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Alliance for Aquatic Resource Monitoring (ALLARM)
Dickinson College

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Stream of Consciousness is a publication of the Alliance for Aquatic Resources Monitoring (ALLARM) at Dickinson College. For more information, please contact allarm@dickinson.edu.
New Mexico:
Earth Huts Constructed

By Laura Walters

This summer I had the unique opportunity of traveling to Ramah, New Mexico with a group of students. Each student worked for Solar Now, Inc., an international non-profit organization located in Beverly, Massachusetts, dedicated to renewable energy education. Our mission was to build an Earth Hut dormitory for the first sustainable school completely off the energy grid in the United States.

Charles DeWeese, founder and President of the New Leaf Community School, wished to create a school where the principles of sustainability and ecoliteracy are taught through experiential learning and systemic thinking. The school's mission is “to serve, to seek awareness, to learn of our connectedness with all living things, to seek wholeness, and to celebrate and share our educational journeys.”

A group of students from Solar Now, Inc. originally met Mr. DeWeese at an environmental conference and learned of the Earth Hut structures to be built at the New Leaf Community School.

‘Earth’ continues on page 10

New Avenues of Support for Watershed Assessment: C-SAW

By Alissa Barron

Have you ever felt intimidated by the scientific aspects of your monitoring program? Many watershed associations and organizations have expressed concern that they lack the technical background or training they need to accomplish their watershed monitoring goals. This is a very real concern, particularly as more communities are coming together to form watershed associations and perform watershed assessments throughout Pennsylvania.

To address this desire for technical guidance, a team of specialists from ALLARM, the Delaware Riverkeeper Network, Stroud Water Research Center, Canaan Valley Institute, United States Geological Survey (USGS), and the Pennsylvania Resource Conservation and Development Councils have joined forces to help local groups achieve their goals for watershed protection. The creation of this

‘C-SAW’ continues on page 22
All About Alissa

By Allie Still

This summer Alissa Barron was hired as the new assistant director of ALLARM. Her position was made possible by the Growing Greener grant that created the Consortium for Scientific Assistance to Watersheds (C-SAW), along with other grants. As assistant director, Alissa will be involved in a number of ALLARM projects.

Her responsibilities include:
- coordinating ALLARM’s involvement with C-SAW
- assisting ALLARM Director, Lauren Imgrund, in overseeing the laboratory staff and laboratory work
- working with Dickinson College professor, Michael Heiman, in raising awareness about ALLARM on the Dickinson College campus and beyond
- overseeing the monitoring of Letort Spring Run and the Mully Grub
- coordinating a study on the Clean Air Act’s effect on Pennsylvania streams
- training student staff in using Geographic Information Systems (GIS), computer mapping software.
- various projects with students and staff

Alissa is a 2001 graduate of Brown University. She received her degree in Environmental Studies. Throughout her last year at Brown, Alissa spent much of her energy working on her honors thesis, which dealt with the risk of public exposure to mercury contamination in Rhode Island’s fresh water fish. “Three of my passions include water quality and rights, environmental health, and international development,” stated Alissa. Part of her studies at Brown included a semester abroad in Ecuador with the School for International Training.

Alissa explained that living in Ecuador reaffirmed her commitment to localized grassroots movements, as opposed to “top down” approaches to environmental management and social change. It was this interest in community-based activism that lead her to ALLARM.

ALLARM appealed to Alissa because of its unique collaboration of students, faculty, volunteers, and watershed organizations, as well as the opportunity to improve on lab and fieldwork skills. Alissa believes that in many respects, watershed associations have a longer history in Pennsylvania than other states.

Student staff members of ALLARM have appreciated the knowledge and skills Alissa offers to the ALLARM office and lab. ALLARM student researcher, Claire Foster, stated, “Alissa has been very helpful in working with the Clean Air Act project—especially in using GIS.” Jessica Spencer, director of SMART, has also had positive experiences working with Alissa: “she is very knowledgeable and can answer any question anyone could ever have!” The addition of Alissa to the ALLARM staff has been both beneficial and enjoyable. ALLARM is fortunate to have Alissa, and will continue to benefit from her knowledge and enthusiasm.

PAEE Conference

By Jessica Spencer

The Pennsylvania Alliance for Environmental Education (PAEE) held a conference November 2-4, 2001, at the Radisson Convention Center in Harrisburg, Pennsylvania. Each fall the PAEE conference hosts a variety of administrators, naturalists, environmental educators, classroom teachers, government personnel, and interested individuals to come together for development in these professions. This year PAEE specifically partnered with Audubon Pennsylvania to provide a diverse array of workshops designed to address skills, activities, and information of interest to environmental educators, classroom teachers, and nature center program administrators.
Stream of Consciousness

There were three featured speakers during the conference. One of the featured speakers was Emilio Williams, Mr. Williams is the president of KOI Group. This group specializes in staff development. His presentation focused on finding a common ground with diverse audiences and practical steps for reaching and integrating diverse audiences.

Another speaker, Roger B. Swain is a science editor for *Horticulture* magazine and host of the PBS television show “The Victory Garden.” Mr. Swain articulated that as gardeners, biologists, and educators, we look at how we can best manage the flow of “the most precious fluid,” from making the most of the fresh water we have to keep runoff pollution free.

The third speaker was Scott Weidensaul, a naturalist and author of *Raising the Dead: the Search for Lost Species*. Mr. Weidensaul explored why we are enthralled by these fleeting species and what rediscoveries of species thought to be extinct mean for the current decline in biodiversity.

Two staff members from ALLARM attended the conference, Emily Funk and Jessica Spencer. These two women are co-coordinators of Students Monitoring Aquatic Resources Together (SMART), which is the youth education branch of ALLARM. SMART works with local schools, scouts, and youth organizations to continue to inform students about the importance of stream health in their local communities.

