



Volume 18 Number 3  
Summer 2007

# Land Air & Water

Kentucky Environmental and Public Protection Cabinet

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# Land Air & Water

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*Land, Air & Water* is published quarterly by the Environmental and Public Protection Cabinet with state and federal funds. Subscription to this publication is free. Write the Office of Communications and Public Outreach, 5th Floor, Capital Plaza Tower, Frankfort, KY 40601 or phone 502-564-5525 to have your name added to the mailing list. Address changes and deletions also should be sent to this office or faxed to 502-564-3354.

## New EPA Web site makes it easier to be good environmental stewards

Article courtesy of the U.S. Environmental Protection Agency

The new EPA Web site on stewardship programs, launched in May, can help businesses, government and private citizens make intelligent choices on sustainable environmental benefits. Simple everyday decisions by organizations and individuals on such issues as recycling, reuse or choice of fuel support pollution prevention and environmental stewardship.

The Web site will enable users to find EPA partnership programs, such as the Energy Star energy-saving program, which best align with their needs and interests. Businesses can search for EPA programs based on their industrial category, environmental issue of interest and geographic area. One specific Web site, for example, shows businesses how they can help employees reduce the environmental impacts of commuting.

The Web site provides information links that individuals can use to protect the environment in different settings, such as home, work, school and shopping. One Web site shows citizens how they can use pesticides safely.

This tool is the latest in a series of steps EPA has taken to support environmental stewardship. In 2005, EPA Administrator Stephen L. Johnson endorsed a framework for EPA that recognizes environmental stewardship as the next phase in an ongoing evolution of environmental policy—from pollution control to pollution prevention and sustainability.

EPA is now promoting environmental stewardship in a variety of ways. For example, the agency has challenged individuals to become more energy efficient at home through the "Change a Light, Change the World" campaign, and challenged Fortune 500 companies to double their purchases of green power. Examples at the local level include EPA offering communities technical assistance in applying for smart growth principles, as well as providing funding to retrofit older diesel school buses with pollution control equipment. At colleges and universities, EPA is sponsoring research to help students develop and design innovative solutions to sustainability challenges in agriculture, water and energy use. EPA's commitment to environmental stewardship is also evident at the agencies facilities. In 2006, EPA's new Potomac Yard office in Arlington, Va., earned a gold rating under the internationally recognized green building standard known as LEED (Leadership in Energy and Environmental Design).

See the environmental stewardship Web site <http://www.epa.gov/stewardship>.

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*Printed on recycled paper with state and federal funds*

# what's inside

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Air & Water

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## features

on the cover



This great blue heron (*Ardea herodias*) was photographed by Merle Wasson, of Paris, Ky., on Stoner Creek, which runs through Bourbon and Clark counties.



### **1** Brine release prompts monitoring

The Division of Water collects samples to establish baseline water quality data and evaluate stream integrity.

### **9-10** Earth Week in Kentucky

“Energy for Kentucky’s Unbridled Future” had everyone thinking about energy choices. Read about the cabinet’s events.

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Printed by Post Printing  
Lexington, Kentucky

# Levisa Fork, Fishtrap Lake will be monitored for impacts of chloride

By Allison Fleck  
Division of Water

The Division of Water (DOW) has begun weekly sampling of the Levisa Fork of the Big Sandy River to ensure water quality is not impaired by discharges of brine water by a coal mining company in Virginia.

Consolidation Coal Co., a subsidiary of Pittsburgh-based Consol Energy, received a permit from the state of Virginia in May that will allow the company to discharge up to 10,000 gallons per minute of brine water over the next 17 years into the Levisa Fork, 12 miles upstream from the Kentucky border. The brine will travel through a 19-mile pipeline from the mine to the Levisa Fork of the Big Sandy River where it will be released through a diffuser at a rate of up to 14.4 million gallons per day.

Teresa J. Hill, secretary of the Environmental and Public Protection Cabinet, said Kentucky's monitoring program is the "prudent" approach.

"I have been

assured by the state of Virginia that the water to be discharged will not harm Kentucky waterways," said Hill. "Nevertheless, it remains prudent to conduct periodic monitoring to make sure our waters remain safe for aquatic life and as a source of drinking water."

Biologists with the DOW Water Quality Branch recently visited the Levisa Fork on the Kentucky side prior to initiation of the discharge to establish a baseline on water quality, sedimentation and aquatic life. They also collected fish tissue



**LEFT:** *The banded darter (Etheostoma zonale) inhabits Levisa Fork.* Photo by Eric Eisiminger  
**ABOVE:** *DOW biologists Sue Bruenderman and John Brumley collect fish samples from Fishtrap Lake. Tests performed on fish tissue are used to evaluate the presence of contaminants in the water.* Photo by Allison Fleck

## About brine

Gas, oil and coal mining operations generate large volumes of brine, or salty water, that when released into rivers and streams, can alter local water quality and impact animal and plant life. The brine water is very similar to table salt, or sodium chloride (NaCl). It is this chloride factor that is of concern as the Virginia coal company releases the brine into the Levisa Fork. The concentration of the chloride is an average of 6,907 milligrams per liter.

The Virginia discharge permit allows Consolidation Coal Co. to

*Continued on Page 8*

from Fishtrap Lake, which is fed by the Levisa Fork. The lake will continue to be monitored for algae content.

"This baseline data will give us a snapshot of the two Pike County water bodies before any discharge occurs," said John Brumley, supervisor of the Ecological Support Section of the Water Quality Branch. "We will be checking in-stream water conditions such as dissolved oxygen, temperature and pH. Further analysis of samples will be performed by the Division of Environmental Services."

In addition to chloride content, laboratory analysis will determine alkalinity, total suspended solids and sulfates, as well as recoverable metals like aluminum, arsenic, barium, cadmium, iron, lead and selenium. The water will also be tested for PCB levels. Brumley said mine waste-

water usually contains metals that leach from underground caverns. Excessive amounts of these materials can have a detrimental effect on fish, plants and animal life.

"Biological communities leave detectable response signatures related to such pollutants as excessive nutrients, organic wastes, industrial toxins and habitat alterations," said Eric Eisiminger, a DOW biologist specializing in fish tissue. "The advantages of using fish as biological indicators include their widespread distribution from small streams to all but the most polluted waters, their varied trophic levels, their stable populations during summer months and the availability of extensive life history. The fish analysis, along with the bacteriological and chemical data, will help us evaluate the biological integrity of the entire ecosystem of the stream."



# Predator in the woods

By Tim McClure  
Division of Forestry

The Kentucky Division of Forestry recently released a predator beetle to aid in the fight against the Hemlock Woolly Adelgid (HWA) in southeastern Kentucky. The pest has been discovered in Harlan, Bell and Letcher counties, with infestations occurring around several state parks and nature preserves. Other state agencies have released predator beetles too, including the Kentucky State Nature



Preserves Commission (KSNPC) and the Department of Parks (in Pine Mountain State Resort Park).

The last issue of *Land, Air & Water* contained a description of the HWA and a narrative on the plight of the eastern hemlock and its ecological associations in the mountains of eastern Kentucky. The future of eastern hemlock, the only shade-tolerant evergreen in our forests, is uncertain to say the least.

Chemical and biocontrol measures are the only control methods currently in use in the 18 states that have been infested with HWA. Kentucky is now employing both of these practices in hopes of keeping HWA populations below harmful levels. Last year, the Division of Forestry used insecticidal soap sprays to guard against additional HWA infestations. This year, the division is stepping up its defense.

“We are crossing our fingers in hopes that the predator beetle will eat enough adelgids to stop the spread. Otherwise, we will be without a viable treatment option in our forests,” said Leah W. MacSwords, the Division of Forestry’s director and state forester. “Chemical treatments are too expensive for large landscape settings like

*Release of predator beetle in Kentucky forests will help fight the spread of Hemlock woolly adelgid.*



Kentucky Ridge State Forest and Pine Mountain State Resort Park.”

Biocontrol was thought to be a year or so away, and beetle placement necessitates high levels of HWA populations. However, waiting for populations to reach ‘heavy’ infestation levels allows the pest to be spread in the interim by birds carrying HWA hitchhikers into uninfested areas. In order to minimize this threat, predator beetles were employed earlier in the biocontrol equation in hopes that the pest can be kept in check.

In March, a predator beetle, *Saisiscymnus tsugae*, was released initially at Cumberland Gap National Park and in Kentucky Ridge State Forest. This beetle, a member of the ladybird beetle family, was imported from Asia. HWA is an Asian native, and the beetle is a native predator on HWA.

According to the KSNPC, 7,000 beetles were also released in Blanton Forest, Martin’s Fork Wildlife Management Nature Preserve and Stone Mountain Nature Preserve and Wildlife Management Area.

Predator beetles are reared on infested branch cuttings, then placed in buckets and



shipped. The cuttings and beetles are hand placed on targeted hemlock branches where the beetles eventually establish themselves.

Measuring the success of the predator beetle will take some time. The release sites will be monitored to see how well the predator beetles are surviving in their new home.



**TOP and LEFT:** *Tiny black predator beetles make themselves at home on hemlock branches after being hand placed in targeted areas. Placement requires an overcast day with no wind.*

**ABOVE:** *Buckets, each containing 1,000 beetles, were delivered to the target area.*  
Photos by Division of Forestry

# Paducah Water increases capacity without increase in cost

By Allison Fleck  
Division of Water

Paducah Water is celebrating a 60 percent increase in water production that comes at no cost to the community and no cost to the customers. The achievement caps a year-long cooperative effort between the Kentucky Division of Water (DOW) and the western Kentucky utility to help the company increase capacity through efficient use of its resources.

