



GREATER LEBANON
REFUSE AUTHORITY

1994-95
ANNUAL REPORT

Refuse Report

The GLRA At A Glance

The Greater Lebanon Refuse Authority (GLRA) was formed under the guidance of the Regional Planning Commission in 1959. It is comprised of one representative from each of the County's twenty six municipalities.

The GLRA is committed to managing a comprehensive solid waste management system in accordance with the 1990 Lebanon County Solid Waste Management Plan. The GLRA operates the facility in a manner that protects the health and safety of Lebanon County residents and the quality of the environment.

The facility accepts an average of 250 tons of regulated municipal solid waste from Lebanon County each day.

The Annual Refuse Report provides readers with an in-depth look at the workings of the landfill, GLRA activities, recycling information, and plans for solid waste management in the future.

Printed on Recycled Paper
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The Best Little Landfill in North America

Lebanon County is home to nearly 114,000 residents as well as numerous businesses and industries. It is an area of great beauty and offers an array of valuable resources. The role of the Greater Lebanon Refuse Authority (GLRA) is to manage the County's municipal solid waste system in an environmentally safe, reliable, and efficient manner. During 1994, the GLRA has continued to uphold these standards, has made considerable progress, and has been recognized nationally for its achievements.

Lebanon County is now also home to the best small landfill (accepting less than 500 tons of trash per day) in America. The GLRA was awarded the "Systems Excellence Award" for operating the best small landfill by the Solid Waste Association of North America (SWANA). During its review, the GLRA received a perfect score in thirty one categories which judged the facility on operations, engineering, maintenance, and administration. Terry Mauser, GLRA superintendent, received the award on behalf of the GLRA at SWANA's annual convention in San Antonio, Texas. The board was delighted that the GLRA was recognized for its performance and commends all of the employees and staff who made it happen.

The GLRA did not get where it is today overnight. After years of hard work and dedication by both GLRA staff and Authority Members, this achievement is well deserved. A special thanks goes out to Terry Mauser, superintendent, and



Terry Mauser, superintendent, accepts award at SWANA conference in Texas.

Jeffrey Witmeyer, assistant superintendent, who have worked with Authority members, the Executive Director, and GLRA staff to both set and reach a level of performance which made this award possible.

In reviewing the GLRA's application, SWANA specifically mentioned several areas that moved us up from the honorable mention status that the GLRA received last year to this year's first place. These improvements included the addition of a methane monitor in the scalehouse, automated record keeping, a highly organized filing system, and the addition of the convenience and recycling centers.

The GLRA strives to continue to provide Lebanon County with a safe and environmentally sound waste management operation in a cost effective manner now and into the future.

James W. Cantrell, Jr.
Chairman

GLRA Members & Staff

GLRA MEMBERS

- **CHAIRMAN**
James W. Cantrell, Jr.
Swatara Twp.
- **VICE CHAIRMAN**
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Lebanon City
- **SECRETARY**
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- **ASSISTANT SECRETARY**
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Richland Boro.
- **TREASURER**
Joseph A. Anspach
East Hanover Twp.
- **ASSISTANT TREASURER**
Charles W. Jamison
South Londonderry Twp.
- **No current representative**
Annville Twp.
- **Clifford Berger**
Bethel Twp.
- **Jay Detweiler**
Cleona Boro.
- **No current representative**
Cornwall Boro.
- **Bruce E. Kramer**
Heidelberg Twp.
- **Robert R. Confair**
Jackson Twp.
- **Clifford H. Wood**
Jonestown Boro.
- **George H. Merkel**
Millcreek Twp.
- **Lynce Polczynski**
Mt. Gretna Boro.
- **Clarence A. Kline**
Myerstown Boro.
- **Eri L. Meyer**
North Annville Twp.
- **George A. Czakoglu**
North Cornwall Twp.
- **Donald J. Fisher**
North Lebanon Twp.
- **Gordon W. Watts**
North Londonderry Twp.
- **Donald P. Klees, Sr.**
Palmyra Boro.
- **Michael A. Scanlin**
South Annville Twp.
- **Bernard J. Scharenbroch**
South Lebanon Twp.
- **Michael D. Smith**
Union Twp.
- **Ogene F. Dissinger**
West Cornwall Twp.
- **GLRA STAFF**
- **EXECUTIVE DIRECTOR**
Michael D. Pavelek II
- **LANDFILL SUPERINTENDENT**
Terry L. Mauser
- **ASSISTANT LANDFILL SUPER.**
Jeffrey R. Witmeyer
- **ENGINEERS**
Lawrence D. Taylor
Jonathan R. Beers
- **RECYCLING COORDINATOR**
Lori Greenberg-Cagnoli
- **SOLICITOR**
Weiss Weiss & Weiss

