

# MDE Environment

Maryland Department of the Environment

March 1999

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## Catching Transportation Violations with Trashnet



by Quentin Banks

Last month's Trashnet, a multi-state operation to curb the unsafe transportation of garbage and debris to landfills throughout the

region, proved to be a success as approximately 650 trucks were found to have 759 violations of applicable Maryland transportation safety regulations. The operation also provided much needed insight into the intricacies of the regional transportation of waste into and through Maryland.

Enforcement numbers show that of the trucks stopped in Maryland, 87 were placed out-of-service for being overweight, having faulty brakes or having unsecured loads and 25 drivers were taken out of service for license or logbook violations. The trucks-out-of-service number is 13 percent of the total stopped. The regional operation,

which was the first of its kind in the nation, was conducted at 45 sites in Maryland, New York, New Jersey, Pennsylvania, Delaware, Ohio, West Virginia, Virginia and Washington D.C. Participants inspected more than 3,800 trucks carrying solid waste. The inspections focused on truck safety and environmental protection. West Virginia is still compiling its data.

Besides the number of vehicles stopped and inspected, officials also are talking about trends observed during the operation. Many of the trucks are traveling through Delaware on Route 301 and traveling through

*(continued on page 2)*

## Efforts to Control Heavy Duty Diesel Vehicle Emissions

by Bob Maddox

There is nothing worse than being stuck behind a diesel powered vehicle in a summer traffic jam. The billowy black smoke being emitted from a truck or bus tailpipe is not only annoying, it poses a threat to both health and environment. Yet, thanks to improved engine design and proposed environmental regulatory programs to limit the emissions, the future holds tighter controls on diesel vehicles and cleaner air.

Many heavy-duty vehicles, e. g., transit buses and tractor-trailer trucks, are powered by diesel fuel and are a major source of nitrogen oxides (NOx) and fine particulate matter. NOx is a precursor to ground-level ozone and also contributes to nutrient deposition to the Chesapeake Bay. Fine particulate matter, known as PM2.5 (2.5 microns or less in diameter), can be inhaled and cause damaged lung tissue, impaired breathing and aggravation of existing respiratory

and cardiovascular illnesses.

"The dark exhaust you see coming from buses and trucks is really unburned fuel," according to Marcia Ways of the Maryland Department of the Environment's Mobile Source Control Program. "The smoke is a high concentration of fine particulate matter."

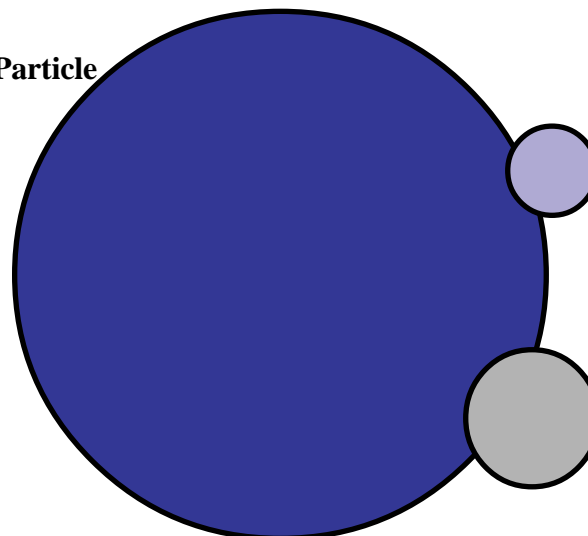
Diesel exhaust also contains toxic

chemicals resulting from incomplete combustion of diesel fuel. The California Air Resources Board (CARB) identified several chemicals in diesel exhaust as toxic pollutants. The U.S. Environmental Protection Agency (EPA) is doing its own assessment of diesel exhaust and is expected to come to the same conclusion as CARB.