“I applaud Paducah Water for their innovation and their success in this cost-effective capacity increase,” said Julie Roney, supervisor of the Technical Assistance and Outreach Section of the Drinking Water Branch. “This accomplishment demonstrates how the Area-Wide Optimization Program can help public water systems operate in the most efficient manner possible with the resources they have.”

The Area-Wide Optimization Program was developed by the U.S. Environmental Protection Agency as a multistate effort to optimize particle removal and disinfection capabilities of filtration water treatment plants. The goal is to maximize public health protection from disease by identifying performance problems in the water system.

The program, as Paducah Water has learned, is one of the most economical ways a drinking water system can improve

their ability to produce safe drinking water, extend the life of the plant and enhance the skills of the operators.

The DOW began working with Paducah Water last year as the utility considered several possibilities for increasing production as part of a multiyear master plan. The utility considered the purchase of a new \$600,000 filter medium to increase capacity, as well as investigated new plant construction, which was estimated at \$7.2 million for new basins and filters and a filter building.

At the suggestion of DOW staff, Paducah Water tested its current filters at higher flow rates and found that water quality was maintained at the higher rates. After reviewing the results, DOW awarded the utility a performance-based operational permit to increase capacity without any changes to the plant. The increased capacity will allow the treatment plant to increase production of water from 12 million gallons to 19.9 million gallons per day. The permit also increases the flow through the filters from five to eight gallons per square foot of plant capacity.

Paducah Water celebrated receipt of its operational permit last month with a luncheon attended by company staff as well as city, county and state government

*Continued on next page*

## *Water treatment plants receive state recognition*

Twenty-four Kentucky water treatment plants received awards from the Division of Water (DOW) for producing drinking water that consistently meets or exceeds state water quality standards. Through their voluntary participation in the Area-Wide Optimization Program, 154 public and private water treatment plants were asked to reduce turbidity levels below those required by state and federal regulations. Turbidity, or cloudiness of water, can be caused by sand and dirt as well as bacteria and viruses. Particle removal is critical for producing water that is free from dirt and microbes that can cause waterborne diseases.

Four water systems—Rattlesnake Ridge Water District, Greensburg, London and Northpoint Training Center—were recognized for reaching 100 percent optimized water quality goals for particle removal. Twenty other water systems were recognized for meeting 95 percent optimized water quality goals for particle removal—Benham, Southern Water and Sewer District, Lawrenceburg, Franklin, Pineville, Hardin County Water District No. 2, West Liberty, Morehead, Harlan, Ashland, Kentucky-American/Richmond Road Station, Trooper Island Camp, Stanford, Paducah, Barbourville, Alcan Ingot, Logan-Todd Regional Water Commission, Irvine, Beech Fork Water Commission and Nicholasville.

“Together, these 24 systems serve 475,000 Kentuckians who can be assured that their water treatment systems are working hard to produce safe drinking water from Kentucky’s lakes, rivers and reservoirs,” said Donna Marlin, manager of the Drinking Water Branch of the DOW. “I fully expect to present more awards next year as water systems continue to make technical, managerial and financial improvements in the business of producing clean, safe water for the citizens of the commonwealth.”

*(From left) Paducah Water Plant Manager Keith Emmons, Paducah Mayor William F. Paxton, Paducah Chamber of Commerce Board Chair Phil McIntosh, Paducah Water General Manager Glen Anderson, City Commissioner and Paducah Water Board Member Gayle Kaler and McCracken County Judge Executive Van Newberry.*

Photo submitted



# Kentucky communities receive \$1.4 million in brownfield grants

By Herb Petitjean  
Division of Compliance Assistance

Two Kentucky cities have received financial assistance from the U.S. Environmental Protection Agency that assists with the redevelopment of contaminated properties in their communities. Louisville-Jefferson County Metro Government and the city of Frankfort were among 202 recipients nationwide.

Brownfields are old industrial or commercial properties that are abandoned or underutilized due to real or perceived contamination. The EPA Brownfields Program works with states, communities and other stakeholders to prevent, assess, safely clean up and sustainably reuse these brownfields.

Brownfield redevelopment has been a priority of Governor Ernie Fletcher's administration.

"I have long been convinced that brownfield sites once destined to be nothing more than abandoned eyesores can be redeemed and restored to productivity," said Governor Fletcher. "Many can be transformed into flourishing economic machines, creating jobs and returning money to a community."

Louisville received a \$1 million revolving loan fund grant to address brownfield cleanup in the Park Hill Industrial Corridor. Both Louisville and the city of Frankfort each received a \$200,000 grant that will be used to conduct assessments of petroleum-contaminated properties. Frankfort's grant will address cleanup in the Holmes Street Corridor.

"EPA is proud to be a part of this effort to turn problem properties into community assets," said James Palmer, EPA regional administrator in Atlanta. "With this assistance, the city of Frankfort and the Louisville Metro Government will be making great strides in transforming the area into productive, revitalized properties, putting people and property back to work."

Since the beginning of the program, EPA has awarded 1,067 assessment grants totaling more than \$262 million; 217



*Frankfort Mayor William May (center left) accepts a \$200,000 grant check from EPA Regional Administrator James Palmer (center behind check) to help assess petroleum contaminated properties in the Holmes Street Corridor. Photo by Herb Petitjean*

revolving loan fund grants totaling more than \$201.7 million; and 336 cleanup grants totaling \$61.3 million. This assistance has leveraged more than \$9.6 billion in cleanup and redevelopment, helped create more than 43,029 jobs, and resulted in the assessment of more than 10,504 properties and the cleanup of 180 properties.

The Kentucky Brownfield Program will conduct a series of workshops around the state in July to assist communities that wish to apply for the next round of EPA brownfield grants. To receive notification of these workshops, contact the Division of Compliance Assistance at 800-926-8111.



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## Paducah Water increases capacity without increase in cost

*Continued from previous page*

officials. Paducah Mayor William F. Paxton noted the significant economic benefit of the nonstructural plant modifications. "The city will not have to issue bonds for a major upgrade. It also gives our community another asset for economic development opportunities. If a new industry comes in, we will be able to serve them immediately. We won't have to wait to build new facilities," said Paxton.

Jim Hamon, an environmental engineer in the Technical Services and Outreach Section, said awarding of the permit also reflects favorably on the expertise and commitment of the plant staff. "After reviewing Paducah Water's operation, and taking into account the confidence we have in the plant operators and the management team, we were able to increase the flow-through rating of the current system without hesitation," he said. "There are no other plants in Kentucky that have received this kind of flow-through filter rating."

Paducah Water was one of 24 Kentucky water treatment plants recognized for producing drinking water that consistently meets or exceeds state water quality standards.

Paducah Water serves nearly 23,000 metered accounts with approximately 60,000 users in Paducah and McCracken County. The company has been in operation for more than 120 years and has been city-owned for more than 75 years.



# Shaker prosperity traced to perennial springs

By Allison Fleck  
Division of Water

Two geologists with the Division of Water have determined that the groundwater recharge area feeding two springs near Shaker Village at Pleasant Hill yielded a perennial water flow that allowed the society to prosper in agriculture and trade.

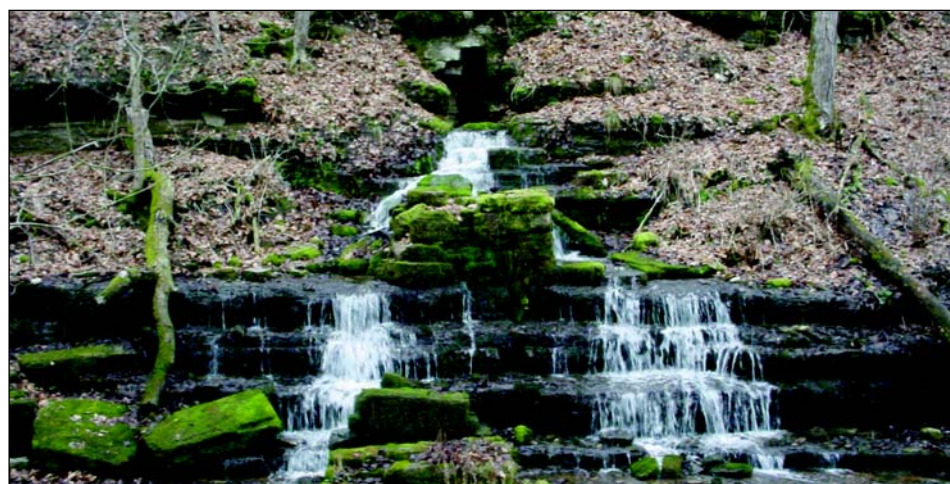
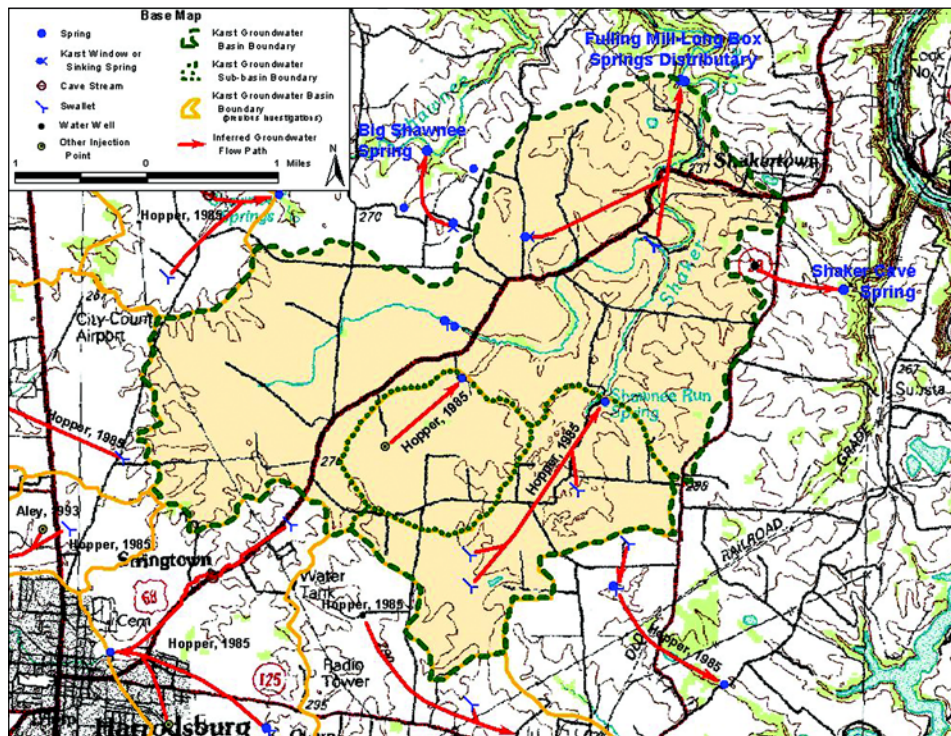
“The Shakers took advantage of the continuous flow of the Fulling Mill Spring to develop a dependable water system for the wool-fuling process,” said Rob Blair, who conducted the groundwater tracing project with fellow geologist Joe Ray. “The water supplied by this and other area springs was critical to their success as farmers, herders and traders.”