Learning From Yesterday, Planning For Tomorrow, Acting Today

In 1957, the Lebanon County commissioners had the insight to examine how the county disposed of its solid waste and how its practices might impact the environment in the years to come. Based on the determination that there could be problems on the horizon, the County Commissioners formed a regional planning task force which was given the task of evaluating the then current waste disposal practices, their impacts, and to formulate other options. As a result of their evaluation and findings, the Greater Lebanon Refuse Authority (GLRA) was formed in 1959 to provide an environmentally sound waste disposal facility to service the needs of all municipalities in Lebanon County.

After 35 years, I look at their actions in retrospect and have a profound appreciation for their activity and the benefit of their foresight. While some municipalities are now facing the cleanup of contaminated sites and groundwater at a cost of hundreds of millions of dollars, Lebanon County's site has not shown any characteristics which would require any major remediation, or, in the worst case scenario, cause it to be included on the national priority list for cleanup. While other areas have numerous waste disposal sites which have been abandoned and are contributing to pollution problems, Lebanon County's single waste disposal facility was selected to provide sound engineering practice and to actively monitor and maintain its sites to the current standards of environmental protection. And while other areas have waste disposal facilities which can be detected by their odor and strong visible presence, the GLRA facility is relatively innocuous and blends into the natural landscape.

Today the population in our area and throughout the world continues to increase. With this increase, also comes an increase in the local economy and in the volume of trash generated. In 1990, there were 72,000 tons of municipal waste generated in Lebanon County and only three percent was recycled. During 1993, the county generated over 101,000 tons of municipal waste and recycled 28% of this material.

On a recent clear winter evening, I stood on a ridge with an old friend and watched a flock of wild turkey forage in the clearing below. There were three ridges to the West where the sun was setting through an orange and streaked horizon over the wilderness. We watched as lights became visible in the wilderness and stars became visible in the sky.

Our recycling percentages have improved, but there is less and less empty wilderness on the horizon. We must act today to reduce the waste we generate, recycle what we can, and develop innovative, cost effective and environmentally sound techniques to effectively utilize space needed to manage our waste for the future. The GLRA, like its predecessors, is actively planning for the future today. The GLRA is working to both recycle and to develop new technologies to reduce the volume of waste received for disposal at its facility and is examining options such as reclaiming old landfills sites in order to reduce the amount of open space being consumed for disposal.

Join us in acting today so that we can all enjoy a better tomorrow.

MICHAEL D. PAVELEK II
Executive Director

What Do Trash, Nature, and History Have in Common?

A walking trail at the landfill? That's right. While it may seem like an odd place to go for a leisurely stroll, a jog, or a horseback ride, the Union Canal Walking Trail offers a recreational area in a country setting with a first hand view of the landfill facility and the historic Union Canal. The idea for the walking trail stemmed from the fact that the GLRA's facility constitutes a large tract of open land that could become wasted space or a public asset.

The project began in 1991, when the GLRA dedicated and set aside the land containing the historic Union Canal locks for public use. North Annville Township, North Lebanon Township and the GLRA worked together to open the walking trail which features three locks of the historic Union Canal. Students from the Lebanon City schools helped to construct the trail. The Union Canal Walking Trail was officially opened on April 29, 1994. Besides providing a wonderful and scenic recreational area, the trail provides a valuable link in the potential Union Canal Greenbelt between Lebanon City and the Swatara Creek.

Some fifteen hundred feet of the old Union Canal and three of its locks dating back to the 1820's, cuts through the GLRA's property in Northern Lebanon Township. At one time, the Canal was used to transport supplies to markets between Philadelphia and Middletown.