*(continued on page 3)*

### Relative Size of PM2.5

Beach Sand Particle



Fine Particle PM2.5

Flour Particle

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- Parris N. Glendening**, Governor  
**Kathleen Kennedy Townsend**,  
 Lieutenant Governor  
**Jane T. Nishida**,  
 Secretary of Environment  
**Arthur Ray**, Deputy Secretary  
**Bob Hoyt**, Assistant Secretary  
**Susan E. Woods**,  
 Director of Communications  
**Christine F. Plummer**, Managing Editor  
**Editorial Board Members**  
**Sue Battle**, Director,  
 Environmental Permits Service Center  
**Robert Maddox**, Public Participation  
 Coordinator, Air & Radiation Management  
**Jim George**, Section Head, Technical &  
 Regulatory Services Administration  
**Joe Herb**, Graphic Artist, Technical &  
 Regulatory Services Administration  
**Don Mauldin**, Administrative Specialist,  
 Waste Management Administration  
**Barbara Rodgers**, Division Chief,  
 Administrative & Employee Services  
**Pat Coll**, Management Associate,  
 Administrative & Employee Services

#### Contributing Writers:

- |                       |                        |
|-----------------------|------------------------|
| Shirley Garner, OC    | Carolyn Kuciara, TARSA |
| Fran Stierstorfer, OC | Pat Coll, AESA         |
| Suzanne Bond, OC      | Jim George, TARSA      |
| Kathy Bishop, ECU     | Janet Hamilton, WMA    |
| Quentin Banks, OC     | Georgia Allen, AESA    |
| Bob Maddox, ARMA      | Laura Armstrong, EPSC  |
| George Beston, WMA    | Chris Dollar, CBF      |
| Chris Bivens, OS      | Lawrence Robinson, WMA |
| Rick Grills, WAS      | John Mitchell, OS      |
| Carlotta Carr, AESA   | Mike Gallagher, AESA   |

#### For the Record Section Meetings and Hearings Calendar

**Joane Mueller**, Production Coord.

#### Contributors:

- |                        |                      |
|------------------------|----------------------|
| Dorothy Guy, ARMA      | Ty Stinson, WMA      |
| Gail Castleman, WAS    | Ta-shon Yu, WMA      |
| Lorrie Del Pizzo, EPSC | Bob Harris, WMA      |
| Sheila Franklin, WMA   | Rick Trickett, WMA   |
| Edwina Goines, ARMA    | Jeanette Wolfe, ARMA |
| Melody Thrower, WMA    |                      |
| Lois McNamara, WMA     |                      |

#### Enforcement & Compliance Notes

**Bernard Penner**, Office of the Secretary

#### Contributors:

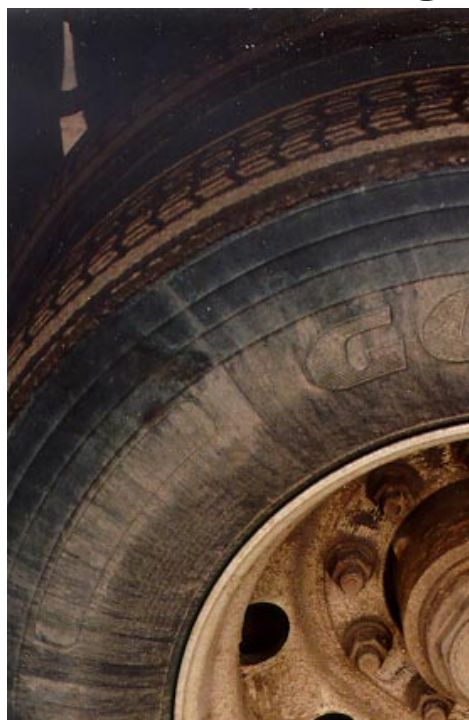
- Angelo Bianca, ARMA  
 Frank Courtright, ARMA  
 Frank Whitehead, ARMA  
 Regina Rochez, WAS  
 Jack Bowen, WMA

#### Send comments or inquiries to:

MDEnvironment  
 Christine Plummer, Managing Editor  
 2500 Broening Highway  
 Baltimore MD 21224  
 cplummer@mde.state.md.us  
 (410) 631-3012

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## Checking the Trash



**Overweight trucks constitute a threat to infrastructure such as roads, sewer pipes and water mains.**

Maryland's Eastern Shore to the Chesapeake Bay Bridge to apparently avoid the Interstate 95 corridor with its numerous inspection sites and weighing stations. At a Route 301 inspection site located two miles south of the Delaware line, five trucks were placed out of service on the first day. One truck, which was carrying construction and demolition debris to the PST Reclamation Landfill in Anne Arundel County, was 28,000 pounds overweight. The other four overloaded trucks were loaded with municipal waste destined for landfills in Virginia.