It was a rewarding experience for both women, who learned a great deal more about issues related to environmental education. They also had the opportunity to eat lunch with Mr. Swain and be entertained by his wittiness and knowledge about native plant species of North America.

Upcoming Workshops

*By Lauren Imgrund*

Over the next year ALLARM will be participating in a series of workshops for volunteer monitoring groups. The workshops are sponsored by the PA Department of Environmental Protection Citizens Volunteer Monitoring Program with these partners: ALLARM, Canaan Valley Institute, Stroud Water Research Center, Delaware Riverkeeper, and River Network.

The workshops are interactive indoor sessions, which provide participants with the tools to develop a watershed monitoring plan (study design) and to turn monitoring data into information. These two-day sessions combine hands-on activities in small groups with presentations. Participants design a study using a “virtual watershed” perspective, such as a canoe club assigned to their small group. On day two participants use a sample data set to learn about the data to information process, work through a series of questions about the data, and develop findings, conclusions, and recommendations for the virtual watershed.

These workshops are a great place for groups who are interested in designing a program, revisiting their program, and most importantly, for those groups struggling with data interpretation and what steps to follow to communicate information to data users and the general public.

Workshop Dates are:

**January 25 – 26, 2002:**
Dickinson College, Carlisle, PA

**April 5 –6:**
South Western, PA (Exact location to be determined)

For Registration Materials and more information contact: Lesley Moore at Canaan Valley Institute – 888-549-7640, Lesley.moore@canaanvi.org.

May 3 –4:
North Central, PA (Exact location to be determined)

**March 2 – 3:**
Temple University, Ambler, PA
The once small study of organic farming conducted by Alexis Schoppe and Chris Verni of the class of '00 has now grown into a finely oiled, well-tuned, pesticide free running machine that we like to call the Dickinson College Garden. Where, do you ask, is this Garden of Eden? You need not look any further than the Dickinson Park and Intramural Fields, behind the Sylvan Learning Center. The garden was formulated by Alex and Chris under the advisement of Prof. Kirsten Hural to study the methods of sustainable/organic agriculture. The original garden consisted of five beds for planting, and has since been well maintained and greatly expanded. There is now about a third of an acre cultivated, comprised of over 24 beds and a field of crops.

The garden is now run by a group of volunteer Dickinson students who have formed an organization called "Students Interested in Sustainable Agriculture" (SISA). These students spend a couple of hours a week working on the garden with the help of student leader Joel Pitney. SISA sells a good portion of their crops to the Farmers Market and then recycles those profits back into maintenance and expansion of the garden. Some of the food is donated to the Project Share food bank organization and the rest is hoarded by the SISA members. Essentially, any crop capable of being grown in this local climate can be found in the garden. The key concept to organic farming is creating a diverse ecosystem that will allow you to grow a wide variety of plants without the use of pesticides or other chemically-induced mechanisms.

The diversity in the Dickinson College Garden has been well established. The garden is surrounded by trees, which provide habitat for birds that can eat potentially harmful insects. There are wild flowers planted all around the garden to attract wasps, which can also kill potentially harmful insects. The idea is not to eliminate insects entirely, because some insects have beneficial purposes. Crops are rotated so that certain insects can't settle into the soils of particular crops. Some crops are planted next to a specific companion plant to naturally repel certain insects from each other. Compost is created from the left over food at Dickinson's salad bar. The compost and mulch are spread out over the crops during frost season to keep the ground soft until the spring and to avoid having to rot, which would invite insects to settle into the newly turned soil. A greenhouse has recently been built to start planting seeds to grow over the winter and prepare them for spring planting.

SISA's current plans are to begin planting an orchard and putting up fencing to keep out the groundhogs. Over the summer, SISA ran a successful program that involved the children from the community in the garden and would like to see more commu-
Stream of Consciousness

Community involvement in the future. A part time garden coordinator, Jen Haplin, has been hired for the next two years starting in January. She will work with students to help manage the crops, continue and expand community outreach, promote related course work and research at Dickinson College, strengthen markets for the garden products and seek additional funding to ensure continued operation and expansion of the program. The garden serves as a valuable outdoor laboratory for the methods of sustainable/organic agriculture and is a great source for many potential independent research projects. SISA encourages students and other members of the community to get involved and to find out more about the Dickinson College Garden by checking out the SISA website at http://www.dickinson.edu/departments/envst/ or contacting Joel Pitney at Pitneyj@dickinson.edu for further information.

WASTE Summit Reflections

By Emily Funk

"Women do not want to be mainstreamed into a polluted stream. We want to clean the stream and transform it into a fresh and flowing body. One that moves in a new direction - a world at peace, that respects human rights for all, renders economic justice and provides a sound and healthy environment." -Bella Abzug, WEDO co-founder and honorary president (1920-1998).

I had the incredible opportunity to be a part of the Women Assessing the State of The Environment Summit (WASTE), a conference supporting women's leadership for environmental change. It was hosted by the Rachel Carson Institute (RCI) at Chatham College the weekend of November 9th through the 11th and organized collaboratively by The RCI and The Women's Environment and Development Organization (WEDO). Under this inextricably linked umbrella of women and the environment, the individuals and groups participating in the conference combined wide-ranging global and local knowledge about social and environmental issues into one phenomenal, action packed weekend.

