be used as mentioned previously for consolidating commodities into larger loads for delivery to secondary and final markets. Part of the area in the transfer facility could be used to expand on the existing space available to the Borough in the municipal garage for processing and storage of recycled materials.

Given that the Authority has already secured a permit for transfer station, a significant development cost has already been incurred. If the transfer is constructed on or adjacent to the landfill property, there will no disruption to the Borough's present system. In fact, if the Authority would elect not to pursue developing a transfer facility, the Borough could purchase the permit and develop the project.

CONCLUSIONS

- The Borough of Lewistown's Public Works Department operates a successful collection system for refuse, recycled items, yard waste materials and bulky waste. Like many other municipal collection systems, it offers a level of service above what is commonly offered to households in communities with contracted or subscription collection programs.
- The scheduled closure of the Mifflin County Landfill has placed the Borough in the dilemma of evaluating how to cost effectively haul collected refuse to an out-of-County disposal facility.
- The rate charged for the Borough's integrated municipal waste management services is based on delivering refuse to a disposal facility located within five miles of the Borough's business center.
- Two options were identified for transporting municipal waste to an out-of-County disposal site and they include direct or transfer haul.
- The costs calculated for the two options, \$45.70 for direct haul and \$47.65 for transfer haul, are economically competitive with the current rate of \$49.50 paid by the Borough for disposal.
- One factor that could increase the rates projected for both direct and transfer haul to and out-of-County disposal facility is the actual tipping fee being higher than the \$34.00 per ton rate used in this analysis.
- An in-County transfer facility will provide Borough and/or County with the flexibility of shopping around for the lowest available tipping rate.

RECOMMENDATIONS

- The Borough of Lewistown should work closely with the Authority staff to resolve what actions the Authority is prepared to take in developing an in-County transfer facility.
- The Borough should negotiate with the Authority to secure the transfer station permit in the event the Authority elects to not pursue development of a transfer facility.
- There are economic and other compelling reasons for a transfer facility to be developed in Mifflin County, therefore, the Borough should purchase new collection vehicles with the expectation that they will not be required to direct haul collected material any further than to a facility located in Mifflin County.

Please feel free to call me at (717) 730-0404 with any questions relating to this report.

Sincerely,

Richard M. Schlauder, Jr.
Director Environmental Services, Pennsylvania Office

cc: Kathleen Kilbane, SWANA
Carl Hursh, DEP
Debbie Miller, R.W. Beck