The majority of the 18 Maryland inspection sites operated from 2 a.m. to 10 a.m. This was arranged so that the waste trucks, which travel at night

from waste pickup points in New York and New Jersey to Virginia, would be intercepted. These trucks arrive at the landfills in Virginia at the crack of dawn when they open and then return north for another trash load pickup.

One of the most heated subjects was the issue of safety and accidents on roads involving trash haulers. A trash truck from New Jersey overturned on the second day of the operation, after pulling onto a soft shoulder of the Capital Beltway near the Saint Barnabas Road exit in Prince George's County. While the truck was not overweight, the driver picked a spot where the shoulder gave way under the weight of his truck, which rolled on its side. When attempts were made to pull the truck up, the trailer ruptured and tons of trash fell out on the ground. The trucking company had to contract a local firm to clean up the trash and transport it to a local landfill.

While there is an ongoing debate about the importation of trash, the issue for Maryland is that the state is the principal transportation route to the landfills of Virginia. Overweight waste trucks constitute a threat to infrastructure (roads, water mains, sewer pipes, etc.) of many Maryland communities as trucks seek alternative routes to Virginia's landfills. Accidents involving waste vehicles constitute a threat to Maryland's environment. This situation is expected to become worse as New York City plans to export approximately 13,000 tons per day of trash when its Fresh Kill Landfill closes in 2001. The states in the Mid-Atlantic

region will be meeting with New York City to discuss changes to the export plan and ways to bring balance to the waste marketplace.

Officials from the Maryland State Police, Maryland Transportation Authority Police, Anne Arundel County Police, Baltimore County Police, Prince George's County Police and the Maryland Department of the Environment who participated in this operation agree that other such operations will be conducted in the future.



**In Maryland, 25 drivers were taken off the road for license violations alone.**



**Officials checked driver logs, weight allowances and safety violations.**

### Wetlands Restoration Workshop for Businesses

**March 17, 1999  
 7:30 a.m. - noon**

**Benefits to creating a wetland  
 on your business campus  
 include:**

- Tax Benefits
- Improved Community Relations
- Improved Employee Morale
- Ongoing Publicity Opportunities
- Environmental Benefits

**Information on technical, regulatory  
 and financial assistance will be  
 presented.**

**For more information contact  
 the Maryland Department of  
 the Environment at  
 (410) 631-8059**

# Regulatory Settlement Leads to Wetlands Construction and Wildlife Habitat

by George E. Beston

Nearly 90 acres of woodland and cropland have been donated to a local Eastern Shore land trust by Perdue Farms as settlement of a recent Maryland Department of the Environment enforcement action. In the settlement, Perdue Farms was required to upgrade its Showell processing facility wastewater treatment plant and perform a supplemental environment project. The donation of 50 acres and \$150,000 to a land trust to construct nontidal wetlands on the protected property will be the first major project in support of Governor Glendening's initiative to restore wetlands in Maryland.

"It was a much larger piece of property than was actually required," said Perdue Farm's Director of

Environmental Services John Chlada. "But, the Showell property was a

perfect match to fulfill the judgement because it had the combination of open space and forest lands and a good habitat mix."

The Chesapeake Wildlife Sanctuary, a nonprofit organization that treats oiled and injured wildlife, was asked if it was interested in taking ownership of the property and assuming responsibility for the wetlands construction.

"The Chesapeake Wildlife Sanctuary is thrilled at the possibilities of being

able to expand its operations to such a wonderful piece of property," said

Executive Director Dianne Pearce. "Future plans for the property include a facility and staff that will enable us to

provide medical assistance to animals in an area of the Eastern Shore where none presently exists."