The main goal for The Summit was to make significant progress on The Women's Action Agenda for a Healthy Planet 2002 (WAA2002). WAA2002 stems from Agenda 21, a uniform world-wide document which asks countries and communities to do their own assess-

Summer Spectacular

By Vallie Lewis

This past summer, Julie Vastine and Vallie Lewis served as ALLARM's summer interns. Working full weeks, they developed a broader understanding of how ALLARM functions and the variety of projects in which we are involved. Initially, Julie was focused on lab work and quality control, while Vallie concentrated on reorganizing the volunteer database. Eventually they each took on a variety of tasks, working together on some and individually on others. They attended several Keystone Watershed Network meetings, participated in the WREN (Watershed Resources Education Network) conference, presented SMART activities for summer school programs, continued monthly monitoring of the Letort and Mully Grub, helped with habitat assessment training for Ridge and Valley Streamkeepers and witnessed the process of hiring our new assistant director, Alissa Barron. Julie was also trained on fecal coliform protocol. Two more highlights from this summer were the R.F. Shangraw Community Aquatic Research Laboratory Dedication and the Shermans Creek Conservation Association (SCCA) Youth Day.

see 'Lab Dedication' on page 9 and 'SCA' article on page 11
In the spring of 2001, I was given the opportunity to be one of four student delegates selected to participate in the Citizen's Advisory Committee (CAC) to the Chesapeake Executive Council. This was the first year that this committee decided to invite student delegates aboard to help the committee in its efforts to protect and restore the health of the Chesapeake Bay.

The Committee consists of citizens from the four states whose watersheds have the most impact on the Bay: Pennsylvania, Maryland, Washington D.C., and Virginia. One student delegate was selected from each of these states. Olivia Campbell represents the state of Maryland and is a senior at Gettysburg College. Washington D.C. is represented by Stephanie Quaranta. Ms. Quaranta is attending graduate school at American University and is studying to become a lawyer. Shannon Meseck is the representative for Virginia and is a graduate student at Old Dominion University. I am a junior at Dickinson College majoring in Environmental Science with a certificate in education. The members of CAC have a diverse background representing various fields of interest and concerns pertaining to the Bay. These interests include conservation, development, agriculture, business and industry, recreation, seafood, and now student perspectives. The overall purpose of the CAC is to represent residents and stakeholders of the Chesapeake Bay watershed in restoration efforts for the Bay.

The CAC was created by the Chesapeake Executive Council, which appoints the 25 member staff of the CAC. The Executive Council is composed of the Administrator of the Environmental Protection Agency, Christine Todd Whitman (the former governor of New Jersey); the Mayor of the District of Columbia; the Governors of Virginia, Pennsylvania and Maryland; and the Chairperson of the Chesapeake Bay Commission. CAC provides advice and guidance to the Chesapeake Bay Program through participation in all aspects of the program and regular participation with the Executive Council, which brings a "citizen perspective" to the Bay Program.

Several decades ago, a decline in the Bay activity was beginning to be noticed by local citizens, scientists, and government officials. In the late 1970s, the scientific community began to take interest in these concerns of Chesapeake Bay. The research conducted on the Bay pinpointed three areas in need of immediate attention: nutrient over-enrichment, dwindling underwater sea grasses, and toxic pollution. Due to the results of the scientific community's research, the Bay Program was initiated in 1983 and since has evolved to its current restoration effort called Chesapeake 2000.

As a resident of Pennsylvania, I did not realize the effects that our state has on the Chesapeake Bay until I attended the first CAC meeting in Norfolk, Virginia. I reside in Wellsboro, Pennsylvania, a small rural town located near Pine Creek in the North Central section of the state. Pine Creek is connected to the Chesapeake Bay watershed because it flows into the Susquehanna River, which is the main source of freshwater for the Bay. The issues discussed at our meeting in Virginia are issues that Pennsylvanians rarely directly encounter, but ones that show Pennsylvanians are indirectly contributing to Bay pollution through our daily lives and activities.

The current issues discussed in Virginia pertained to blue crab populations, a restoration program for oysters, and the Chesapeake Bay Agreement 2000. This agreement "addresses the enormous challenges that lie ahead" for the Bay region. One of the main...
new challenges to the Bay is increased population and development in the Bay area, adding further complications to the dynamic ecological system of the Bay and its interactions with the global ecosystem.

Although it may seem like Pennsylvania is disconnected from the Chesapeake Bay because of our geographical borders, the state contributes significantly to the Bay’s functions and ecological communities. In Pennsylvania the sources of Pine Creek in the north, Tunkhannock Creek in the east, and the Juniata River in the west impact the Bay in some fashion every day.

The Chesapeake Bay watershed encompasses 64,000 square miles, and the Susquehanna River contributes fifty percent of the fresh water flowing to the Bay. The Susquehanna River collects pollution and sediment discharge throughout the state from its watershed of intercepting streams and tributaries, and carries it to its final destination of the Chesapeake Bay.

A combination of freshwater and saltwater makes the Bay a unique ecosystem. The Chesapeake Bay is an extremely productive region with only a small variety of species. The impact of this pollution entering the Bay from the Susquehanna River is having an adverse effect on some of the Bay life. An increase in the nutrient load can cause a decrease in the growth of the submerged aquatic vegetation on which organisms depend to survive. This is only one example of the many problems that can arise.

The meetings for the CAC continue on a quarterly basis throughout the year. By next spring I will have attended a meeting in each state learning about the positive and negative impacts that citizens have on the Chesapeake Bay watershed. I am also gaining an understanding about the committee and how decisions are being made to benefit restoration efforts for the Bay. Through my experience, I hope that as citizens of Pennsylvania we will keep informed on Bay issues affecting its health, and understand that these issues do not occur away from our homes, but are instead a branch of our homes.

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**Loka Conference**

*By Katie Hoffman*

In October professor Michael Heiman had the opportunity to represent ALLARM at the North Eastern region Loka planning session in Hartford, Connecticut. Loka, founded in 1987, is a non-profit organization working to make science and technology more responsive to environmental and social concerns. LOKA provides opportunities for public interest groups, grassroots interest groups, and everyday citizens to become involved in science and technology, and decision making.

The Northeast Regional meeting was proposed at the national Loka conference held in Austin, Texas the purpose of this meeting was to bring together groups interested in community based research to form a network for sharing information, obtaining funding, and developing leadership. Approximately 35 organizations representing community-based organizations, consultants for community-based research, and academic institutions including Princeton, Cornell, and Yale attended. ALLARM was one of the only groups present representing natural science-based research. ALLARM also received accolades from other organizations for involving students and local communities in a unique cooperative research opportunity.