The trail runs for approximately a mile and a quarter along the canal, fields and pastures, and the perimeter of the landfill and returns to the parking facility along Russell Road. The land is used at your own risk and supervision of young children is encouraged. It is hoped that this area will



Locks along the Union Canal

eventually include picnic tables, a wheelchair access area along the trail, and a bridge across one of the locks so that visitors can peer inside. Two of the locks are in good condition and still have their original wooden floors intact.

During December of 1994, the Union Canal Walking Trail received one of eight national "Awards of Merit" in the category of Parks and Recreation from American City and County Magazine. The townships and the GLRA were recognized for this trail as an outstanding example of cooperation between local governments.

The Union Canal Walking Trail is open to the public between sunrise and dusk. The trail is accessible from the lower parking lot located adjacent to the GLRA's main office. Restrooms are available during regular GLRA office hours. We invite everyone to come out for a visit. Tours of the landfill facility are available by appointment.

For Your Information

Tipping fees at the GLRA are as follows:

- \$55.20 per ton
- \$18.40 minimum fee (up to 660 pounds)

The GLRA accepts ONLY the following wastes:

- Residential Waste
- Commercial/Industrial Waste
- Construction & Demolition Debris
- Type "S" Residual Waste

Green Waste fees are as follows:

- \$22.50 per ton
- \$7.50 minimum fee (up to 660 pounds)

Green waste includes the following materials:

- Leaves • Grass Clippings • Tree Trimmings •
- Garden Residue • Shrubbery • Tree Branches
- and Limbs (less than 4 inches diameter) •

NO plastic bags, rocks, treated or painted wood, tree stumps or trunks.

GLRA Construction Projects Update

Expansion

The GLRA is expanding its landfill because we are running out of space for Lebanon County's garbage. The existing 13 acre lined landfill area, where refuse is presently being dumped, was constructed in 1991 and will reach capacity in mid to late 1995.

In December of 1994, after more than three years of planning and review by the Department of Environmental Resources (DER), the GLRA received a permit to expand the landfill onto an additional 40 acres of land already owned by the GLRA. The permitted expansion area should provide a minimum of 20 to 25 years of capacity for Lebanon County's trash.

The expansion will take place in several phases through the construction of six new pads. A pad is the bottom of the landfill which is made up of a liner system that is described in detail in the "Getting To The Bottom of Landfill" article on pages 6 and 7 of this newsletter. The first two pads are going to be constructed in the spring and summer of 1995. The addition of these pads will create 12 acres of space which should provide for about eight years of landfill capacity.

The expansion projects consist of earth moving, liner system construction, drilling of new groundwater monitoring wells, leachate pumping and piping systems, and new access roads. The construction of the two pads in 1995 is anticipated to cost the GLRA 3 to 3.5 million dollars, which will be paid by an existing Municipal Bond. Contractors for the project are being selected by the public bidding process.

Closure and Stormwater

The movement of rainwater during a storm can be either a blessing or a disaster depending on weather the storm is a gentle spring rain falling on grassed lawns, or a deluge falling on bare soil. This "stormwater" and its control is a fact of life for an active landfill. Construction activity always affects how the land reacts to stormwater. Recognizing this, the GLRA pays great attention to stormwater control, and its impact downstream. While there are those events which exceed any attempt by man to control, every effort is made to mitigate, reduce, or eliminate soil erosion, flooding, and other damage caused by uncontrolled discharge.



Southeast Basin, Stormwater Control.

The recent completion of the 1994 "Closure" of the old landfill, and its attendant stormwater systems, attest to this fact. The stormwater system originally conceived in the late 1980's would have increased stormwater flow through Swatara Township, and contributed to the flooding at a culvert passing under Mountville Drive. After sharing GLRA's concerns with the township supervisors, the stormwater control plans for the Closure and for the operation of the adjacent borrow areas were revised. The bulk of the water was diverted to the "Southeast Basin" on the corner of Heilmandale and Russell Roads and an evaporation basin was installed for the remainder. The "Heilmandale Basin," located east of Heilmandale Road, was installed as originally designed, however, the outlet was built to hold back enough flow to allow the Mountville Drive culvert time to pass large storm events without flooding.