A combination of wetlands restoration/creation and reforestation will provide many water quality benefits and an area where rehabilitated animals can be safely released back into their natural habitat. Mammals will enter

the woods and find food and cover, turtles and ducks can be released in the wetland areas, get re-acclimated to freedom and then stay or move on as they like.

MDE will continue to provide guidance during the design and construction of the wetland project, and the Chesapeake Habitat Restoration Trust, Maryland Environmental Trust and the Lower Shore Land Conservancy will hold a permanent easement to protect the property.

Perdue Farms has fully complied with the judge's order including the completion of a new wastewater treatment plant, and the citizens of Maryland will receive long-term environmental benefits associated with this project in the environmentally sensitive St. Martin's River watershed.

*"The Chesapeake Wildlife Sanctuary is thrilled at the possibilities of being able to expand its operations to such a wonderful piece of property," said Executive Director Dianne Pearce.*

## Maryland Recyclers Coalition

presents  
**11th Annual Conference, Training and Exposition**

**June 3 - 4**

*Chesapeake College  
Wye Mills, Maryland*

Topics of interest include: Markets, equipment, purchasing, contracts, record keeping, reuse, buy recycled, green purchasing, waste prevention, pollution prevention, waste exchange, zero waste and others.

**Keynote speakers include:**  
**Secretary of Environment**  
**Jane Nishida and**  
**Fran McPoland,**  
**Federal Environmental Executive.**



For more information on attending, exhibiting or sponsoring this event contact the

MRC at (410) 974-4472 or  
[MRC@mdassn.com](mailto:MRC@mdassn.com)

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## Diesel Vehicle Smoke Inspection Program

Maryland is addressing the problem of diesel vehicle emissions through the Pilot Diesel Vehicle Smoke Inspection Program. The initial effort, known as Phase I, set out to assess the extent of the problem. For nearly two years, from May 1993 through March 1995, workers at roadside scale houses randomly selected in-state and out-of-state trucks for voluntary inspections.

From the information gathered during Phase I, the department concluded that 40 percent of the vehicles tested had excessive smoke emissions and that one-fifth of all trucks tested were gross polluters. Maryland-based trucks exceeded the emissions standard more frequently than the out-of-state trucks. The voluntary nature of Phase I was successful as most operators willingly allowed a smoke emissions test inspection. Truck operators know that when a truck produces excessive emissions, the truck is not running efficiently and has higher operating costs. The results of Phase I indicate that a heavy-duty smoke inspection program is important to maintaining the health of citizens and reducing impacts on the environment such as visibility, odors, sooty residues, acid and nutrient deposition to the Bay.

The department received funding for fiscal year 1999 to implement

Phase II of the Pilot Diesel Vehicle Smoke Inspections Program. Phase II will study the effectiveness of different repairs in reducing smoke emissions by comparing smoke inspections at repair garages before and after repairs. The study will evaluate the effectiveness of available repair and maintenance procedures to reduce smoke and provide information about the results to vehicle owners to demonstrate how proper repairs can reduce emissions.

Phase II began in January 1999 with testing of Mass Transit Administration buses and State Highway Administration trucks. Vehicles belonging to Montgomery County Government and Baltimore Gas and Electric also will participate in the testing.

The Maryland Trucking Association and the Maryland departments of the Environment and Transportation are currently working together to address legislation introduced by Senators Baker and Forehand and Delegate Morhaim of the Maryland General Assembly. This legislation would require a mandatory diesel emissions testing program in Maryland.

Several other states also are working to control emissions from heavy-duty diesel vehicles. Twelve states have existing inspection programs or enabling legislation to begin inspection programs. Six of these states — Massachusetts, New Hampshire,

Maine, New York, Connecticut, and New Jersey— are in the Northeast and are working in concert on a regional plan to reduce emissions. Two other Northeast states — Rhode Island and Vermont — have completed pilot programs.