Michael Heiman will be serving on the planning committee for the northeast region. Part of the role of the planning committee will be arranging for an annual conference of the northeast region. Participants at the conference all expressed interest in holding the conference at Dickinson College in the near future.

For more information about Loka go to:

http://loka.org/
Both human and environmental factors shape the health of Pennsylvania waterways. Warwick Senior High School students know that well after checking the pulse of a stream flowing close to their Lancaster County homes. DCNR's award-winning Watershed Education program showed them what to seek and where to look. What they found was a high chlorine source, traced to a factory's machine-cleaning process. What they used to find it was an unique educational tool that recently was saluted by state officials.

Last year it lured over 2,000 students and teachers out of the classroom and into Pennsylvania's waterways. This year, even more participants will be able to share data and view program goals and requirements on a DCNR website.

This state park effort received its highest recognition June 26 when it was among 25 organizations and individuals honored at the first-ever Governor’s Award for Watershed Stewardship ceremony, said John Plonski, DCNR’s executive deputy secretary for parks and forestry.

DCNR’s Watershed Education program enables teachers or civic group leaders to attend workshops hosted at area state parks by park environmental educators. Participants then are encouraged to launch study efforts along Pennsylvania’s wealth of waterways.

Teachers and their students are encouraged to pick a waterway and focus on its historical, cultural, and geological features, while noting physical features such as clarity, pH, sedimentation, runoff, and possible pollution threats. An appropriate stewardship program, using this information and data, will be crafted to help the waterway, said Plonski. Students then will share what they learned at the end of the year at a student summit.

Plonski noted that since its revision in 1998, the Watershed Education program for students in grades 6 through 12 has chalked up some pretty impressive statistics. Almost 50 schools across the state have participated, involving 446 teachers in 28 teacher workshops. More than 2,000 teachers and students from schools and civic groups have undertaken watershed education studies. Recognition of the program and its results by Gov. Ridge is a deserving tribute to the quality and dedication of our state parks bureau’s environmental education staff,” said Sarah E. Hopkins, chief of the bureau’s environmental education and information division.

A core group of state park educators put many, many hours, along with their hearts and minds, into developing this program, Hopkins said. They drew from their collective years of experience to develop a program that offers a comprehensive approach to studying and learning about the environment, as well as one that is challenging and motivating to students.

Jean Devlin, head of the bureau’s Environmental Education and Interpretive Section, said the governor’s award further validates that Watershed Education is a top-notch program for educators and students across the Commonwealth.

The web-based technology will allow students and teachers alike to exchange data and become more interactive, said Teresa Kromel, an environmental education specialist who oversaw the program’s revision. It will allow us to get the program information out to more people; enhance storage and utilization of data and information collected; and act as a clearing house for references, tips on equipment needed, and background information.

Kromel advises prospective participating teachers to review web page information; contact one of the listed parks personnel, and pick a waterway students can study, learn from, and help protect. Hopefully, the program’s recognition by the governor, coupled with its enhanced accessibility on the web, will encourage additional school teachers to participate, Kromel said. This program will educate the watershed users of the future so that they do not repeat past mistakes.

An overview of the watershed program can be accessed through the website www.watersheded.dcnr.state.pa.us
Laboratory Dedication

By Vallie Lewis
Photos by Pierce Bounds

On Saturday June 9, during Dickinson College’s Alumni Weekend, we officially celebrated the dedication of ALLARM’s new laboratory. The cost of the lab was underwritten by a $100,000 donation from Dickinson College graduate Dr. Rick Shangraw ’81 and his wife Mary Shangraw. The Shangraws and their friends and family were present for the dedication ceremony, which was held in the hallway of the James Center, adjacent to the new lab. Other members of the Dickinson College community including alumni, students, faculty and staff attended the event. The crowd was addressed by the college president, Dr. William Durden, who thanked the Shangraws for their donation and explained the value of having a community-based research program like ALLARM within the college. Lauren Imgrund, ALLARM’s Director, explained to the audience how the new lab is essential for ALLARM to meet upcoming goals of administering a state-wide quality control program and offering technical support to at least 3 more volunteer groups under the Growing Greener funded Consortium for Scientific Assistance to Watersheds. As ALLARM staff members and Dickinson College students, Julie Vastine and Vallie Lewis gave examples from their own experience to illustrate the benefits of the hands on education they are receiving by participating and teaching meaningful science within the lab and the community. ALLARM’s Founder and Science Director, Dr. Candie Wilderman, spoke in more detail about the significance of service-based education for students and the community. She described the “democratization of science” and placed ALLARM in the context of a growing field she called “science by the people” rather than “science for the people.” She also recalled Rick Shangraw, the first to graduate Dickinson with a certificate in Environmental Science, as an engaged student. Mr. Shangraw talked about the influence of his education and shared his enthusiasm for Dickinson and the ALLARM Program. Following these speakers, a ribbon cutting ceremony was conducted in the lab and everyone was given an opportunity to see the new facility. ALLARM would like to thank all who attended, especially Dr. Shangraw and family. We would also like to encourage our volunteers to visit the Community Aquatic Research Laboratory (CARL), here at Dickinson College.
As a result of this initial meeting, we were able to become involved in the actual process of building the first dormitory for the School.

