

## **SOLID WASTE MANAGEMENT GROUP 2017**

### **Overview**

In 2017, there were a number of changes within the Solid Waste Division. The Recycling Attendant and Heavy Equipment Operator positions were filled. A new 10-wheeled dump truck was purchased.

The Solid Waste Division continues to manage its budget well. In 2017 actual combined expenditures were 8% lower than budgeted and revenues were 2% greater than budgeted.

Global recycling markets softened. Although recycling markets were off; the Lebanon Recycling Center was able to continue moving material at average revenue levels. The reason for our ability to move recyclables well is that Lebanon has a reputation for “clean” material.

The compost operation at the facility saw an increase in materials composted. The facility “recipe” uses biosolids, food waste and other organic materials to produce topsoil for use on the landfill slopes in areas needing vegetative growth for erosion control. This use of waste diverts nearly 4,500 tons out of the landfill to be beneficially used onsite and reduces costs associated with the purchase of topsoil.

Landfill disposal tonnage in 2017, decreased very slightly over 2016 by 88 tons. The decreased tonnage was so small that it would be difficult to determine the reason; trash from New Hampshire was approximately 300 tons lower in 2017 than 2016.

Alternative daily cover (ADC) is used cover the day’s trash. State and Federal regulations require that ADC or native soils be used at the end of every day. In 2017, solid waste staff reduced the use of cover materials by more than 50%. This translates into more disposal capacity for waste; improved utilization of “air space”. The reduction was accomplished with training and monitoring of daily operations.

### **Staff**

The Solid Waste Management Group is staffed with eight (8) employees; One (1) Manager, five (5) employees for the Landfill operations and two (2) employees for recycling operations. We also have one staff member available from another department to assist as needed. The list of staff and their respective NH Solid Waste Operator License number are shown below:

	<u>SW Operator #</u>
• Marc Morgan, Solid Waste Manager	209
• Larry Carpenter, Heavy Equipment Operator	3539
• Bram Litvinoff, Heavy Equipment Operator	3687
• Ray Becker, Heavy Equipment Operator	30803

- Ed Denike III, Scale House Operator 1019
- Jeremiah Stearns, Operator/Weigh Master 4717
- Keith Pero, Recycling Attendant 3696
- Scott Poirier, Fill In Heavy Equipment 4116

**Equipment**

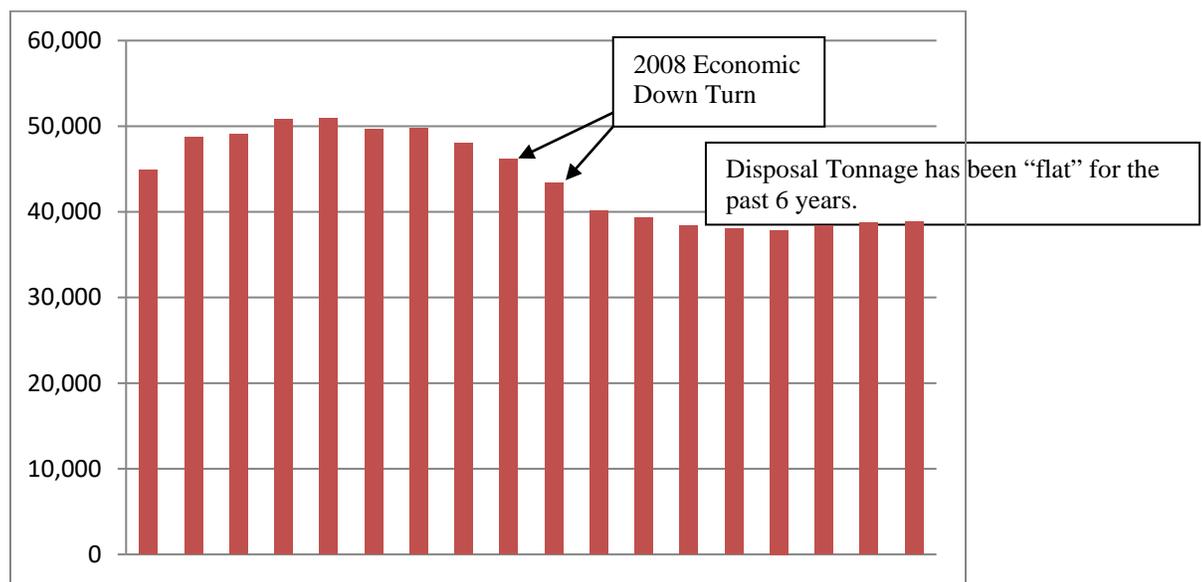
A Freightliner, 10-wheeled dump truck was purchased to replace a 1986 Ford Dump Truck. The new truck is used at the solid waste facility to haul a variety of materials and used during City-wide winter operations.

**Landfill Operations**

Operations in the landfill continue to focus on increasing waste density to improve landfill disposal capacity. Landfill staff has improved compaction techniques and reduced the use of cover materials. In 2017, staff used more than 50% less cover material than in the previous reporting year (2016). This improved use of cover material results in preserving nearly 10,000 yd3 of disposal capacity for the future.

The graph below shows the past 17 years of waste received at the landfill. The uptick in 2011 is due to the increased material disposed from Hurricane Irene damage in August and September of that year. The trend also shows the effect of the significant decrease in tonnage after 2008 because of the poor economy and increased efforts to recycle and reuse in the commercial and industrial sectors. Those tons of waste have not rebounded. These decreases have reduced the amount of revenue generated; however, it has also increased the “life” of the landfill.