Continued observation of stormwater activities caused the GLRA to make a few minor additions. A stormwater swale was added on the Russell Road or south end of the old landfill to protect Russell Road while the grass grew and the site stabilized. Additionally, a concrete berm replaced the earthen berm in the evaporative basin guarding the path across Heilmandale Road to the Heilmandale Basin. As a result of the care and diligence on this project, the stormwater control promised to the Swatara Township Supervisors was achieved.

Staffing Changes 1991-95: Meeting The Needs

In 1991, there was the equivalent of 21.5 full time employee positions at the GLRA. Implementation of the Solid Waste Management Plan required the GLRA to undertake many additional activities including:

- Coordination of county level recycling programs and grant application preparation,
- Development of public information awareness programs,
- Maintenance and revisions to the County Waste Management Plan,
- Development of Solid Waste and Septic Waste Regulations,
- Enforcement of Solid Waste Regulations,

- Enforcement of Septic Waste Regulations,
- Permitting of haulers for all municipal wastes,
- Providing ten years of refuse disposal capacity.

When the GLRA reorganized to accommodate these requirements, one and one half equivalent full time positions were added to implement the additional recycling, public information, regulatory compliance and enforcement programs. This raised the GLRA staff to 23 people.

Additionally, since June of 1991, nine million dollars of physical plant and 30 acres of grounds have been added to GLRA's operations. These facilities include the new lined landfill, the site fencing, the leachate treatment plant,

leachate collection and conveyance systems, the new maintenance and office facility, and the Shilling office property. The GLRA found that one additional staff person was required to maintain these new facilities. One additional person was also required to operate the treatment plant. These changes brought the GLRA staff to its present 25 full time employees.

The role of the GLRA has changed as a result of new regulations and new environmental standards. Staffing for the expanded scope of operations has been kept to a minimum by cross training staff, automation, equipment selection, and utilizing the abilities of our employees in a very cost effective manner.

THOMAS McDOWELL
MICHAEL PAVELEK

Landfill Rules of Thumb:

• GLRA Hours of Operation:

Monday - Friday
7:00 A.M. to 4:30 P.M.

Saturday
7:00 A.M. to 12:00 Noon

- All GLRA customers must have a valid permit.
- Allow yourself enough time to finish unloading your vehicle by closing time.
- In the event that the landfill must close due to severe weather, please listen to local radio stations for announcements.

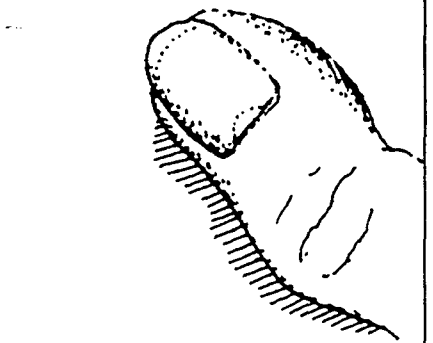
• Closing of the facility for a short time due to localized lightning or electrical storms may not have advance warning provided.

• All open loads of municipal solid waste must be tarped.

• During 1995, the GLRA will be closed or close early on the following holidays :

New Year's Day, Monday, January 2
Memorial Day, Monday, May 29
Independence Day, Tuesday, July 4
Labor Day, Monday, September 4
Thanksgiving Day, Thursday, November 23
Christmas Day, Monday, December 25

Annual Employee Recognition Meeting,
Friday, December 22 close at 1:00 P.M.



• The following types of waste are UNACCEPTABLE for disposal at the GLRA:

Tires
Explosives
Liquid waste
Infectious waste
Hazardous waste
Household hazardous waste
Radioactive waste
Out-of-county waste

Getting To The Bottom Of The Landfill

You may have read about or heard of sanitary landfills and why they are important. But, what is a sanitary landfill and how is it constructed? Well, lets get to the bottom of the landfill and check it out.