A group of 15 Solar Now Affiliates traveled to New Mexico to be the pioneering students of the New Leaf Community School. We learned first-hand how the Earth Hut structures are made, while also learning the principles behind the construction. An Earth Hut is a structure (usually dome shaped) that is constructed entirely from recycled materials. First, a circular hole is dug and leveled, horizontally and vertically to the perimeter of the circle. Tires with a piece of cardboard placed in the bottom are then filled and rammed with soil (each tire ends up weighing between 300-400 pounds) to create an insulation layer. The tires are stacked around the circumference of the hole, usually about 4 tire-layers high. Next, recycled cans surrounded with cement are layered on top of the tires to level around the circumference of the structure and provide further insulation. The outside of the structure is then “back-filled” as dirt is packed against it up to the top layer of tires. Inside the hole, the walls must be leveled perpendicular to the ground/floor, so chicken wire is nailed around all the walls. Mud, recycled cans, and bottles are then used to fill in any gaps between the chicken wire and the wall. This was as far as our group was able to participate due to time constraints, but the next step in finishing the structure would be constructing a ceiling (most likely made with wood because of snow-load requirements) covering the top, and finally, placing a door in the opening. Earth Huts can be as elaborate as desired and serve as wonderful low-cost housing.

While we were not able to complete our Earth Hut, Mr. DeWeese made sure that we took the time to see a finished version of the Hut or an Earthship, which is a larger version of the Hut. An Earth Hut is one of the buildings used to make an Earthship, but an Earthship is more complex and self-contained. An Earthship also includes the properties of passive solar heating and cooling, photovoltaic and wind energy systems, and a cistern water collecting system with a gray structure that is also aesthetically pleasing. There is an Earthship community in Taos, New Mexico, which also houses the inventor of the Earthship concept. We were given a tour of many of the homes and saw just how beautiful the structures can actually be. They are not primitive dirt homes; they are actually environmentally friendly, fully functioning homes that produce their own energy and recycle their own water supply, while making a much smaller impact on our earth.

Our group’s learning experience was not limited to construction of the Earth Hut. We also learned a great deal about the area of the United States that we were visiting. The New Leaf Community School’s land borders both the Zuni and Navajo reservations, which creates a magical feeling of serenity and charm. Mr. DeWeese chose to incorporate some of the native traditions involving our relationship to the earth in our experience to help broaden our viewpoints. Practices were also adopted to lessen our impact on the earth. One was the use of compost toilets. Our waste was recycled and used to enrich the soil, which eliminated the need for a septic system. When the sun went down, we only had one light that was powered from solar energy collected during the daytime. This limited the amount of work we could do and made the experience a bit more challenging, but it was also incredibly rewarding, as we learned so much about sustainable living and the importance of preserving our environment. Our experience at the New Leaf Community School was a true revelation, and I am grateful for the opportunity to be a part of it.
work hours revolve around the sun’s cycle.

This experience has enriched all of us with the knowledge of what can be achieved to conserve our energy sources and promote a healthy environment and planet for all. We were truly one with nature and working with our earth.


Shermans Creek Conservation Association (SCCA) Youth Day

By Vallie Lewis

Where does your water come from? Where does it go after you use it to wash your hands, flush your toilet or water your garden? These are some of the first questions we discussed with home-schooled students from the Shermans Creek Watershed during the first-ever SCCA youth day. Linda Sieber of SCCA first approached ALLARM about helping to coordinate a youth day in the spring. ALLARM worked with Linda Sieber, Debra Smith and other SCCA members to plan the event, which was held on July 18, 2001 at the Shermansdale Lions Club Park, along Shermans Creek. Through Linda Sieber’s contact, we arranged to offer the Youth Day to an organization of homeschooled students and families in Perry County. This provided SCCA with an opportunity to connect with

and educate some of the youth in their rural watershed. The students ranged in age from 4 to 14 years old, which made planning the event a challenge and conducting the event an adventure. ALLARM’s summer interns, Vallie and Julie, planned a full day of education and activities. SCCA volunteers were trained to help lead the activities. About 30 participants attended the event, which began with a discussion about the water cycle and how our daily lives are connected to the cycle. Students were introduced to the watershed concept and given a chance to experiment with model watersheds created by ALLARM staff. SCCA volunteers helped them understand how things that people do each day impact the watershed. To explore the resource they were beginning to learn more about, the group took a walk down to Shermans Creek. After lunch, ALLARM staff lead students in games of capture the flag and “toilet tag.” Then the group split in half. One half learned about acid rain and chemical monitoring from Lauren Imgrund. The other half did biological monitoring, by catching small insects that live on the stream bed, with Vallie and Julie. When each group had finished their tasks, they switched and performed the other project. The day concluded with a discussion about what everyone had learned and a loud singing game, compliments of Julie’s previous experience as a camp counselor. From the Water Cycle to “UP-CHICA-BOOM!” the day provided a chance for students to learn about the value of water resources, recognize the significance of their own Shermans Creek, and have fun doing it!
Meet: ALLARM
Student Staff
Fall Semester 2001

Allie:
My name is Allie Still, and I am a senior Environmental Studies Major. I have been working for ALLARM since my freshman year—what a long strange trip it has been. I was far far away last year, studying German in Vienna, and was able to work a little with a political organization. I am back from Europe now and committed to the community outreach of ALLARM. I will be working with ALLARM’s partner watershed organizations on networking, as well as planning a conference for the watershed organizations.

Steph:
Becky and I are the managers of ALLARM’s wonderful lab. My job is to maintain the order and cleanliness of the lab, run quality control, monitor the Letort and run the collected samples. Washing dishes is an integral part of my job and I also hope to learn how to run fecal coliform samples.

Pat:
I’ll be doing graphs for our volunteer water quality monitors and entering volunteer data into the database.

Jess:
I am the SMART coordinator, which involves working with local schools and youth organizations to teach about the importance of stream quality. Also, I am doing Mully Grub and Letort Spring Run outreach and continuing progress on the Mully Grub Restoration Project.

Claire:
I am in charge of keeping the website up to date. This semester, I’m also working with GIS and getting a research project about the Clean Air Act started.

Heather:
I’ll be working on publications, such as this newsletter as well as creating a timeline summary of the history of ALLARM. I’ll be making a new letterhead and a brochure that discusses pH, alkalinity and water quality monitoring.