*MSW Tonnage Delivered to the Lebanon Landfill for Disposal  
2000-2017*



## **Leachate**

The landfill generated 2,577,363 gallons of leachate that was pumped to the Lebanon waste water treatment plant as compared to 4,769,747 gallons the previous year. The decrease is directly attributed to the work solid waste staff was able to accomplish. Outside slopes were graded and seeded to reduce erosion. Staff also spent time filling areas that had exposed liner. Leachate management in the future will include recirculating the fluid back into the landfill to increase waste compaction and gas generation.

## **Landfill Gas**

The gas collection system is operating well. Cold temperatures cause the flare station to shut down due to safety protocols. Gas generation is ranges from 340 – 380 cubic feet per minute. With infrastructure in place; data is being collected. In 2018, a gas to energy program will be developed with construction to begin in late 2018. The engineering firm of Dubois & King Inc was selected after a competitive/qualification process was completed. Dubois & King will work with City staff to develop a system that will convert the gas generated at the landfill into power.

In 2017, the Division purchased a GEM-5000 Landfill Gas Analyzer. This device is used to monitor and maintain gas flows within the landfill gas well field. Two Solid Waste Division staff received training on using the device and maintaining the well field. The well field was previously maintained with a third party vendor. The purchase and use of this device has saved the Solid Waste Budget nearly \$12,000 and improved monitoring and maintenance of the well field.

## **Waste Diversion**

Waste diversion activities at the Solid Waste Facility are accomplished using one of three methods: reuse, recycling and composting. All three activities contribute improved disposal capacity, but also it is the “right thing to do”. Diverting waste from disposal allows the waste to be used and divert the use of virgin products. Examples of diversion include:

- Use of glass bottles and jars as a construction aggregate in the landfill. Glass is used instead of crushed stone (which costs money) around gas collection lines.
- The facility receives “dirty wood” for disposal. Dirty wood is all wood products that are NOT brush. This waste is ground up and used as cover to save air space.
- Using ground up concrete and brick in the road base of landfill roads instead of crush stone or gravel. This activity beneficially utilizes a waste and reduces costs.

## **Recycling Activities**

The Lebanon Recycling Center processed and shipped 1,926 tons of recyclables which

is only slightly less than the 1,969 tons in 2016. The end of 2017 saw a dramatic change in the global recycling markets when China stopped accepting recyclables. The result has been a drop in commodity pricing and a much tighter market specification on material destined for recycling. The City Solid Waste Division continues to evaluate new recycling markets and processing techniques.

### *Special Wastes*

The Recycling Center also manages a number of other items for recycling. Many of these items require special handling. Those items include: mercury containing light bulbs for recycling, electronic devices, and Freon containing devices, used oil, antifreeze, vegetable oil, batteries, propane tanks and other mercury containing devices.

- In 2017, the program collected more than 7.5 miles of fluorescent tubes (40,124.5 feet) and 3,064 compact fluorescent bulbs; more than the distance from the landfill to City Hall if they are laid end to end.
- Electronic devices recycled include: computers, monitors, televisions, VCR's, DVD players, radios and anything with a plug. In 2017, the program recycled nearly 41 tons of this electronic material, an increase of 30% in the past two years. Residents also use local electronic recycling options with collection events and vendor take back programs.
- Freon units include refrigerators, air conditioners and water coolers. The Freon is removed from each unit and reused in other Freon devices. Once the Freon is removed, the devices are recycled along with scrap metal. In 2017, the facility collected 930 Freon units for recycling.
- Used oil is collected from homeowners and is recycled into "new" oil. In 2017, the Recycling Center collected 1,630 gallons.
- Antifreeze is also collected to avoid disposal in the landfill.
- Vegetable oil is collected and recycled using a local biodiesel group in Vermont. Nearly 100 gallons of vegetable was recycled into a usable fuel.
- Batteries contain a number of hazardous materials. Batteries collected for recycling include: automotive batteries, small lead-acid batteries, rechargeable batteries, batteries from electronic devices, and button cell batteries. In 2017, the Recycling Center collected and recycled 5.5 tons of batteries.
- Propane tanks are typically repurposed through local tank filling programs. The Recycling Center collects 20lb and larger propane tanks for recycling purposes. In 2017, the Recycling Center collected 221 tanks for recycling.
- Mercury containing devices cannot be placed in the landfill. The Lebanon Recycling Center collects thermostats, thermometers and other mercury devices. In 2017, the Recycling Center recycled nearly 50 pounds of mercury containing devices.

### Composting

The City of Lebanon collects leaf and yard waste from residents and commercial accounts for composting. Brush is also collected and is ground to be managed with the compost process. Other organic waste diverted from the landfill includes wastewater

treatment plant biosolids, food waste, animal manures and compostable dinnerware. In 2017, the facility created approximately 20,000 yd<sup>3</sup> of compost using waste feedstocks from the landfill. This material is used on outside slopes, as required by the facility solid waste permit, to stabilize the slope and grow grass.

In 2018, we are hoping to expand the program and begin accepting food waste for composting from area residents in our drop off area.

### **Household Hazardous Waste Collection Event**

The City of Lebanon and the Upper Valley Lake Sunapee Regional Planning Commission hosted two (2) household hazardous waste (HHW) collections events in 2017. During the two collection events, residents and small businesses from Cornish, Enfield, Goshen, Hanover, Lebanon, Lempster, Lyme, Newbury, Orford, Piermont, Plainfield, Springfield, Sunapee, Unity and Wilmot brought HHW to the Lebanon Solid Waste Facility in May and October.

In 2018, the collect events will take place at the Lebanon High School. This change should improve traffic control for the event and eliminate congestion and confusion at the Lebanon Solid Waste Facility.