The Shaker community was established at Pleasant Hill near Harrodsburg in 1806 and would eventually become the third largest of 19 villages stretching from Maine to Kentucky. Their livestock included cattle, sheep and chickens. By 1823 the central Kentucky community comprised nearly 3,000 acres in wheat, rye and oats as well as extensive fruit orchards and fields for their herds.

Trade with the outside world provided a steady income to sustain the community of believers. Among the products they produced for their own use and for trade were woolen goods, pressed cheeses, preserves, medicinal herbs, packaged seeds, brooms, cooper’s wares, shoes, weaving implements and tanned skins.

The Shakers were renowned for their industriousness and innovation, as evidenced by the water system they devised to supply the fulling mill. Water from the Fulling Mill Spring was fed across a creek channel via a wooden aqueduct to the mill used to clean and process sheared wool. The ruins of the system are still visible.

Water from other springs on the property was pumped to a cypress cistern and delivered by lead pipes and the flow of gravity to bath houses, kitchens and wash houses throughout the settlement. Blair and Ray set out to determine the hydro-geological connections providing a steady flow of water from the Fulling Mill



**TOP:** Basemap showing selected dye traces and groundwater basin boundaries for Shaker Village at Pleasant Hill, Mercer County. **ABOVE:** Emerald-green moss radiates from smooth rocks surrounding Fulling Mill Spring on the grounds of Shaker Village. Map and photos provided by the Division of Water

Spring and the adjacent Long Box Spring.

“We were curious to discover the groundwater basin boundaries of the local water sources,” said Blair. “Fortunately, the Shakers were diligent record keepers and left behind notes on the discharge of several springs. As early as 1887, a Shaker named Henry Daily underscored the importance of the springs by noting measurements of their water flow during periods of drought.”

Expanding on the previous work of other hydrologists and aided by Shaker Village park naturalist Don Pelly, Blair and Ray injected nontoxic fluorescent dyes into both natural and modified karst features such as a hand-dug well, local sinkholes and stream swallets.

The term “karst” refers to a particular type of groundwater drainage system.

*Continued on Page 16*



# Nuisance *Aquatic* animals in Kentucky

By Ryan Evans

Kentucky State Nature Preserves Commission

Many of us have watched nature shows and gotten glimpses of the animals in exotic rainforests, but you don't need to go to the equator to see rainforests of diversity. You might not know that the southeastern United States is in fact a rainforest of its own in terms of aquatic animals. Kentucky has 103 species of freshwater mussels, a group of animals with a level of diversity equaled nowhere else in the world. The commonwealth has more than 250 documented native species of fish, and more than 60 species of freshwater snails and crayfish each. Kentucky also has several types of fish and crayfish that are found nowhere else in the world (species that are called "endemic" to the state).

One of the challenges we face as a society is how to safeguard and preserve this biological diversity in the face of drastically altered aquatic habitats (e.g. dams, stream channelization), habitat degradation (such as silt runoff into streams) and water pollution in many areas of the state. Our native fauna face another threat in the form of exotic aquatic animals, i.e., species that are not native to Kentucky and are becoming "nuisance" species.

Perhaps the most well-known nuisance aquatic animal is the zebra mussel (*Dreissena polymorpha*). This European species arrived in ships' ballast water in Ontario and Michigan's Lake St. Clair during the late 1980s. Since that time, it has spread across the continent. Unlike our native mussels, the zebra mussel and a

similar exotic species, the quagga mussel (*D. bugensis*), have a different mode of reproduction. Like barnacles, the larvae these animals produce settle on hard surfaces, overwhelming sessile native species with their sheer numbers alone. Zebra mussels have caused great disruptions to native mussel fauna in the United States, significantly reducing or eliminating mussels altogether in some parts of the country. The Asian clam (*Corbicula fluminea*) is also a problematic, nuisance species and has invaded many waterways in Kentucky.

Another group of exotic species causing great concern is carps. Carps originate from southeastern Asia and are members of the minnow family. The well-known common carp (*Cyprinus carpio*) can indirectly stir up high amounts of silt in its feeding activities. This increased turbidity and silting in the water (and direct effects from feeding) can reduce or eliminate aquatic plants as well as affect spawning of native fishes by creating unfavorable conditions (e.g., smothering) for the eggs. Two carps in particular, the silver carp (*Hypophthalmichthys molitrix*) and bighead carp (*H. nobilis*) have made recent news with their habit of leaping from the water when they sense approaching watercraft. These carps



**ABOVE:**  
*Zebra mussel*  
(*Dreissena polymorpha*).  
U.S. Geological Survey Archives photo  
[www.forestry.org](http://www.forestry.org)



**LEFT:**  
*Common carp*  
(*Hypophthalmichthys molitrix*).  
KSNPC staff photo

are filter feeders but have the ability to switch to eating other food items when zooplankton numbers are low. They can grow to over 60 pounds. A fish of this size requires an enormous amount of food resources to survive. They are expected to compete directly with native filter feeding fishes and pose a long-term, perhaps permanent, threat. This threat is also relevant to boaters and fishermen due to the potential of bodily harm resulting from the carps' dangerous leaping activities, as well as causing damage to expensive fishing nets used by commercial fishermen.

These are just a few of the aquatic invaders we have in Kentucky. Others exist and more will likely be reaching the commonwealth in the future due to accidental or intentional releases. As a citizen, it is important to become aware of the threat of these species and to do what you can. Prevention is the best remedy we have to this problem. Once these exotic animals become established, they can persist indefinitely in our state.

If you enjoy keeping fish in aquariums, learn about your pets' native origin. Nearly all fishes bought in pet stores are not native to Kentucky. If they aren't native, make sure they do not get

*Continued on Page 8*

While a dedicated funding source for brownfield redevelopment is still a hope for the future, there have been new developments in terms of brownfield funding. During the last legislative session, a few new and improved tools were added that are applicable to brownfield redevelopment.

Senate Bill 82 helped sharpen the saw, so to speak, of an existing funding source.

- The property owner or a responsible party has provided all legally required notices with respect to the contaminants found at the property.
- The property owner is in compliance with all land use restrictions and does not impede the effectiveness or integrity of any institutional control.
- The property owner complied with any information request or administrative

## New tools for brownfield redevelopment

By Amanda LeFevre  
Division of Compliance Assistance



Governor Ernie Fletcher signs House Bill 549 into law, which provides another source of funding for brownfield redevelopment. Photo courtesy of the Kentucky League of Cities

Tax incentives have been available to entities that undertook a property cleanup under the VERP process. VERP (Voluntary Environmental Remediation Program) is fairly cumbersome, so few people have taken advantage of the incentives that were meant to encourage redevelopment. Senate Bill 82 opened up the incentives to other Environmental and Public Protection Cabinet-approved cleanups of qualified properties. A qualified property means that:

- All releases of hazardous substances, pollutants, contaminants, petroleum or petroleum products on the property occurred prior to the owner's acquisition of the property.
- The property owner made all appropriate inquiries into previous ownership and uses of the property in accordance with generally accepted practices.

subpoena under KRS 224.

- The property owner is not affiliated with any person who is potentially liable for the release of the contamination through direct or indirect family relation, any contractual, corporate or financial relationship, or reorganization of a business that was potentially liable.

For qualified parties, the state and local property tax rates on a remediated property are reduced. For three years following the cleanup, the property will not be subject to local ad valorem property taxes. The state ad valorem property tax rate will be reduced from 31.5 cents to 1.5 cents per \$100 of assessed value.

Qualified parties can also receive up to \$150,000 worth of income tax credits for expenditures made in order to meet the requirements of the cabinet-approved cleanup. The allowable credit for any taxable year is a maximum of 25 percent

of the credit authorized, which may be carried forward for 10 successive years.

Additionally, House Bill 549 unveiled another useful tool for brownfields. Tax increment financing (TIF) uses future gains in taxes to finance the current improvement projects that will create those gains. When a project, such as a road, a school or hazardous waste cleanup, is carried out there is an increase in value of surrounding real estate. These improvements often spark new investment in the area, which creates more taxable property, thus more tax revenues. Those added revenues are dedicated to finance debt issued to pay for the project.