Becky:
I work in the lab and run tests on samples collected from the Letort stream. I also work on water quality control and make test kits for the volunteer monitors. I’m going to be reassessing the Mully Grub Restoration Project to determine the survival rate of the new trees. And like all the lab monkeys, I wash lots of dishes.
Vallie:
As Community Outreach Coordinator, I am working to plan events and make contacts around the Mully Grub and Letort Restoration Project. I am also working on a part of ALLARM’s ongoing self evaluation process by designing and administering a survey of our alumni. We hope to get a better understanding of the impact ALLARM has on the students who work here.

Katie:
This semester I will be working with data management, including data entry and checking previously entered data. I will be working on reports for sites monitored in the past. I also hope to learn and work with GIS.

Laura:
This year, I am a lab assistant and the office manager. I will test samples for quality control and improve my dishwashing skills. Also, I will be sending the volunteers kits and other needed materials as well as updating files.

Emily:
Hi my name is Emily Funk and this is my first year at ALLARM. I’m very excited about the community outreach and involvement. I’m working on coordinating the SMART program and working on the newsletter.

Meet new ALLARM staff member:
Michael Heiman
No longer the “Best-Kept Secret on Campus!” This semester, I will be working to help promote ALLARM across campus and throughout the region. Projects include encouraging other faculty to consider ALLARM and its member groups as partners for course-linked research, to represent ALLARM at state and national meetings where networks of like-minded service-learning programs are forming (for mutual support and federal funding), and to encourage faculty to see their own research in light of ALLARM’s potential.

A note from the ALLARM founder:
I never thought when I founded ALLARM in 1986 that it would grow to be what it is today, so it is a real joy to me to continue to be involved with our amazing student staff and wonderful Director and Assistant Director! My job as Science Director involves overseeing our Community Aquatic Research Laboratory and supervising data analysis and interpretation. I’m especially enjoying developing workshops to teach volunteers to turn their data into useful information, rather than just handing them completed reports! I am also interested in using ALLARM as a nationwide model for community-based research in collaboration with universities and in extending ALLARM more into the curriculum at Dickinson. I especially enjoy our international collaboration with Russian scientists and volunteers from the St. Petersburg and Vologda regions and am looking forward to our second trip to Russia this summer to share our experiences in volunteer monitoring.
My job as director entails outreach to our volunteers and partner groups, networking with environmental groups and government, fundraising, organizational planning and working with our student staff to help them do their jobs. Current projects include coordinating the Mully Grub/Letort Spring Run Stream Restoration, implementing a series of two-day study design and data interpretation workshop, serving on the steering committee for the Keystone Watershed Network, and helping to launch the C-SAW program. I especially enjoy working with our wonderful volunteers and very dedicated and enthusiastic staff.

A note from the Assistant Director: Alissa Barron

As ALLARM's new Assistant Director, I will be working on a number of projects this year. Much of my time will be spent coordinating ALLARM’s involvement in a statewide consortium of specialists developed to provide technical assistance to watershed monitoring groups. Through this group, the Consortium for Scientific Assistance to Watersheds (C-SAW) ALLARM will provide long-term, in-depth mentoring assistance to a handful of organizations throughout the Susquehanna Watershed. ALLARM’s Community Aquatic Research Laboratory (CARL) will also be used by C-SAW to help groups statewide with quality control and assurance of their monitoring data. This work will also involve participating in training workshops and meetings statewide.

In addition to the C-SAW program, I will be working with the ALLARM staff on the Mully Grub/Letort Spring Run Stream Restoration, on training staff on GIS and enhancing ALLARM’s use of GIS, and on a study of the impacts of the Clean Air Act amendments on the quality of Pennsylvania’s waters.

Coral Bleaching in Australia

By Rebecca Karasack

This past semester, I had the opportunity to study at the University of Queensland (UQ) in Brisbane, Australia. Brisbane is located on the eastern coast, halfway between Sydney and the Great Barrier Reef.

As part of my curriculum at UQ, I spent a week at the University research station on Heron Island, in the southern section of the Great Barrier Reef. Heron Island is a coral cay that is surrounded completely by reef. Coral cays form as broken pieces of coral and sand accumulate on a shelf of dead coral. As the live coral surrounding the shelf die and break down, they are washed onto the shelf and an island develops. Plants grow as birds deposit seeds in the sand. In addition, Heron Island, like most coral cays, was never inhabited by mammals, and therefore a lack of predation has enabled bird species to thrive. Loggerhead turtles also take advantage of this relatively predator-free environment and lay their eggs on the beaches.

Most of the reef around Heron Island is teeming with life. During my stay, I saw manta rays; green and loggerhead turtles; squid; black-tipped, white-tipped, shovel-nosed, nurse, and wobbegong sharks; giant hermit crabs; sea cucumbers; spaghetti worms; sea anemones; starfish; and various species of fish and coral. Everywhere I looked, something was moving.

One afternoon we were taken to snorkel at a coral head, called a “bommie” by the Aussies. The bommie was completely covered by various colors of branching coral and the small fish that hide amongst them. I was swimming along the huge shelf of coral when, all
of a sudden, I entered a drastically different environment. The colors and the fish were gone and the branching coral, now a dull gray color, was broken and crumbling and full of cobweb-like algae. I was looking at coral that were suffering from coral bleaching.

Coral bleaching is caused by the breakdown of the symbiosis between coral and xoozanthellae. Xoozanthellae are microscopic dinoflagellates, an organism that moves around using a whip-like tail called a flagellum. They live symbiotically with coral and give the coral its brilliant colors. When the coral becomes stressed it may expel the xoozanthellae, which causes the coral to lose its coloration. This phenomenon is called coral bleaching. In extreme cases, the coral may lose the xoozanthellae for good causing the coral to die.