For those of you who may not know, Pennsylvania Department of Environmental Resources' (DER) regulations require all newly constructed landfills to be lined with two layers of high density polyethylene (HDPE) plastic and to have a leachate collection system. These two systems are what distinguishes today's sanitary landfills from the "dumps" of the past. The main objective of the liner and leachate collection systems is to prevent the leachate (the liquid created when water seeps through trash in a landfill) from coming into contact with the groundwater. Many Lebanon County residents rely on groundwater as their source of drinking water.

The Liner System

The first step in constructing a sanitary landfill is to prepare a smooth soil bed by excavating existing rock and soil or by filling in an area with compacted soil. The starting point is determined by the groundwater table. The state requires all landfills to be eight feet above the high water table. A six inch layer of low permeable soil, such as clay, is placed on top of the excavated or filled area.

At this point, the liner materials are laid starting with a 13.5 oz (ounces per square yard) nonwoven geotextile fabric. Nonwoven geotextile is like a wool blanket, and its primary purpose is to cushion the plastic liner from stones and other sharp objects. The geotextile is sewn together with hand held sewing machines to make one huge landfill quilt.

Next comes the HDPE plastic liners, which are black in color. HDPE liners are the same type of plastic that laundry detergent bottles are made from, except they are much thicker. In fact, the GLRA uses 60 mil thick liners. Sixty mils (not 60 millimeters) is about 1/16 of an inch or 1.5 millimeters. That is about the thickness of a car key. The reason HDPE is used instead of Polyvinyl Chloride (PVC), like pool liners, is because it is more durable and much more resistant to all types of chemicals.

So how are the liners installed. Like shingles? No, its much more environmentally sound. It has to be water tight. The HDPE liner comes in 24 foot wide rolls that are over 400 feet in length and weigh about 3,000 pounds. It would take 4 1/2 rolls to line a football field. The liners are lifted by a machine, usually a front end loader with a special attachment. Laborers or sometimes a small four wheeler will pull out the roll and position it to overlap the liner next to it by 6 inches. The two liners are fusion "welded" by a special machine with two sets of rollers that heat, crimp, and melt the liners together. The machine makes two seams that are air tested by pressurizing the half inch air space between the seams.

How tough is HDPE? It is a very durable material. The 60 mil HDPE is used by most landfills and withstands a lot of abuse during installation. Despite this fact, many precautions are taken such as the workmen wear sneakers and they avoid taking any unnecessary sharp or pointy objects on to the liner area. Occasionally, something sharp may drop on the liner and require it to be patched.

HDPE patches are placed on the liner by using an extrusion welding machine. The gun heats the patch and the liner and places a thick bead of hot HDPE around

the edge of the patch. This seam is then tested by using a special device. A box, which has one open side and a rubber gasket attached to it, is placed on top of the seam. Soapy water is placed on the seam and the box has a vacuum drawn on it. If the box loses vacuum there is a leak. The exact position of the leak is found by looking through a glass window on the box to see where the soapy water is bubbling. Its like finding a leak in a tire.

The fusion and extruded seams are more durable than a glued or chemically bonded seam because it uses the HDPE material to reform it into one thick piece of material. Every seam is tested and certified by qualified inspectors. Additionally, every square foot of the liner is walked and visually inspected for any factory flaws or defects from installation.

Liners sound impressive, but do they really protect the environment 100% from landfill leaks? Well, we would like to think that one well laid liner would be enough, but even every good worker and every good system needs a backup. That is why cars come with spare tires. And, that is why the state mandates a double liner system and not just one liner.

A secondary liner (bottom HDPE liner) is laid in case the primary (top) liner would develop a leak. Between the liners are two layers of drainage net. HDPE drainage net is almost a quarter of an inch thick and consists of strands of HDPE running in two directions creating an X pattern. It looks like a chain link fence, except the holes are about 1/4 inch. Leachate is able to flow through this net into the collection pipes at the lower end of the landfill.

On top of the primary liner is another nonwoven geotextile that is a little bit heavier than the geotextile under the secondary liner. Its heavier because 18 inches of AASHTO #8 stone is placed on top of the primary liner. AASHTO #8 stone is a rounded crushed stone, 3/8 inch diameter, about the size of a large pea, and its purpose is two fold. First, 18 inches of stone serves as a barrier to protect the primary liner from sharp objects in the garbage. Secondly, it creates a good flow zone for the leachate, similar to that of the geonet.