TIF creates funding for distressed areas where redevelopment might otherwise not occur and for projects that are unaffordable for municipalities.

Development areas can be created in blighted, distressed areas if they meet two or more of the following criteria:

- Substantial loss of residential, commercial, or industrial activity or use.
- Forty percent or more of the households are low-income households.
- More than 50 percent of the residential, commercial or industrial structures are deteriorating or have deteriorated.
- Substantial abandonment of residential, commercial or industrial structures.
- Substantial presence of environmentally contaminated land.
- Inadequate public improvements or substantial deterioration in public infrastructure.
- Any combination of factors that substantially impairs or arrests the growth and economic development of the city or county; impedes the provision of adequate housing; impedes the development of commercial or industrial property or adversely affects the public health, safety or general welfare due to the area's present condition and use.

Projects will be approved and administered through the newly created State Tax Increment Financing Commission of the Finance and Administration Cabinet.

In addition, the Kentucky Brownfield Program can perform free environmental assessments to municipalities, nonprofits

*Continued on Page 12*

# EPPC files toxic air pollution regulations

By Elizabeth Robb  
Division for Air Quality

The Division for Air Quality (DAQ) in the Environmental and Public Protection Cabinet (EPPC) has filed regulations that would protect the public from emissions of toxic air pollutants around the state.

“EPPC considers the protection of public health from the effects of environmental pollutants to be a matter of the highest priority,” stated Teresa J. Hill, secretary of the Environmental and Public Protection Cabinet. “This program will fill the gap where U.S. EPA has been slow in fully meeting Clean Air Act mandates regarding air toxics,” she said.

DAQ Director John Lyons said the Kentucky program is designed to identify risks associated with air toxics emissions consistent with protection of human health. The program also will establish clear implementation procedures.

The proposed regulations were developed with extensive public involvement. In August 2004, EPPC established a workgroup of 10 experts in toxicology, environmental protection and risk assessment to assist in the formulation of the air toxics rules. Several meetings of the workgroup, open to the public, have been held during the last two years. In all, nearly 70 different stakeholders have been involved in development of the program.


DAQ filed its regulations with the Legislative Research Commission on May 14, and they were published in the Administrative Register of Kentucky on June 1. A public hearing was held June 29, 2007. 

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## Nuisance Aquatic animals in Kentucky

*Continued from Page 6*

released into the wild. To help get a handle on this problem, Kentucky has recently developed an Aquatic Nuisance Species Task Force (KY-ANSTF). This group of biologists and commercial fishery industry representatives has identified many of the existing and future threats in terms of nuisance species. They have also outlined steps that can be taken to prevent future introductions. A KY-ANSTF Web site is planned for the future, as well as a paper highlighting the issues related to aquatic nuisance species in our state, which species are involved and potential actions that might be taken to minimize problems for our native species.

There is a great deal of information available about aquatic nuisance species, particularly on the World Wide Web. Citizens are encouraged to learn as much as possible to help combat the threats posed to our natural heritage. 

### Nuisance Aquatic Species Web Resources:

- Florida Integrated Science Center of the U.S. Geological Survey, Gainesville, Fla. <http://cars.er.usgs.gov/>
- Aquatic Nuisance Species of the Mississippi River Basin presentation by Jerry Rasmussen of the Mississippi Interstate Cooperative Research Association. Requires Adobe Acrobat Reader <http://wwwaux.cerc.cr.usgs.gov/MICRA/anspaper.pdf>
- Information from the U.S. Environmental Protection Agency on Asian carps <http://www.epa.gov/glnpo/invasive/asiancarp>
- Web site about the Asian clam, a nuisance exotic species <http://www.iisgcp.org/EXOTICSP/Asianclam.htm>

## Brine *Continued from Page 1*

release the brine in a diffuse manner over time to ensure the concentration of chlorides is within acceptable limits.

The brine has until now been stored in an abandoned mine in Buchanan County, Va., but storage space has run out even though the major shaft reaches nearly to sea level. A report posted on the Web site of the Virginia Department of Mines, Minerals and Energy states that the discharge rate of the brine water into the Levisa Fork will represent a 1.5 percent to 2.8 percent increase in the flow rate of the Levisa Fork, although no discharge will occur during low-water-flow periods.

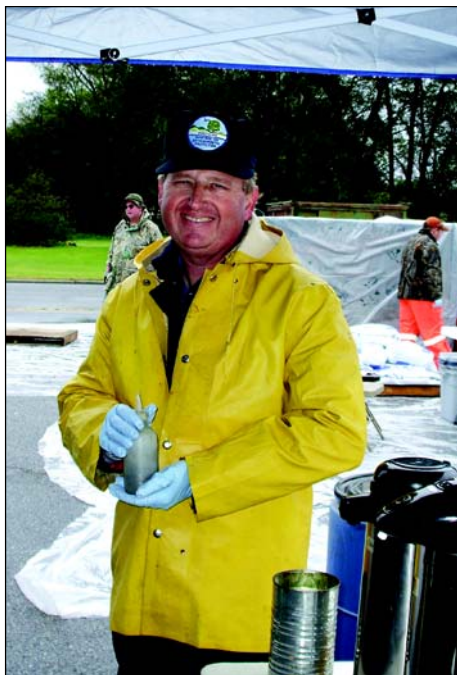
The report also explains the alternative solutions the coal company considered for disposal of the brine. These include reverse osmosis, deep-well injection and recirculation through slurry impoundment and a preparation plant.

Reverse osmosis, also known as electro dialysis, is often used in commercial and residential water filtration. It is a common method of desalinating water. Reverse osmosis is a separation process that uses pressure to force a solvent through a semipermeable membrane that retains the solute on one side and allows the solvent to pass through. The resulting materials, reduced to a semi-dry sludge and crystallized waste, must then be transported to a waste disposal facility.

Deep-well injection is a liquid waste disposal technology that uses injection wells to place treated or untreated liquid waste into geologic formations that have no potential to allow migration of contaminants into potential potable water aquifers.

Recirculation through slurry impoundment and a preparation plant involves reducing the mud and salt water to a watery slurry, separating and collecting the useable elements by evaporation or chemical action and injecting the waste into deep wells or formulating dehydrated pellets for disposal.

# Earth Energy for Kentucky's



**ABOVE:** *Inspector Gary Morgan, of the EPPC's Paducah Regional Office, holds a bottle of elemental mercury collected during the McCracken County event.*

Photo by Kerri Cope

**BELOW:** *EPPC Secretary Teresa J. Hill and David Whitehouse, director of the Division of Parks and Recreation in Boone County, stand beside Gunpowder Creek following the natural area dedication ceremony.* Staff photo

**By Elizabeth Robb**  
Division for Air Quality

**K**entucky's Earth Week 2007 campaign featured a wealth of activities designed to emphasize and promote personal action to benefit the environment. The campaign encouraged Kentuckians to consider the importance of energy in our daily lives. The 37th Earth Day was celebrated across the United States and internationally on Saturday, April 22. In Kentucky, Earth Week is the culmination of a month-long campaign that has been spearheaded each year since 2004 by the Environmental and Public Protection Cabinet (EPPC) under Governor Ernie Fletcher.

The emphasis was on energy – encouraging individuals to take stock of the energy that they use daily, where that energy comes from, and choices that they

can make to conserve energy and benefit the environment.

“The hundreds of choices that we make each day add up to make a big impact on Kentucky's energy future,” said EPPC Secretary Teresa J. Hill. “Choosing a fuel-efficient car, utilizing alternative fuels, purchasing more energy-efficient home products and weatherizing our homes, choosing to recycle, buying local food...each one of us can make choices that can benefit our environment and the sustainability of our energy supply,” she said. “Small changes can add up to make a big difference.”

Earth Week began with what is fast becoming an annual tradition – the raising of the Earth Flag at the Capital Plaza Tower office building in Frankfort.

During the ceremony, Secretary Hill reflected on the importance of energy in our daily lives and the role that energy conservation plays in protecting the environment and human health.

## **Kickoff celebration**

Stan Cave, chief of staff to Governor Ernie Fletcher, formally kicked off Earth Week in Kentucky in a public ceremony at the state's new recycling center in Frankfort. During the kickoff, school and local county government officials received \$1.2 million in grants for the use of “crumb rubber,” a recycled tire product that can be used for playground and athletic surfaces, as well as a mulch.

## **New state natural area in Boone County**

The Kentucky Heritage Land Conservation Fund Board



# Week

## Unbridled Future

awarded the Boone County Fiscal Court \$292,000 for the purchase of land surrounding a portion of Gunpowder Creek. The property was purchased from the Kenton County Airport Board. The acreage is on both sides of Gunpowder Creek and includes approximately three-quarters of a mile of Gunpowder Creek, a significant perennial stream in northern Kentucky.

Development of the property is the responsibility of the Boone County Fiscal Court, which intends to focus on natural resource protection, restoration and enhancement, and to permit public access



where appropriate. Also planned are walking trails and opportunities for passive recreation such as hiking, nature study and picnicking.

### LexMark International joins KY EXCEL

Governor Fletcher presented LexMark International, one of the world's leading makers of printers and related products, with a plaque commemorating its Master level membership with KY EXCEL, an environmental leadership program that encourages citizens, nonprofits and businesses to complete voluntary projects that benefit Kentucky's environment. The ceremony was part of LexMark's day-long Earth Day celebration, which included tree seedling giveaways, a bird of prey show, informative seminars and a hybrid and alternative-fuel car show.