The major cause of stress on the corals has been documented as a result of increasing ocean temperatures. Katharina Fabricius, a research scientist with the Australian Institute of Marine Science stated, “Climate impact has happened. The four most serious bleaching events were in 1987 and 1988, 1992, 1994, and 1998—which was the biggest.” In 1998, the ocean temperatures rose between 1-2 degrees C as a result of El Nino, causing a global outbreak of coral bleaching. According to the U.S. State Department’s Coral Reef Task Force, “this outbreak was a direct result of climate change caused by the burning of fossil fuels.”

Increasing ocean temperatures are not the only threat to coral reefs; other human activities also threaten reefs. For example, deforestation and poor land-use practices have released sediments into the sea via rivers, which can smother and kill corals. Pollution from agri-chemicals, industry, and human sewage is also impacting the reefs, causing harmful algal blooms from the nutrient-rich, and sometimes toxic, waste. These algal blooms form a thick mat along the surface of the water and prevent sunlight from reaching the coral. Over-fishing is also a problem in many places. In addition, fishing methods themselves can often be a problem. Fishermen in Southeast Asia, for example, throw homemade explosives onto reefs and then collect the fish that float to the surface. The explosives flatten reefs and destroy future productivity.

Finally, reckless tourism has led to the destruction of countless reefs as boats and people break apart the infrastructure. People have damaged reefs by stepping on the coral, inadvertently kicking the reef during snorkeling, and breaking off pieces of coral to take home as souvenirs.

Although many human activities seriously threaten the future of coral reefs, humans also depend on reefs for a variety of services. First, millions of people rely on reefs as a major source of animal protein. Reefs also protect coastal cities and towns from the devastating waves associated with ocean storms and are a major source of income from tourism. They are a source of biodiversity and are very important for scientific research in the fields of biology, ecology and health. Even human medicines are developed through reef research: AZT, a drug used to treat people with HIV and AIDS, is derived from a reef sponge in the Caribbean. Thus, given the many threats, preservation of coral reefs is very important.

For more information on what is being done to preserve the coral reefs check out the EPA’s Coral Reef Task Force website at:
http://www.epa.gov/owow/oceans/coral/taskforce.html

1 Helvarg, David. 2000. Australia: the reefs are going Down Under. Environmental Magazine. V. 11 no5. pg. 31-2

1959:

1998:

http://coralreef.gov/DOI.PNCR/index.html
Reformulated Gasoline, Methyl Tertiary Butyl Ether, and Leaking Underground Storage Tanks

by Stephanie Pye

The Clean Air Act and Reformulated Gasoline

To combat air pollution from automobile emissions, Congress created the Reformulated Gasoline (RFG) Program as part of the Clean Air Act Amendments (CAAA) of 1990. RFG is a cleaner-burning blend of gasoline that reduces motor fuel emissions by reducing some of the more harmful, toxic components found in conventional gasoline and adding more combustible, cleaner-burning compounds. The most significant difference between conventional gasoline and RFG is RFG’s high oxygen content, which decreases the levels of benzene, aromatics, sulfur, and other toxic substances in gasoline. This requirement is met by the addition of methyl tertiary butyl ether (MTBE), ethanol, or other oxygenates.

The use of RFG was mandated by Congress in ten areas of the country designated as “non-attainment” areas having extreme or severe levels of air pollution. In Pennsylvania, Bucks, Chester, Delaware, Montgomery, and Philadelphia counties are designated as part of the Philadelphia “non-attainment” area required to implement the RFG program. Phase I of the RFG program began January 1st, 1995, requiring a 15% reduction in volatile organic compounds (VOC’s), a 15% reduction in air toxic emissions, and zero increases in NOx’s. More stringent reductions were achieved, however a 22% reduction in air toxics, a 28% reduction in ozone-forming compounds, a 2-3% reduction in nitrogen oxides (NOx’s) and a 37% reduction in benzene emissions. Phase II began January 1st, 2000, requiring a 25% reduction in both air toxics and VOC’s and a 4-7% reduction in NOx’s.

What is MTBE?

Since the onset of the RFG program, MTBE has become the most widely used fuel oxygenate, accounting for 35% to 50% of all RFG sold in the US. This widespread use of MTBE has significantly cleaned up the nation’s air by reducing air toxics, ozone-forming compounds, carbon monoxide, and NOx’s. This reduction is estimated to be equal to taking 16 million cars off the road annually. MTBE is favorable over other oxygenates such as ethanol or ETBE because of its ability to be produced on-site at the refineries, its low cost, its ability to blend easily without separating from gasoline and its capability to be transferred through existing pipelines.

MTBE’s unique properties in water made some people question its suitability as a gasoline additive. Once released into the environment, MTBE tends to stay in the water and not adsorb to solids, therefore it can move to the groundwater at almost the same velocity as the recharge water. The solubility of pure liquid MTBE in water is around 50,000 mg/L whereas the next most-soluble gasoline component is benzene, which has a solubility of 1,780 mg/L. Thus, due to its solubility and small molecular size, large amounts of MTBE can travel and dissolve very quickly when introduced to water by a leak or a spill.

MTBE Water Contamination

The fears about MTBE water contamination were soon confirmed in 1996 when high concentrations of MTBE were discovered in the groundwater of Santa Monica, California. Subsequent assessment of groundwater and drinking water wells across the US found that 5-10% of the drinking water wells in areas using RFG were contaminated with MTBE. However, approximately 99% of MTBE detections were below the EPA drinking water advisory of 20-40 ppb; 99% of the detections were below 20 ppb. High concentrations (above 20 ppb) of MTBE found in groundwater were generally a result of leaking underground storage tanks, distribution systems and pipelines. Lower concentrations were found to be a result of small spills, improper disposal, and storm water runoff. MTBE contamination has also been detected in private wells in the Philadelphia region. A report published by the EPA found MTBE in 7% of drinking water sources in 12 northeastern states, including Pennsylvania. According to the DEP, over 400 sites being stored tanks’ continues on next page
monitored for MTBE in the Allegheny, Lower Susquehanna, Monogehela and Lower Delaware river basins, there were two sites with MTBE concentrations over than the EPA's advisory level of 20 ppb in Cumberland County. In Bucks and Montgomery counties, there have been at least six major cases of MTBE contamination. In most of these incidents, residents with nearby wells were not notified until several months or more after the release.