Finally, on top of these 9 layers of materials, eight feet of "select garbage" is placed. We are very picky

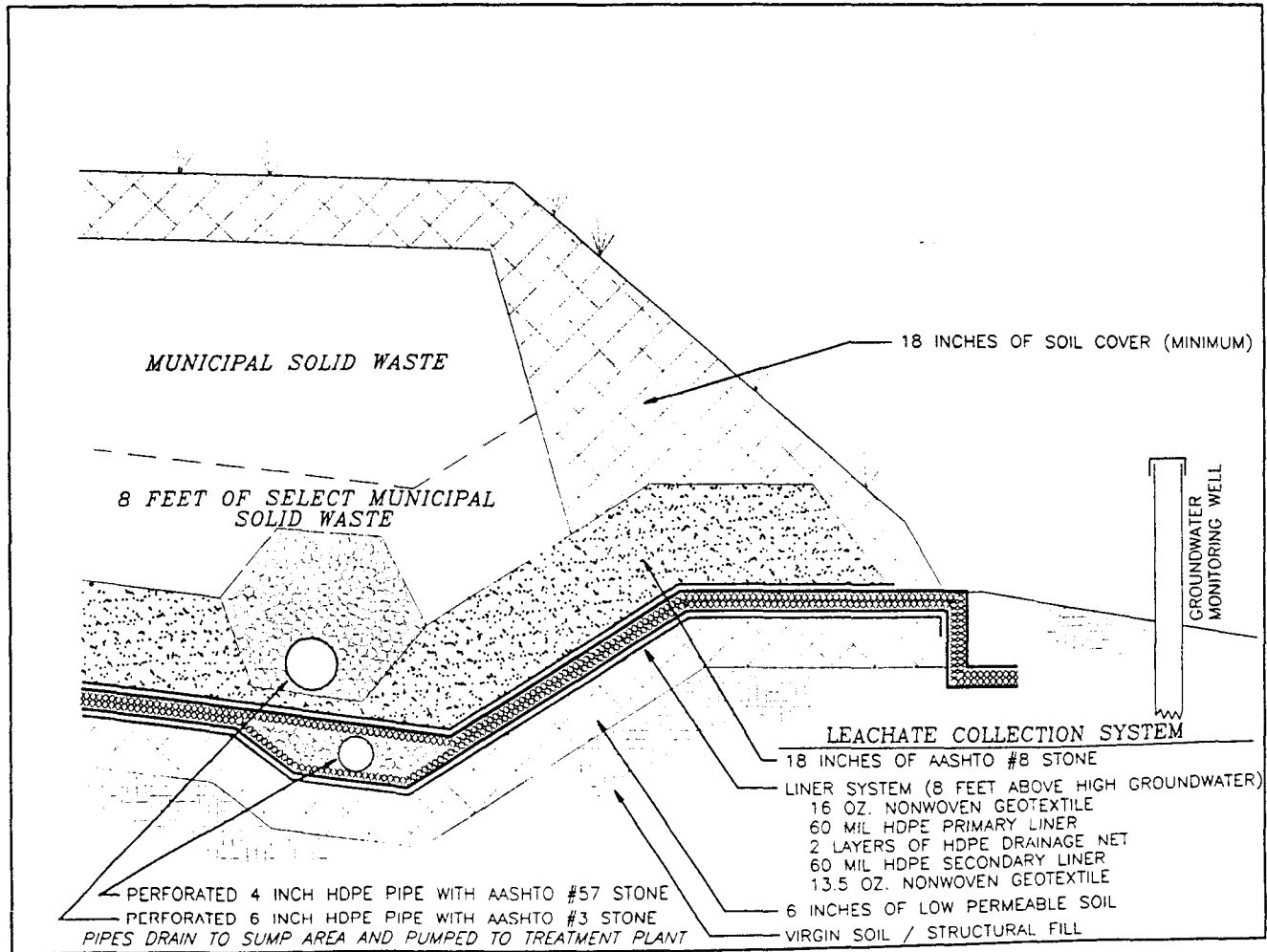
about the garbage that is placed close to the liner. The first eight feet of garbage does not consist of large, sharp objects. Instead, household garbage bags from curbside collection trucks are targeted. Once the select garbage is placed and covered by six inches of soil, the landfill is up and running and any type of acceptable refuse can be placed on top of it.