State regulatory programs are not the only avenue to reduce diesel emissions. Under the Clean Air Act, the EPA has established emissions standards that require diesel engine manufacturers to design their products to dramatically reduce emissions. These standards apply to engines manufactured since 1987 and have resulted in engines that are more efficient and emit less NOx and particulates. Newer standards have gone into effect requiring engines made after 2003 to further reduce emissions.

With the increase of inspection programs and tighter emission standards for diesel engines, the days of urgently rolling up our car windows on warm days may be coming to an end.

If you see a smoking truck or bus that is Maryland registered, please call 410-631-3270 to report it. Include a description of the vehicle with license number, date, time of day, and location. MDE will send the owner a letter requesting that the necessary repairs be made to reduce diesel emissions.

# CBF Launches Innovative Strategies to Restore SAV

by Chris Dollar, CBF

Beneath the surface of the Chesapeake Bay, a vibrant community teems with diverse life, a world where scores of aquatic organisms, such as the world famous Chesapeake blue crab and juvenile fish like spot and croaker, take refuge among the green, lush Bay grasses. Also called submerged aquatic vegetation (SAV), underwater grasses have always been an essential part of the Bay's fragile ecosystem providing habitat, absorbing excessive nutrients, releasing oxygen, and helping to reduce wave energy that contributes to erosion.

Despite a modest resurgence of SAV in some areas of the Bay, there are only about 69,000 acres, or 12 percent, remaining of the historic level of 600,000 acres. In the Chesapeake Bay Foundation's (CBF) 1998 State of the Bay Report, SAV scored a mere 12 out of 100. By restoring and protecting SAV, CBF believes water quality will increase and important fisheries, like blue crabs, will stabilize and increase as well.

Until recently, it was a commonly held belief that the only way to resuscitate SAV in the Bay was to improve water quality. CBF and its partners, however, have proven that it is also possible to restore Bay grasses by transplanting them to diminished areas or by growing grasses from seed and planting them in designated areas.



Calvert County Middle School students Robert Mitchell and Robert Ezerine measuring for proper water depth.

Although the technology is still experimental, there have been modest successes. Last year, CBF and the Maryland Department of Natural Resources (DNR) worked with 12 schools in Maryland to grow wild celery, a type of SAV, from seed in tanks. With the help of the students, CBF and DNR then planted it in appropriate areas. This year, as part of the "Bay Grasses in Classes" program, more than 2500 students from Maryland and Virginia will grow underwater grasses that will be used as part of a Bay-wide restoration initiative.

CBF's BaySavers Institute, which

engages and trains adults to help save the Bay, is also using this SAV-growing technology. In the fall of 1998, CBF kicked-off the "Grasses for the Masses" program by potting wild celery seeds at the United States Department of Agriculture's National Plant Materials Center. Volunteers monitored the plants there until they were ready for their permanent home in the Bay.

This month, CBF will train volunteers to grow SAV in tanks in their homes. The plants will grow for up to six months before BaySavers plant them in suitable restoration sites. Volunteers also will be trained to

monitor the success of the project. Currently, CBF is working with 100 volunteers from Pennsylvania and Virginia to grow underwater grasses for restoration projects in their area. By improving water quality and refining SAV planting techniques, CBF is working toward its goal of having a Bay with 225,000 acres of SAV by the year 2005.

There are other ways to protect existing SAV beds from man-induced damage. CBF, Maryland Department of the Environment, and other environmental groups provided critical support for the Maryland law that prohibits use of hydraulic clam gear in SAV beds. There also was joint support for regulations that outlaw clam dredging in SAV beds on the Atlantic seaside.

Through innovative techniques and the efforts of trained and environmentally aware citizens, CBF and its partners work to restore the Chesapeake Bay to its rightful place as one of the world's greatest estuaries.

For more information about CBF restoration programs, please call Bill Street at 410-268-8816 or [bstreet@savethebay.cbf.org](mailto:bstreet@savethebay.cbf.org). For volunteer information about BaySavers, please contact Kim Donahue at 410-268-8816 or [kdonahue@savethebay.cbf.org](mailto:kdonahue@savethebay.cbf.org). For information about CBF's education restoration program, please contact Jamie Baxter at 410-268-8816 or [jbaxter@savethebay.cbf.org](mailto:jbaxter@savethebay.cbf.org).