### Toyota dedicates environmental education center

Toyota dedicated its new environmental education center, a walking trail featuring stations that highlight native plants, wildlife and water, on the grounds of the Toyota plant. The environmental education center is open to people of all



ages who would like to learn more about Kentucky's natural environment. The environmental education center was part of Toyota's commitment to KY EXCEL. Toyota Motor Manufacturing Kentucky (TMMK) is a Master level member.

### Mercury collection in McCracken County

The EPPC partnered with the Cabinet for Health and Family Services to offer free mercury collection for residents of McCracken County. Over 109 pounds of mercury were collected.

### Environmental Quality Commission Earth Day awards

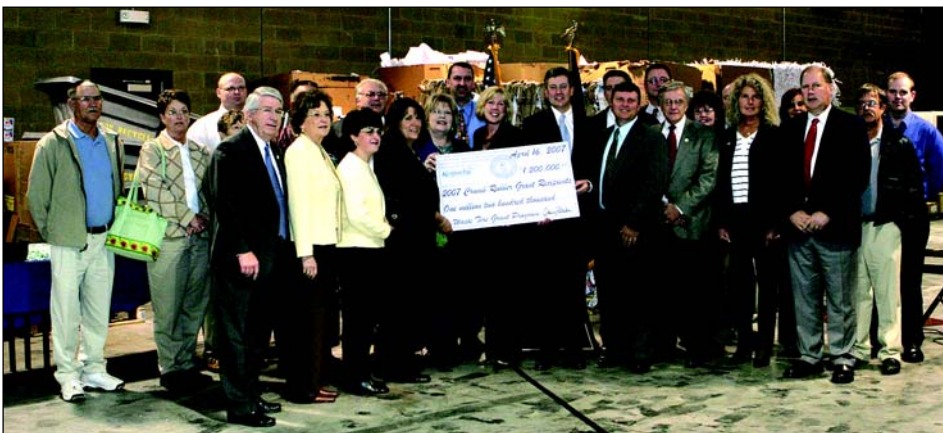
The EQC commended several groups and individuals for their dedication in protecting the environment. Read *Kentuckians recognized for environmental contributions* on Page 20.



**ABOVE:** Steve St. Angelo, president of TMMK, celebrates the new environmental education center with children from the Toyota daycare facility. Photo courtesy of Toyota Motor Manufacturing KY, Inc.

**UPPER LEFT:** Governor Ernie Fletcher stands with Deredk Wallace cradling an eagle from the Southwestern High School's raptor program during the LexMark event.

**LEFT:** Several recipients of the \$1.2 million crumb rubber grant pose with their check. Photos by Creative Services



# Brownfields and bankers

*Workshop provides lenders with assurances of brownfield success*

By Amanda LeFevre  
Division of Compliance Assistance

Nobody ever said that brownfield redevelopment was risk free, and there is no group of people who are more risk adverse than the lending community. So, how do you get skiddish lenders comfortable with the thought of making loans on properties with environmental issues?

The U.S. EPA, in an agreement with ICF International, brought a workshop to Kentucky that helped educate the lending community about brownfield lending. *Brownfields—New Market Opportunities for Lenders* was held in Louisville in May, where approximately 40 attendees, including representatives from local banks, learned that the market for these properties is not as frightening as it used to be.

Historically, brownfields have been a risky business due to liability concerns and the surprises that are often present in these properties. Health concerns and lawsuits can materialize long after a remediation occurs. There is also the problem of getting into a project and discovering more issues than were originally indicated in initial assessments. Just the thought of either of these scenarios would make a loan officer run screaming.

However, the world of brownfields has evolved, and there are many market instruments out there that make redevelopment ventures less of a gamble.

The workshop provided attendees with an overview of the U.S. EPA's brownfield program, including funding opportunities available to states, cities and nonprofit organizations. These funds are important because they can often help leverage other funds to help a project become a reality. Also discussed were liability concerns at the federal and state levels, the new All Appropriate Inquiries Rule and the role of the lender in the redevelopment process.

Bankers also learned of success stories in their own backyards. Mayor David Cartmell, of Maysville, detailed how his small city was able to put together various funding sources to redevelop the former Carnation Milk factory and turn it into a new manufacturing facility that created 75 new jobs in a low-income community.

On the other end of the spectrum, Bill Weyland, a Louisville developer, shared how he was able to complete several large-scale projects, including the Louisville Slugger Museum, the former Snead Manufacturing Building and the Henry Clay Hotel.

The goal at the end of the day was to encourage bankers to take the leap and participate in the brownfield market. This was accomplished by demonstrating that redevelopment can be done in a profitable manner all the while minimizing the risks involved.

Opportunities abound in the state, and by educating those who can provide financing it is hoped that brownfield redevelopment can become a more commonplace activity rather than the exception to the rule.



*Maysville Mayor David Cartmell (left) and Matt Robbins, revitalization coordinator for EPA Region 4, discuss brownfields during a break at the workshop. Cartmell and Robbins were speakers who explained the resources available to assist in brownfield redevelopment and shared examples of projects.* Photo by Herb Petitjean

## Welcome new KY EXCEL members

Since April, 23 new members have joined the KY EXCEL program.

KY EXCEL is a voluntary program open to any individual, organization, community or business that wishes to improve and protect Kentucky's environment in ways that extend beyond Kentucky's environmental requirements.

Call 1-800-926-8111 and learn how you can get involved.

### Master members

U.S. Army Garrison-Fort Knox, Fort Knox  
Angell-Demmel North America, Lebanon  
GE Kentucky Glass Plant, Lexington  
Akebono Brake-Glasgow Plant, Glasgow

### Leader members

Akebono Brake-Springfield Plant,  
Springfield  
North American Stainless, Ghent  
Interplastic Mfg. Co., Thermoset Resins  
Division, Fort Wright  
\*Gallatin Steel Co., Ghent  
River Metals Recycling LLC, Louisville  
River Metals Recycling LLC,  
Fort Mitchell  
River Metals Recycling LLC, Ferguson  
River Metals Recycling LLC, Henderson  
River Metals Recycling LLC, Newport

### Advocate members

Rose Marie and Mike Wilmoth, Lexington  
The Barker Family, Ashland  
Malcolm Pirnie Inc., Columbus  
Eastern Committee on Responsible  
Environmental Stewardship (ECRES),  
Richmond  
Transylvania Environmental Rights and  
Responsibilities Alliance (TERRA),  
Lexington  
Richard Denton, Bowling Green  
Dogpong Farm, Waddy  
Friends of McConnell Springs, Lexington  
Copperhead Environmental  
Consulting Inc., Paint Lick  
Solar Energy Solutions LLC, Georgetown

\*Gallatin Steel Co. was previously a Partner member and has increased its commitment to the environment and environmental management planning to advance to the Leader level.

# Successful partnering with the right tools

By Larry D. Hughes  
Division of Waste Management

In 1999 the Kentucky Division of Waste Management (DWM) entered into a partnership with the U.S. Department of Defense to promote prompt and protective environmental cleanups at military sites.

Projects have included cleanup and transformation of Lexington Bluegrass Army Depot into a thriving business site and the Naval Ordnance Station Louisville into Technology Park of Greater Louisville.

The success of this military/state partnership is based on trust and open communication among team members and a supportive working process. The latter means a supportive process that does not unduly hinder and distract the team with the process itself nor undermine open communications. Trust and open communication among stakeholders is the heart of the partnering approach. This human factor is the vital starting point and continuing factor for success. If teamwork is not developed and sustained by all stakeholders, then little success will be achieved. Holding to one's own interest without considering others leads to failure.

Thus, the best solutions are those arrived at together with all stakeholders' input and concerns clearly considered in the investigation and cleanup process. This is best developed by partnering in which the facility and regulators work together toward a common set of goals. Over the years, this has been the goal developed by the DWM and military partnership.

## New program—performance-based contracts

If the heart of the partnering is trust and open communication, then the actual cleanup process is the body that puts the efforts into motion. The newest program employed by the Army is the performance-based contract (PBC).

Fort Knox and Fort Campbell are currently being cleaned up using PBCs. You can view installation action plans for both facilities, cleanup history and current site status online at <https://aero.apgea.army.mil/piAP/frmHtmlInstallations.do?state=KY>.

The PBC is a way to direct the cleanup contractor by shifting from a performance-driven system to a results-driven system. Rather than the process directing the cleanup, the desired results direct the cleanup process. Simply put, it helps achieve the cleanup goal and leaves "how to do it" up to the expertise of the cleanup team.

PBC is not an isolated new way to hire cleanup contractors, but is based on the natural progression of environmental cleanups over the years. As the science involved with investigations and remedies have improved, environmental cleanups have naturally moved away from process-directed to results-driven approaches. Yet, in order for tools like PBC to achieve success, they still depend upon stakeholder partnerships.

A strong partnership and a supportive working process combine two solid strategies for environmental cleanup. Properly used, these can avoid two common pitfalls that stagnate cleanups—stakeholders working against each others' interests and becoming bogged down in the cleanup process.

Over the years, DWM and the military have developed these strategies to help achieve the original mission of prompt and protective environmental cleanups in Kentucky and perhaps serve as a model for future nonfederal cleanup efforts.

## Crumb rubber mulch surfaces playgrounds



*Emily Smith and Zoe Walker play on the monkey bars at the Anderson County Early Childhood Center. Crumb rubber mulch was applied to the playground under a 2005 state grant from the Waste Tire Trust Fund administered by the Division of Waste Management. Information about the 2007 round of funding—grants totaling \$1.2 million—and the program is available by going online to [www.waste.ky.gov](http://www.waste.ky.gov) or calling the division at 502-564-6716.*

Photo by Saralyn Ledford, Anderson County ECC

## New tools for brownfield redevelopment

*Continued from Page 7*

and quasi governmental agencies that help determine what environmental issues, if any, are present at a property.

