INTEGRATED WASTE MANAGEMENT IN BABYLON, NEW YORK

FLOYD HASSELRIIS
Doucet & Mainka
Peekskill, New York

WILLIAM J. HUFF, PHILIP M. SCHUCHTER, EUGENE ALESHIN, AND HERBERT GREENE
Gershman, Brickner and Bratton
Falls Church, Virginia

Discussion by
Jeffrey F. Clunie
R. W. Beck and Associates

The authors have presented an informative discussion regarding the development, construction, and testing of the waste-to-energy facility (the “Facility”) recently constructed in Babylon, New York (the “Town”). The paper provides a considerable amount of historical and background information, a technical description of the Facility, and acceptance test results. It is refreshing to read about a waste-to-energy facility that sounds as though it has been relatively successful. However, from the title of the paper, I expected to learn more concerning an integrated waste management system. I understand that, in addition to the Facility, the Town’s system includes the wastewater treatment facility, the municipal landfill, and a lined ashfill. I had anticipated that the system may have also included any or all of the following: a source reduction program, reuse and recycling, and composting. I had also anticipated a more balanced presentation of information regarding all of the components of the System. The preponderance of information regards only the Facility.

Therefore, I would ask the authors, as part of their response to this discussion paper, to provide certain additional information regarding other parts of the system. Mention is made in the paper that the system includes “recyclables collection by a private consortium.” There is also a brief discussion of a 15% recycling requirement as part of the State permit, the fact that the Town determined that significant savings could be realized by establishing organized collection districts, and that a system has been implemented to include source-separated curbside collection of newspaper, commingled bottles and cans, and “other recyclables.” Furthermore, the Facility provides drop-off containers for tires, scrap metal, used oil, and plastics.

It would be informative to know:
(a) Has the Town achieved its 15% recycling requirement?
(b) What quantities and types of materials have been recycled?
(c) What level of economic benefit has the Town experienced as a result of the recycling program?
(d) What is the net impact on system costs, perhaps expressed in dollars per ton, resulting from the implementation of the curbside collection and recycling program? Does such cost take into account savings of landfill life?
(e) The design of the ash system includes “Two trommel and magnet systems (to) remove ferrous metals...” Has either the Town or the operator been able to establish a market for post-incineration ferrous metal? What level of recovery has the ash ferrous metal system been able to realize since operation began and...
what does that represent as a percent by weight of the residue ash?

(j) The authors report that during the first eight months of commercial operation, the higher heating value ("HHV") of the waste burned by the Facility has averaged 4500 Btu/lb. This is lower than what has been reported for a number of other facilities. Do the authors attribute any of this to the Town's recycling program? Are there some seasonal variations that have not been taken into account for the remaining four months, or is the HHV in the Town actually this low?

In a separate matter, mention is made that the acceptance testing of the Facility includes the proviso that the HHV of the waste will be established by using the boilers as a calorimeter. I would ask the authors to comment on whether, in their opinion, this particular testing procedure actually proved to be appropriate as a method for determining the HHV of the waste and whether they would recommend its utilization in the future.

AUTHORS' REPLY

(a) Yes, the Town of Babylon (Town) has achieved its 15% recycling requirement. In 1989, the recycling rate was approximately 25% of the total waste stream. This was achieved through a combination of Town sponsored programs (such as curbside collection of recyclables) and private sector recovery efforts.

(b) The following is a summary of materials recycled in 1989 (in tons):

<table>
<thead>
<tr>
<th>Material</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>9000</td>
</tr>
<tr>
<td>Corrugated cardboard</td>
<td>10000</td>
</tr>
<tr>
<td>Other paper</td>
<td>400</td>
</tr>
<tr>
<td>Glass</td>
<td>2000</td>
</tr>
<tr>
<td>Metal (cans and scrap)</td>
<td>7500</td>
</tr>
<tr>
<td>Plastics</td>
<td>6100</td>
</tr>
<tr>
<td>Concrete, asphalt, yard waste, and tires</td>
<td>66,000</td>
</tr>
<tr>
<td>Household hazardous waste</td>
<td>50</td>
</tr>
</tbody>
</table>

101,050 tons

(c) The Town has experienced some level of economic benefit through the support of local secondary material brokers. However, there is no net revenue coming to the Town from the sale of recyclable materials. As experienced by other communities, the glut in the old newspaper market has had a detrimental effect on the overall recycling program economics. This market condition is expected to improve in the near future.

(d) Deriving a net system cost for recycling is difficult. The curbside collection contract and fee is based on both waste and recyclables collection; determining the relative costs of each would take some research and can be the subject of another paper. Other variables that must be considered are Town resources used for recycling (which is not kept on a separate budget), material marketing costs, public education, equipment purchases, transportation expenses, and savings in landfill space.

(e) The facility operator has been able to establish a stable market for the post-incinerated ferrous metal. This took some time and effort, but for good results. The scrap dealer accepting the ferrous is allowed to return any ash residue from his ferrous upgrading process. Currently, there is a positive market price for this ferrous metal.

The facility operator has conducted some modifications to the ferrous recovery system to improve the removal efficiency and better handle the material. The operator has been able to recover over 85% of the ferrous metal in the unprocessed ash residue. Typically, since commercial operation, the ferrous metal has represented 13–16% by weight of the ash residue.

(j) The higher heating value (HHV) of the waste burned at the Facility from the period September 1989 to August 1990 has averaged approximately 4800 Btu/lb. This shows a range from 5500 Btu/lb in December 1989 to 4400 Btu/lb in August 1990. This variation reflects the more moist waste in the summer months from grass clippings and heavier rain fall. The Town’s recycling program currently diverts over 1000 tons per month of newspaper from the Facility which may have some effect on the overall heating value of the waste that is combusted.

The use of the boiler as a calorimeter in determining the HHV of the waste was effective. We would recommend this method in the future. Obviously, the accuracy of the method is dependent on the precision of the plant instrumentation as well as the manual data records that must be taken. The testing team must be thoroughly organized and compulsive about accuracy, and the boiler efficiency calculations deserve careful scrutiny and discussion. In our experience, the ash sampling techniques and the assumptions used in calculating heat output and losses are areas of potential inaccuracies.