Students actively participate in all phases of the Bay-wide restoration initiative



## Tawes Award Accepting Nominations

The Maryland Department of the Environment and the Maryland Petroleum Council invite environmental volunteers from across the state to submit nominations for the 1999 Tawes Award for a Clean Environment. The awards program, now in its 22<sup>nd</sup> year, is open to any non-profit, civic, community or business entity that has demonstrated outstanding efforts to enhance Maryland's environment.

Awards will be given to both an adult and a youth recipient who have participated in any community cleanup, school beautification or ecology project, recycling, oil

pollution prevention or cleanup, waste reduction or any other innovative environmental enhancement project. The project could be a one time effort or an on-going program.

Winners and runners-up and their guests will be invited to an awards luncheon in Annapolis. In addition to the award, winners will receive a monetary donation to the favorite environmental non-profit. For more information on the awards program or to receive a simple application form, contact Chris Plummer of MDE at (410) 631-3012 or MPC's Don Schroeder at (410) 269-1850. Deadline for nominations is April 15.

## Final 1999 Standard Permit Application Turnaround Times

As required by Section 1-607(A)(2) of the Environment Article, the Maryland Department of the Environment (MDE) has established, in consultation with interested parties, standard turnaround times for all types of permit applications. The standard times are detailed on page five of this edition. Please note the following important points:

- These standards refer to the time between MDE's receipt of a complete permit application and MDE's issuance or denial of the permit, excluding delays caused by factors beyond MDE's control. Many applications are incomplete when they first arrive at MDE. The Environmental Permits Service Center or the appropriate MDE permit writer can provide guidance on how to ensure that an application is

complete when submitted.

- Unfortunately, many factors beyond MDE's control can delay the processing of permit applications. Examples include delays in receiving information needed from the applicant and delays in obtaining necessary approvals from local or federal government agencies. MDE's permitting personnel can provide advice about avoiding such delays.
- In most permitting programs, each application has unique characteristics that influence its processing time. For each program listed, the standard time represents the time in which 90 percent of applications can be processed.

For further information, please contact MDE's John Mitchell at 410-631-3772.

# MDE's Final 1999 Standard Permit Application Turnaround Times

**Final**

## Water Management Administration

General Permit Registration for Industrial Wastewater Discharge .....	
for concentrated animal feeding operations .....	150 days
for all other general permits .....	60 days
Individual Permit for Wastewater Discharges .....	
for new minor facilities .....	9 months
for new major facilities .....	12 months
for renewal minor facilities .....	14 months
for renewal major facilities .....	16 months
Toxic Materials Permit .....	45 days
Water and Sewerage Construction Permit .....	3 months
Water Appropriation and Use Permit .....	
for under 10,000 gallons per day .....	60 days
for over 10,000 gallons per day .....	12 months
Coal Mining Permit .....	12 months
Surface Coal Mining Blaster Certification .....	immediately on passing exam
Coal Mining Operator License .....	30 days
Non-Coal Mining Permit .....	7 months
Oil and Gas Exploration and Production .....	5 months
Well Construction Permit .....	30 days
Drinking Water Sampler Certification .....	immediately on passing exam
Nontidal Wetlands (Nontidal Wetlands and Waterways Permits) .....	
for minor projects .....	3 months
for major projects .....	6 months
Waterway and 100-year Floodplain (Nontidal Wetlands and Waterways Permits)	
for minor projects .....	3 months
for major projects .....	6 months
Tidal Wetland Licenses and Permits .....	
for minor projects .....	30 days
for major projects .....	6 months
Erosion/Sediment Control and Stormwater Management Plan Approvals .....	6 months
Erosion and Sediment Control - Responsible Personnel Certification .....	2 weeks
Erosion and Sediment Control - Responsible Personnel Training Program Approval .....	4 weeks
General Permit for Construction Activity .....	2 days
Municipal Separate Storm Sewer Permit .....	12 months
Dam Safety Permit .....	6 months
Environmental Sanitarian License .....	
for new licenses .....	45 days
for renewals .....	30 days
Waterworks and Waste Systems Operator Certification .....	
for new certificates .....	45 days
for renewals .....	30 days
Well Driller License .....	30 days