The Kentucky Infrastructure Authority administers the Clean Water State Revolving Loan Fund. Eligibility necessitates that the money be used to address brownfields that have a current or potential impact on surface or groundwater. Visit <http://www.water.ky.gov/publicassistance/funding/cwsrf> for information. Other resources may be available for the public and private sectors and individual brownfield redevelopers depending on the planned end use of the property. Call 800-926-8111 to determine if your project is eligible for these resources.

# Teams exhibit skill, lore and originality at Kentucky Envirothon state finals

By Allison Fleck  
Division of Water

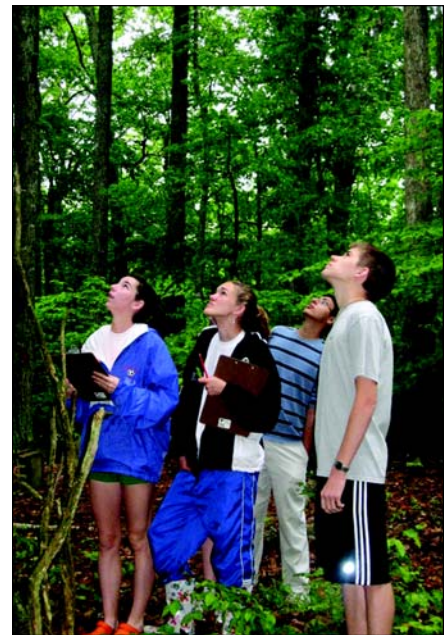
*The Oldham County High School FFA team won top honors at the 2007 Kentucky Envirothon state finals in May at the Kentucky Leadership Center in Jabez. The Fayette County 4-H Environment Club took second place and Model High School in Richmond finished third.*



Ten five-member teams arrived at the state finals following impressive regional performances held in western and eastern Kentucky, which narrowed the field from 38 teams.

This is the ninth year for the Kentucky Envirothon competition, which is open to young people in grades nine through 12. The program is designed to equip them with the knowledge and skills needed to apply the basic principles and practices of resource management and ecology to complex environmental issues. There is also a heavy emphasis on developing communication skills.

The field portion of the contest tested the students' knowledge of wildlife, forestry, aquatics and soil. A mystery



question on energy also tested their quick-response capabilities.

At the wildlife station, the students were tested on their understanding and application of wildlife management techniques as well as wildlife identification.

At the forestry site, students were quizzed on tree, leaf and bark identification, disease recognition and forest conservation.

The aquatics test included identification of insects and waterborne organisms, protection of groundwater and

*Continued on Page 15*



**TOP:** Students with Model Laboratory High School in Richmond gaze at the top branches of a tree to identify its species for the forestry test. **ABOVE LEFT:** First-place winners Oldham County High School FFA pose with a framed wildlife print provided by the Department of Fish and Wildlife Resources.

**LEFT:** Members of Apollo High School FFA team, from Owensboro, take a close look at samples of insects at the aquatics station. Photos by Allison Fleck



# Agriculture and pollution

*Conservation programs help farmers curb their contribution to water pollution*

**By Curtis Kirk**  
**Division of Conservation**

**A**griculture has been tagged as the leading cause of water pollution in the state, according to a report recently released by the Kentucky Division of Water (DOW). It is considered a nonpoint source and is very difficult to monitor and control since it comes from many sources. Farmers own or operate the largest majority of land area with the most miles of streams, so it is likely that they contribute significantly to nonpoint source pollution. Agriculture often gets lumped in with other nonpoint sources such as wildlife waste, failing and improper uses of septic systems and straight pipes that are hard to detect or monitor, further complicating the process of determining the exact contribution that agriculture has on the environment.

Many of Kentucky's farmers recognize the part they play in contributing to water pollution and the impact they have on water quality. Over time, farmers actively engaging in protective measures and making environmentally wise choices will improve the quality of Kentucky's water.

Since October 2001 Kentucky's Agriculture Water Quality Act has required farmers to develop and implement agriculture water quality plans for their farms. More than 60,500 landowners now have water quality plans according to the Division of Conservation, which tracks certifications filed by landowners.

Individual water quality plans are developed through choices of best management practices (BMPs) designed and approved in the state Water Quality Plan. They are designed to prevent runoff from sediment, nutrients, pesticides and other sources of pollution from activities on a farming or silviculture operation. However, implementation of these BMPs can be costly and requires intensive technical assistance to meet certain standards and specifications, making them prohibitive to many farmers.

"It has been our observation that the

majority of farmers want to and are willing to do the right thing considering they are given workable and affordable solutions," said Steve Coleman, director of the Division of Conservation. To assist landowners, the Division of Conservation administers several programs through Kentucky's 121 conservation districts to make technical and financial assistance available.

The Kentucky Soil Erosion and Water Quality Cost Share Program provides cost share assistance to farmers to help in the installation of BMPs. Top priority is given to those farmers dealing with animal waste issues and watersheds where water quality impairment already exists. According to Coleman, the cost share program has been very successful in its short history, but the demand is still much greater than the funds available. Nearly 21,500 farmers have applied for cost share assistance to install BMPs at a projected cost of \$214 million. The Kentucky Soil and Water Conservation Commission approved 7,725 of these applications, and the division disbursed \$82 million to landowners, fully utilizing all available cost share funds. It also provides financial assistance to correct

water quality problems identified by the DOW if a corrective measures plan has been developed and approved.

The Division of Conservation is also involved in other programs to help farmers prevent nonpoint source pollution:

- The Conservation Reserve Enhancement Program is a 10-year project with a \$110 million commitment to protect environmentally sensitive areas in several counties near and around the Mammoth Cave National Park. It decreases erosion, restores wildlife habitat and protects surface and groundwaters. It encourages conservation practices and provides incentives and support to landowners. So far, 539 contracts on 10,437 acres have been awarded, with a total payout to landowners over the life of the contract equaling \$20.6 million.

- The 319 Nonpoint Source Pollution Control Program provides funds to local farmers and contractors to reduce nonpoint source pollution, a majority of which is spent on BMPs and demonstration projects on local farmlands.

- Conservation district technical assistance and office support funds (Direct Aid) make it possible for farmers to access federal and state programs at the local

*Continued on Page 15*

*A Barren County farmer uses an animal waste system and best management practices to manage the waste from his dairy, keeping the waste from streams and creeks.*

Photo by the Division of Conservation



# Teams exhibit skill, lore and originality at Kentucky Envirothon state finals

*Continued from Page 13*

surface water and factors contributing to water pollution.

Despite a heavy downpour that made soil identification difficult, students huddled beneath a tent to identify soil types by appearance and texture.

“Looks like mud to me,” joked Jackson County High School FFA team member Chris Gay as he returned from the soil pit, his boots encased in heavy clay. “Hey, so does this one!”

This was Gay’s second year competing in the Kentucky Envirothon finals.

“This is a great opportunity to go up against other teams and meet new people who have similar interests,” he said. “Yeah, it’s competitive, but like, we helped Apollo High School change their tire yesterday.”

“Hey, I could have done it myself, but they were nice enough to help,” responded Andrew Austin, an Apollo team member.

A more serious tone pervaded the second component of the competition, which involved complex problem-solving and oral presentation.

The focus of this year’s oral competition was energy and the potential of biomass to create renewable fuels that can replace fossil fuels. The teams were asked to design a plan of action for Kentucky that would lead to a market transformation

resulting in 25 percent of Kentucky’s transportation fuel needs being supplied by biobased fuels by the year 2025.

Each team was given 15 minutes to prepare a 10-minute presentation that addressed a complex set of issues, including identification of key players, national security, economic and health factors, environmental concerns and sustainability. The sophistication and insight of their responses indicated a level of understanding and preparation that made scoring the teams a challenge, said Link Shumaker Jr., a biodiesel research assistant at the University of Kentucky who helped judge the presentations.

“These kids are going to be big players in the future of Kentucky’s energy economy,” he said. “They are sharp, and they get it.”

Steve Coleman, director of the Division of Conservation and Kentucky Envirothon program director, said he is impressed every year with the caliber of students who participate in Envirothon – from the school level, through regionals and to the state finals.

“When I see these kids, it gives me great hope for the future,” he said. “Not just the level of knowledge but the level of cooperation. They represent a broad spectrum of backgrounds and experience.”

## **Kentucky Envirothon sponsors:**

Kentucky Association of Conservation Districts  
Kentucky Farm Bureau  
Kentucky Department of Agriculture  
Kentucky Department of Fish and Wildlife Resources  
Kentucky Association of Conservation Districts’ Auxiliary  
Kentucky Environmental Education Council  
Natural Resource Conservation Service  
Trigg and Madison county conservation districts

## **Other agencies assisting:**

Kentucky National Energy Education Development Project  
Eastern Kentucky University  
U.S. Forestry Service  
Kentucky State Nature Preserves Commission  
Kentucky Division of Forestry  
Kentucky Division of Conservation  
Kentucky Division of Water

Paulette Akers, a Division of Water biologist who has been involved with the program for several years, has even higher hopes for Kentucky Envirothon participants.

“I believe if we got all these young people in one room, we could solve all the problems of the world,” she said. “They are articulate, and they have wonderfully innovative, forward-thinking ideas.”