Leachate Collection System

As the landfill is filled with refuse, rainwater and snow come in contact with it and trickles down through the trash. This activity produces what is called leachate or "garbage juice". The leachate flows through the refuse into the AASHTO #8 stone and into the

collection pipes and drains to the lower end of the landfill.

At the lowest point of the landfill is a sump which pumps the leachate to a one million gallon storage tank at the GLRA facility. The leachate is then pumped from the storage tank to the Lebanon City Waste Water Treatment Plant for final treatment. The GLRA has a pre-treatment plant at its facility which, if needed, can partially treat the leachate before it is sent to the City's Treatment Plant. Again, we are protecting the quality of the groundwater by capturing the leachate and treating it to environmental standards before it is discharged.



Recycling: Taking The Next Step

While recycling is new for some of us, others have been doing it for years. Most importantly, however, is that each of us moves forward and takes the next step. This step may be different for everyone. It may be to begin recycling, or to recycle more materials, or to start a program at your office, or to buy items made from recycled material. The bottom line is that there is always something more you can do or learn if you so chose.

Recycling in Lebanon County is moving ahead, thanks to the efforts of our municipalities, residents, local businesses, and recycling companies. During 1994, several new programs were implemented and various educational programs were conducted.

Annville Township was the latest addition to the list of municipalities with curbside recycling programs. Currently, thirteen of the County's twenty six municipalities offer curbside recycling to their residents. What's particularly noteworthy is that seven of the programs were implemented on a voluntary basis. The remaining five municipalities are mandated to recycle under Pennsylvania law, Act 101.

Other steps being taken to increase participation levels and to make recycling more convenient for those who don't have curbside programs include developing recycling drop-off centers throughout the County. Most recently, drop-off centers have been opened in Lebanon City and in Union Township. The GLRA also opened its new and expanded recycling center. All in all, the County now boasts a total of five drop-off centers. The remaining two programs take place



once a month at the Lebanon City/County Municipal Building and at the North Lebanon Township Building. A special thanks goes to K&W Disposal for their interest and cooperation in developing drop-off programs.

Because of the great success of these drop-off centers and the positive feed back expressed by their users, the GLRA is working with other municipalities and businesses to open additional centers. The GLRA is currently in the process of developing two new drop-off locations. Additionally, several commercial buy back centers exist within the County and provide residents with another opportunity to recycle. These include Frattaroli's Salvage Yard, Reazer's & Sons, Dixon Recyclers, and W.S. Enterprises. Please check with these centers to see what materials they accept.

Lebanon County's recycling programs have continued to grow. Some of its success can be attributed to the



"We took the recycling step!"

improving markets for recyclable materials. Because of this, special collection programs, which recycle items that used to be put in the trash, are beginning to spring up. For example, the drop-off center at the GLRA hosted a special collection program for magazines and catalogs. During 1995, their special collection programs will also include magazines and catalogs, corrugated cardboard, and junk mail and mixed paper. Browning-Ferris Industries (BFI), a waste hauling company, has begun collecting magazines, junk mail and scrap paper, and telephone books at the curb. In addition, they now have a drop-off center at their facility in Palmyra which accepts these materials as well as newspaper and corrugated cardboard.

As far as educational activities go, the GLRA has had a busy and exciting year. It published and distributed its annual *Recycling Roundup* newsletter and *Refuse Report* in addition to various flyers and bulletins. The GLRA has provided tours of its facilities to hundreds of students and community groups and has made countless presentations to schools, civic organizations, and businesses. Recycling news can often be heard on PSAs played on local radio stations, seen in advertisements in local newspaper, or even seen on television. The GLRA was featured on a WLYH, TV 15 children's special on recycling. Still to come will be the "Magic of Recycling" program coming to 18 elementary schools in May and informational "recycling wheels."

In the year to come, each of us can take the next step to make recycling more successful and to help extend the life of the landfill and conserve natural resources.