## Waste Management Administration

State Refuse Disposal Permit .....	
for transfer stations .....	7 months
for processing facilities .....	9 months
for processing facilities & transfer stations .....	9 months
for incinerators .....	12 months
for land-clearing debris landfills .....	12 months
for industrial landfills .....	24 months
for rubble landfills .....	36 months
for municipal landfills .....	36 months
Groundwater Discharge Permit for Rubble Landfill .....	6 months
Sewage Sludge Utilization Permit .....	
research .....	45 days
transportation .....	4 months
landfill disposal .....	5 months
distribution .....	6 months
land application .....	10 months
permanent facility .....	23 months
incineration .....	23 months
innovation .....	24 months
Natural Wood Waste Recycling Facility Permit .....	9 months
Scrap Tire Hauler .....	60 days
Scrap Tire Collection Facilities (General and Secondary) .....	60 days
Scrap Tire Solid Waste Acceptance Facility .....	7 months
Scrap Tire TDF/Substitute Fuel Facility .....	7 months
Scrap Tire Primary Collection Facility .....	9 months
Scrap Tire Recyclers .....	9 months
Oil Operations Permit .....	60 days
Oil Operations Permit for Oil-Contaminated Soils .....	6 months
Oil Transfer License .....	30 days
General Permits for Oil Control	
Program Wastewater Discharge Permit .....	20 days
Surface Water Discharge Permit for Oil Terminals .....	5 months
Ground Water Discharge Permit for Oil Terminals .....	5 months
Underground Storage Tank (UST) Technician and Remover Certification .....	20 days
Controlled Hazardous Substances Facility Permit .....	26 months
Hazardous Waste; EPA Identification Number .....	30 days
Controlled Hazardous Substances Hauler, Vehicle and Driver Certification .....	30 days
Special Medical Waste (SMW) Hauler and Vehicle Certification .....	30 days
Lead Paint Accreditations .....	30 days
Lead Paint Training Course Approvals .....	60 days
Lead Paint Instructor Approvals .....	30 days
Voluntary Cleanup Program .....	
to determine if application is accepted .....	60 days
to review action plan .....	4 months

## Air and Radiation Management Administration

General Permit to Construct .....	30 days
Air Quality Permit to Construct .....	
w/o expanded public review .....	3 months
w/expanded public review but limited interest .....	6 months
w/expanded public review and extensive interest .....	11 months
New Source Review Approval .....	10 months
Prevention of Significant [air quality] Deterioration .....	14 months
Air Quality State Permit to Operate .....	3 months
Part 70 (Title V) Permit to Operate .....	
for new permits .....	36 months
for renewals and modifications .....	18 months
Asbestos Contractor License .....	60 days
Asbestos Training Provider Approval .....	3 months

Incinerator Operator Certification .....	30 days
Incinerator Training Course Approval .....	60 days
Fleet Inspection Station License .....	30 days
Certified Emissions Repair Facility Certification .....	30 days
Master Certified Emissions Technician Certificate .....	30 days
Radiation Machine Facility Registration .....	
for dental and veterinary machines .....	90 days
for all other machines .....	6 months
Certification of Machines Emitting Radiation .....	6 months
Radioactive Materials License .....	7 months
Private Inspector License For Inspecting X-Ray Machines .....	60 days
Reciprocal Recognition of Out-of-State Radioactive Material Licenses ..	21 days

# A Second Life for Little Elk Creek River

## Using Technology to Protect the Environment

by Rick Grills

Relying on innovative thinking, groundbreaking technology and design, and strong partnerships, an unusual groundwater remediation project is underway in Cecil County involving the former Spectron Solvent Recycling Center and the Little Elk Creek River. When completed in late 1999 this unusual remediation project will protect the stream surface water from the polluted groundwater.