All the members of the first three finishing teams received backpacks provided by Kentucky Farm Bureau and a \$50 check. Each team received a framed wildlife print provided by the Kentucky Department of Fish and Wildlife Resources. The teacher sponsors of the three teams also received a monetary donation to their programs.

Members of the first-place Oldham County team included Zach Stucker, Corey Hatfield, Daniel Tew, West Korthaus and Brett Hatfield. As part of their award, the team and two sponsors will be provided travel and accommodations to the National Canon Envirothon competition at Hobart and William Smith Colleges in Geneva, N.Y., in late July.

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## **Agriculture and pollution**

*Continued from Page 5*

level. Federal Direct Grants and other funding sources provide base-level support to districts and have assisted in hiring 25 technical service providers through the federal Technical Service Provider Program under the Farm Bill.

- The Equipment Revolving Fund provides funding to purchase heavy and specialized equipment used to install conservation and best management practices to prevent erosion and protect water quality.
- The Kentucky Forest Land Enhancement Program offers cost share reimbursement to landowners for preapproved conservation practices for their forest lands.
- The Landowner Incentive Program provides grants to landowners to create or improve wildlife habitat.

Today, farmers are more diligent in working to protect Kentucky’s water. With help from local conservation districts and state and federal agencies, farmers implementing best management practices will contribute greatly to an improved report for the future of Kentucky’s water.

If you would like more information on the Division of Conservation or conservation districts visit [www.conservation.ky.gov](http://www.conservation.ky.gov).



# Forests for Kentucky's future

By Linda Potter

Department for Natural Resources

Global climate change continues to be a hot issue on federal, state and local levels. Politicians and celebrities seldom miss an opportunity to endorse efforts to limit greenhouse gases that contribute to the warming of our planet. Individuals are finally realizing that they have the ability and the responsibility to actively participate. Unlike those who have recently embraced this issue, the Department for Natural Resources' Paul Rothman and University of Kentucky professor Don Graves have spent a decade developing a reforestation initiative that is both environmentally beneficial and economically viable.

Increasingly, mining companies and landowners are choosing reforestation as their post mining land use option for reclamation. Forests of high value native hardwoods are being planted across Kentucky on old strip mine lands and will provide communities with a host of aesthetic and economic benefits. The trees function as carbon sequestration sites and disturbed lands become nurseries for a new economy.

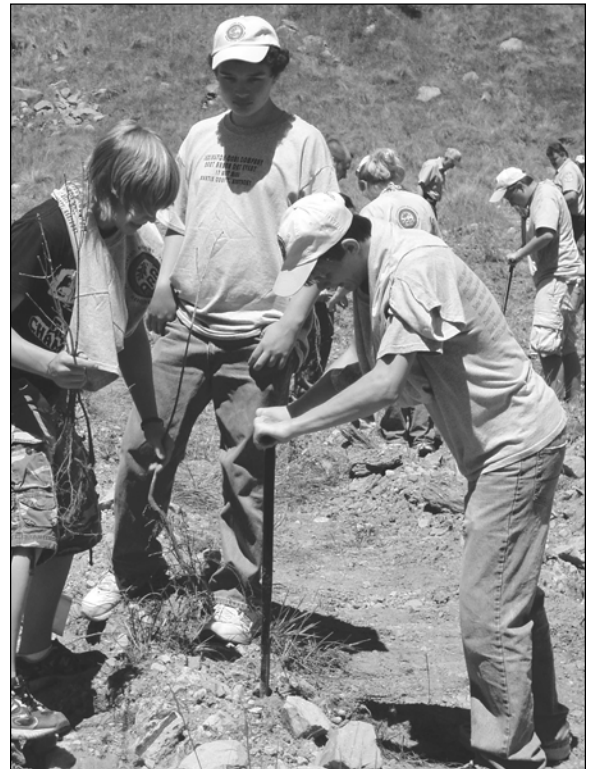
For every ton of wood grown in a forest, 1.5 tons of carbon dioxide (CO<sub>2</sub>) are removed from the air and replaced with 1.1 tons of oxygen. In fact, a single tree can absorb more than 10 tons of CO<sub>2</sub> annually. To date, nearly 2 million seedlings have been planted via grants from the U.S. Forest Service and the U.S. Department of Energy on surface mines throughout the state's eastern and western Kentucky coal fields.

The most recent event took place on May 8 in Martin County. A glorious day greeted students from Inez and Warfield middle schools as they made their way up the mountain at the 17 West Mining Complex for an Arbor Day celebration hosted by Dan Geiger of Lexington Coal Company LLC.

Co-sponsors of the event include the Department for Natural Resources, the Appalachian Regional Reforestation Initiative, the University of Kentucky and the U.S. Office of Surface Mining. Assisted by Kentucky foresters and

American Chestnut Foundation's Mike French, the students planted nearly 300 oak and American chestnut seedlings at the site. Their enthusiasm and excitement mirrored the beauty of the day. They could easily have planted an entire forest! These young arborists will be the leaders of tomorrow with an image of this day and reforestation forever etched in their minds.

*Inez and Warfield  
middle school students  
plant chestnut seedlings.  
Photo by Linda Potter*



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## Shaker prosperity traced to perennial springs

*Continued from Page 5*

Karst terranes are characterized by subsurface conduits formed by the dissolution of soluble rocks, such as limestone and dolostone. Features of a karst landscape may include sinkholes, springs, caves and stream swallets, which are the points at which surface drainage is diverted underground. The study-site springs were monitored with passive dye receptors utilizing activated carbon that could be analyzed for the presence or absence of the dyes.

By determining the connections between dye injection points and study-site springs, Blair and Ray delineated the expansive area drained by the two targeted springs as 12.6 square miles. Interpreted groundwater flow-paths ranged from 350 to 10,350 feet with flow velocities from 40 to greater than 1,166 feet per day.

"Just as we had anticipated based on field observations, two of our dye injections were recovered at both the Fulling Mill Spring and Long Box Spring, thus proving that they are a perennial distributary," said Blair. "The groundwater recharge from multiple sources coalesces to a single trunk conduit that forks into distributary conduits just before discharging to the land surface."

Blair said other dye traces went to different springs, which helped them determine the groundwater basin boundary for the Fulling Mill Spring distributary. Hydro-geologic survey and groundwater tracer testing helped to identify the drainage area for a total of five springs in and around Shaker Village.

"While the historical significance of groundwater use by the Shakers is interesting, it is important to note that many of the study-site springs are still used by private landowners for domestic and livestock water supplies," said Blair. "Information gained from this and similar projects is vital for the protection of groundwater resources."

The entire hydro-geological report on the springs can be found at <http://www.water.ky.gov/gw/monitoring/gengwreports/>. E-mail copies may be obtained by contacting Rob.Blair@ky.gov.

## In the spotlight: Kentucky's rare species and communities

### Fraser's Sedge (*Cymophyllus fraserianus*)

*Kentucky State Nature Preserves Commission Status:*  
Endangered.

*General Description:* A perennial herb with strap-shaped, thick, flat blades.

*Habitat:* Rich mountain woods, cove forests and along streams at the base of mountain slopes.

*Flowering Period:* Early May to late June.

*Range:* Generally Appalachian states with Kentucky at the western and northern extreme of the range.

*Reasons for Listing:* Very narrow range and few known populations.

*Photo by Heather Housman, KSNPC*



### Rare Cane Borer Moth (*Papaipema undescribed species #5*)

*State Status:* Threatened.

*General Description:* Adult moths are light brown with a few small, white spots typical of *Papaipema* species.

*Habitat:* Cane breaks in extreme western Kentucky.

*Larval Foodplant:* Giant cane (*Arundinaria gigantea*).

*Flight Season:* Mid-October.

*Range:* Isolated populations in Kentucky, Mississippi, Missouri and Tennessee.

*Reasons for Listing:* Globally rare with isolated populations in a limited geographic area. In Kentucky, it is known only from a handful of sites in extreme western Kentucky.

*Photo by Ellis Lauder milk, KSNPC*



### Shawnee Hills Sandstone Glade

*Kentucky State Nature Preserves Commission Status:*  
Endangered.

*General Description:* This is a small community (up to a few acres in size) on level or gently sloping terrain with usually a south to west facing aspect. This community is extremely dry and remains mostly open due to droughty, thin soils and exposed sandstone bedrock. Large colonies of lichens and mosses dominate the community, but pockets or depressions in the bedrock where soil can develop support prairie grasses such as little bluestem and broomsedge. These pockets can also harbor forbs such as Willdenow's rushfoil, pinweed, rough buttonweed and narrowleaf pinweed. Due to such droughty conditions, trees and shrubs such as red cedar, Virginia pine and redbud struggle to grow and often are gnarly and stunted.

*Range:* This community is restricted to the Shawnee Hills physiographic region of Kentucky. This region extends into Indiana and Illinois where this natural community can also be found.

*Reasons for Listing:* This community is small, rare and restricted in range.

*Photo by Martina Hines, KSNPC*





# no- discharge zone

New designation at Dale Hollow Lake makes water quality safer for all.

By Allison Fleck  
Division of Water

**K**entucky has taken an extra step toward protecting sensitive waterways by working with the U.S. Environmental Protection Agency (EPA) to designate Dale Hollow Lake a no-discharge zone. The reclassification prohibits the discharge of all boat sewage, both treated and untreated, into its waters.

The lake joins 16 other lakes in Kentucky with the no-discharge designation. The only remaining discharge waters in the commonwealth are Lake Barkley, Lake Cumberland, Kentucky Lake and navigable rivers.

The lake's previous designation as a discharge lake allowed the disposal of



vessel sewage that had been chemically and mechanically treated by a marine sanitation device that meets Coast Guard standards. On no-discharge waters, watercraft with toilets must have holding tanks that can be pumped out at pumpout stations located at most marinas.

The no-discharge designation culminates a three-year cooperative effort by Kentucky and Tennessee and the U.S. Army Corps of Engineers. The effort was strongly supported by local marina operators and citizen groups.

"This designation of Dale Hollow Lake as a no-discharge zone is in the best interests of everyone," said Teresa J. Hill, secretary of the Environmental and Public Protection Cabinet. "The water quality will be safer for swimming, fishing and boating as well as for treatment by drinking water plants."


Sewage carries disease that is harmful

*Dale Hollow Lake encompasses more than 27,000 acres of water that provide unsurpassed opportunities for boating, diving, fishing and swimming.* Photos provided by the Department of Parks <http://parks.ky.gov/>

to people, aquatic plants and animals.

Hill said the existence of adequate sewage pumpout stations was critical to achieving the federal no-discharge zone. In its review of the state's application, EPA found 10 existing pumpout facilities on the Tennessee side of the lake and five on the Kentucky side.

All 15 pumpout facilities either discharge into state-approved and regulated septic tanks or state-approved on-site waste treatment plants, or in some instances the waste is collected into a large holding tank for transport to a sewage treatment plant. Thus, all vessel sewage will be treated to meet existing standards for secondary treatment.

The Dale Hollow dam and reservoir were completed by the U.S. Army Corps of Engineers in 1943, making it the oldest artificial lake in Kentucky. The project consists of 27,700 acres of water and 24,842 acres of surrounding land. The Kentucky portion lies in Cumberland and Clinton counties. The dam, hydroelectric power plant and reservoir are operated by the Nashville District 4 of the Corps. 

# Upcoming conferences

## Conference tackles sustainability issues in the Ohio River Valley

By Amanda LeFevre  
Division of Compliance Assistance

Seems like everywhere you go these days there are signs that people and companies are beginning to embrace the idea of green buildings, smart growth and sustainability.

In Kentucky we are also quickly realizing the importance of sustainable living practices. The tendency to sprawl out to cheap, undeveloped green space has created vacant urban centers in cities across the state and has put pressure on areas like the Bluegrass region. Those vacant areas suffer from environmental issues, safety concerns and poverty.

This fall, Kentucky is hosting a conference that will focus on creating more environmentally, socially and economically vibrant places through the



redevelopment of such areas.

A three-day conference, scheduled for Oct. 1-3, 2007, in Louisville, will cover a wide range of topics related to sustainability and redevelopment. The conference will begin with a tour of sites in the Greater Louisville area and Southern Indiana to see first hand some of the redevelopment potential and challenges facing urban and rural segments of the region.

On day two, attendees can hear from nationally recognized speakers regarding

successful redevelopment strategies, collaboration for better results and the benefits sustainable redevelopment can have upon storm water systems, air quality and public health.

On the final day, attendees will apply lessons they learned from the first two days. Sessions will involve interactive design charrettes in which participants take their new knowledge and apply it to the sites that were visited during the conference. The result will be redevelopment plans for problem properties around the area. Concluding sessions will feature methods for overcoming barriers, tools to assist communities and the economics of sustainable redevelopment practices. Participants will also have a chance to participate in a public health roundtable on the to-be-released Public Health and Brownfield Community Training Program.

The conference is still in its planning phases. Watch the Kentucky Brownfield Program Web site at [www.dca.ky.gov/brownfields](http://www.dca.ky.gov/brownfields) for more details or call Amanda LeFevre at 800-926-8111. ❖

## Kentucky to host Southeast States Asbestos Conference

By Elizabeth Robb  
Division for Air Quality

This fall, federal, state and local officials will converge in Louisville for the 19th annual EPA Southeastern States Asbestos Conference (SESAC). Officials from Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi and Florida will focus on technical, enforcement, inspection and legal issues surrounding asbestos management.

Asbestos is a group of naturally occurring, fibrous, silicate minerals that are mined for use in a number of materials - thermal and acoustic insulation, fire-proofing, garden products and many more commonly used items. The microscopic fibers contained in asbestos products are a concern for human health because they can become airborne and inhaled when products containing asbestos are damaged or disturbed. When inhaled, the fibers

become lodged in the lungs, where they can cause significant health problems that generally don't appear for decades.

Asbestos is regulated at the state and federal level by several rules designed to protect public health, including the Asbestos Hazard Emergency Response Act (AHERA), the National Emissions Standards for Hazardous Air Pollutants and the Asbestos School Hazard Abatement Reauthorization Act. In Kentucky, asbestos professionals, companies and contractors are required to undergo training and maintain certification with the commonwealth. All public and private schools in Kentucky are required by AHERA to submit asbestos management plans and periodic updates.

This year, Kentucky hosts the conference for the first time since 1994, with the Division for Air Quality leading the organizational efforts.

"The division is pleased to host this

year's SESAC conference," stated John Lyons, the division director. "Our staff is working hard to create a memorable event for attendees."

Louisville's Brown Hotel will be the location for the SESAC conference, with more than 100 representatives from every southeastern state and numerous cities throughout the region attending.

"Every year, this is a top-notch conference," said Bruce Cassidy, SESAC co-chair and asbestos management plan reviewer for the Kentucky Division for Air Quality. "Professionals who have been in the field for 30 years are able to share the breadth and depth of their knowledge."

John Sikes (University of Alabama), Lud Hoffman (Alabama) and Parker Moore (Kentucky) will speak at the conference. Together, they represent more than 80 years of experience in asbestos regulation and management. The conference is scheduled for Oct. 28-Nov. 2, 2007. ❖

# Awards

## Kentuckians recognized for environmental contributions

To celebrate the 37th anniversary of Earth Day, the Environmental Quality Commission (EQC) recognized several groups and individuals from across Kentucky for their environmental contributions.

“It’s time for us, as individuals, to step up to the plate and to reduce our impact on the environment,” said Teresa J. Hill, secretary of the Environmental and Public Protection Cabinet, during the ceremony. “Each recipient has taken the opportunity, some for as many as 35 to 40 years, to inspire and to teach others the importance of protecting and enhancing our environment.”

The Earth Day award recipients are:

- **Doug Keaton and the E-3 Team**—for their innovative efforts in energy efficiency public awareness.
- **Scott Shupe**—for providing outstanding environmental education programs to audiences across Kentucky for more than 35 years.
- **Rich Detzel**—for his “Windows into the Wild” environmental education program.
- **Tom Biebighauser**—for his leadership in restoration of wetland habitats across Kentucky.
- **James Rice**—for his lifelong commitment to environmental cleanup efforts in Boone County.
- **Robert Lape**—for his supervision of the design and construction of schools that serve as models for environmental stewardship.
- **Andre Barrie**—for his recycling school project that initiated a countywide recycling program in Nelson County.
- **Stephen Main and the Dry Ridge Wal-Mart**—for outstanding recycling, energy efficiency and community cleanup efforts.
- **Leslie Cole**—Public Service Award—for serving the citizens and environment of the commonwealth during her 20 years as executive director of the EQC.
- **Winifred Hepler**—Lifetime Achievement Award—for her tireless efforts as an advocate for the environment, instrumental in recycling efforts, watershed protection and public outreach in the Louisville area for the past 40+ years.



**TOP:** EQC Vice Chairman Gordon Garner presents Winnie Hepler with the Lifetime Achievement Award. **ABOVE:** EQC Chairman Scott Smith stands with Leslie Cole and her children during the awards ceremony where she received the Public Service Award.

Photos by Creative Services

## Save the date

The Governor’s Conference on the Environment will convene on Oct. 1-2, 2007, at the Lexington Convention Center. This year’s theme is energy, which coincides with the Environmental and Public Protection Cabinet’s theme for Earth Week earlier this spring.

Additional information will be available later this summer on the conference Web site at <http://www.eppc.ky.gov/events/govconference/>

Energy  for  
Kentucky's Unbridled Future

# More Kentucky businesses eligible for Air Quality Stewardship Awards

By Rose Marie Wilmoth  
Division of Compliance Assistance

Eligibility criteria for the Air Quality Stewardship Awards has recently been changed. Any Kentucky business that has taken significant action at its facility to minimize the impact of its operations on air quality and has less than 100 employees at the facility is now eligible for the award, even if they are part of a larger corporate structure.

Changing the eligibility criteria expands the number of businesses that are eligible to receive the award. If you are aware of a business that has exceeded air quality requirements, now is the time to nominate it for this unique award.

The annual awards acknowledge outstanding performance in pollution prevention, reducing emissions or community air quality leadership.

This is the 10th year the Air Quality Small Business Compliance Advisory Panel has offered the awards.

SEMICON Associates, of Lexington, was last year's award winner. The company manufactures dispenser cathodes, which serve as a power source for high-frequency microwave power tubes. It had been using perchloroethylene as a cutting lubricant, which is a hazardous air pollutant. But after four years of research, SEMICON's company management voluntarily



switched to a lubricant that was less of a hazard to the environment. No federal or state regulations or laws required SEMICON to make the changes.

Individuals, businesses and organizations may nominate themselves or others for these awards. A committee of advisory panel members will evaluate the nominations and select a winner(s).

You may call 1-800-926-8111 to request nomination forms or they can be downloaded at <http://www.dca.ky.gov/complianceassistance/smallbusinessairquality/Stewardship+Award.htm>

Nominations must be received by the Division of Compliance Assistance, Department for Environmental Protection, 300 Fair Oaks, Frankfort, KY 40601 no later than Aug. 22, 2007.



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## Environmental and Public Protection Cabinet

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