Construction of the long-awaited cleanup of the former Spectron solvent recycling plant began in Summer 1998. This remedial action addresses contaminated groundwater and chemical seeps originating from beneath the Spectron plant and discharging into Little Elk Creek.

Over 500 former customers of the Spectron plant were identified as "responsible parties" for this cleanup. These companies are now financially responsible under federal law (CERCLA) for cleaning up the environmental contamination caused by the plant. Michael Parr of the DuPont Company is head of the technical committee of the responsible party group charged with investigation and cleanup of the Spectron facility.

"The Spectron project is an innovative combination of well known technologies put together to create a unique solution. The secret to the success of this complex job is the high level of coordination between all of the stakeholders involved," said Parr. "The agencies have done an excellent job balancing their dual roles of working with us to get the project completed so that the environment can be protected and looking over our shoulders to make sure it's done properly."

The technical committee hires environmental contractors to perform work at the site and interact with EPA, MDE and other regulatory agencies and stakeholders.

The technical committee is responsible for ensuring that all work performed at this site is in compliance with applicable local, State and federal laws and regulations. MDE and EPA perform technical and regulatory oversight to assure compliance.

The challenge of this remedial action is to intercept and treat contaminated groundwater before it mixes with the clean surface waters of Little Elk Creek. To accomplish this goal, the remedial design calls for a watertight geosynthetic liner to be installed in the creekbed. Before work in the creekbed could begin, however, water flowing in the creek had to be diverted around the work area. A 24-inch polyethylene pipeline was constructed to carry the creek water from the upstream dam to a point beyond the work area. This pipeline is approximately 1400 feet long. After heavy or prolonged rainstorms there is too much water flowing in the creek to divert around the work area. During these times, work is stopped and all equipment is moved out of the creekbed until creek flow can again be diverted around the work area.

Before construction of the remedy could begin, boulders in the creekbed had to be removed. Once this was accomplished, the groundwater collection system was begun. An elaborate French drain system of gravel-filled trenches and interconnected pipes was constructed beneath the creekbed. The collection system was then connected to sumps where groundwater could be pumped directly to the groundwater treatment plant. At the treatment plant, 99.999 percent of the contaminants will be removed before the water is discharged into Little Elk Creek. The treatment plant will be constructed later this year.

After the groundwater collection system was installed, all of the soil in the creekbed work area was sieved to remove any stones or other debris larger than 2 inches in diameter. The creekbed was then carefully graded and contoured to conform to the original dimensions and elevations that existed before construction. The creekbed was then fine-graded one last time and any remaining stones or other debris were hand-picked before the watertight geosynthetic liner was installed over the creekbed surface. The liner was physically attached to various structural elements (mid-stream anchor wall, cross-stream cutoff walls, etc.) which serve to anchor the liner as well as divide the project into more manageable sections. This remedial project encompasses 1200 feet of creekbed and is divided



Standing in the Little Elk Creek River bed, workers prepare the subgrade for placement of the liner.

into three separate sections. One section of the creekbed containment system is finished before the next section is begun. This minimizes the possibility of a catastrophic rainstorm washing away the entire project before construction is completed.

As the liner system is assembled and tested, gabion baskets (wire baskets filled with rocks) are placed on top to protect and stabilize the geosynthetic liner. The rock-filled gabion baskets will act like armor to protect the vulnerable geosynthetic liner. Extensive efforts are being made in the design and construction of the project to ensure as natural an ecosystem as possible.

When the entire project is completed, the surface water flow will be restored, the stream banks will be replanted and the permanent groundwater treatment system will begin to return the fragile ecosystem to its natural balance.

"The community has been very understanding about the inevitable construction disruption in their community," said DuPont's Parr. "By this summer everyone is going to be pleased with the outcome."



The site during the construction of the protective layer.

Maryland Department of the Environment  
2500 Breoring Highway  
MDE Baltimore MD 21224

Bulk Rate  
US Postage  
Paid  
Rockville, MD  
Permit No. 4212