**Anti-MTBE Legislation**

Regardless of the low occurrence and low levels of MTBE found, California governor Gray Davis has taken action to phase out MTBE by the end of 2002 in order to protect water quality and public health. Many other states are processing legislation to ban MTBE or limit its use. MTBE has been hailed by US Rep. Jim Greenwood (R-8) as possibly the most important environmental issue facing the Pennsylvania Legislature.

Many State Congressmen support an MTBE ban and have introduced such legislation. Pennsylvania House Bill 1918, introduced by Rep. Robert W. Godshall (R-53) in September, was approved by the House Environmental Resources and Energy Committee. This bill would phase-out MTBE over a 4-year period, after which it would be banned.

The legislature has also adopted House Resolution 68 and Senate Resolution 35. HR 68 amends Section 211 of the Clean Air Act to modify provisions regarding the oxygen content of RFG and to improve MTBE regulation. SR 35 requests that the DEP develop, publish, and implement a response plan and regulations pertaining to MTBE pollution and prepare and begin public presentations of an information program regarding MTBE pollution.

Earlier this year, House Bill 811 was introduced and referred to the Committee on Judiciary in February. If passed, HB 811 would prohibit the sale of any fuels containing MTBE.

**Implications of an MTBE Ban**

Some argue that the opponents of MTBE often do not recognize the implications of such a ban. Alternatives to MTBE are not economically practical. The federal government already supports ethanol by providing a fifty-four cent per gallon incentive. A 2001 study by Hart Energy showed that gasoline prices in areas of the country using ethanol were significantly higher than in areas of the country using MTBE. Ethanol has also has been classified by the EPA as a known carcinogen while MTBE has not. An argument used by MTBE supporters is that its high taste and odor threshold helps protect the public from more harmful gasoline chemicals that may seep into the water, acting as a "warning bell" to indicate that more toxic compounds are in transit.

**The Real Problem: LUST's**

Many feel that policymakers are not addressing the major source of MTBE contamination, the leaking underground storage tanks. New UST regulations went into place in 1998 requiring improved leak detection and operational equipment but many tanks are not in compliance with these regulations. In Pennsylvania alone, there are over 1,000 LUST releases annually.

If MTBE is banned from use in reformulated gasoline, then substituting in another fuel oxygenate is not going to solve our water contamination problems. For example, in Lake Tahoe, MTBE was found in groundwater as a result of a LUST and as a result, MTBE was removed from the gasoline in the area. Subsequently, ethanol was substituted for MTBE and now ethanol is contaminating Lake Tahoe's groundwater.
Congratulations Long Term Monitors!

Thank you for your dedication and hard work!

All of the following monitors have monitored for at least the last 6 years:

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<th>Stream Name</th>
<th>County</th>
<th>Years</th>
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<td>Allegheny</td>
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<td>Thorn Creek</td>
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<td>Tom Finkbiner</td>
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Volunteer Spotlight: Linda Sieber and Debra Smith

By Claire Foster

Linda Sieber and Debra Smith are two members of the board of directors for the Shermans Creek Conservation Association (SCCA). Through their work, they have helped the SCCA evolve from an organization formed to stop a specific point-source polluter to a watershed association dedicated to raising community awareness of environmental problems and ensuring the protection of the Shermans Creek watershed.

Linda Sieber lives with her husband along the creek in Shermansdale, a town in Perry County. She enjoys reading and playing the piano. Linda’s son is a landscaper and her daughter is a chemical engineer in Boston. Debra also lives in Perry County with her husband Daniel, and her son Zachary. She likes reading, hiking on the Appalachian Trail in Pennsylvania, and is also in the bell choir.

With plans for a new power plant threatening Shermans Creek, Perry County citizens rallied together to form the Shermans Creek Conservation Association in 1998. Linda, who had recently moved back to Pennsylvania from Maine, heard about the issue and became one of the founding members. Debra was impressed with the success of the newly formed group in keeping the power plant from being built. She started going to meetings and joined shortly after.

Currently, Debra writes the SCCA newsletter as well as grants, and also helps to present information to the community. Linda is the chairwoman of SCCA and organizes meetings, plans events, and works with the water-monitoring program, education, and zoning issues within the watershed.

'Spotlight' continues on next page
In the future, they see the SCCA’s mission as primarily educational. They hope to raise community awareness about watersheds and other environmental issues. Debra and Linda also hope to do more work with children and schools to educate children about the Shermans Creek watershed. Some other goals are possibly a more advanced recycling system, as well as eliminating illegal pollution.

Linda Sieber and Debra Smith are an inspiration to all for community activism and raising community awareness through volunteer monitoring. Their work, along with other members of the SCCA is making a difference in the Shermans Creek watershed and will continue to make a difference for years to come.

**AMD & ART**

*by Stephanie Pye*

In the Appalachian coal region, which extends from Alabama to Pennsylvania, the remnants of over two centuries of mining prevail, leaving one of the most severe environmental problems in the region, acid mine drainage. A 1995 PA DEP study reported that as a result of nearly a century of mining, 2,425 stream miles in Pennsylvania did not meet EPA-mandated in-stream water quality standards. Not only has mining left its environmental impacts, it has also rendered serious social and economic hardships on the region.

An organization committed to reclaiming the environment and community heritage in southwestern Pennsylvania from the aftermath of the coal era is AMD & ART (Acid Mine Drainage and Art). The organization is a community enhancement initiative that brings broad public participation to the design and construction of AMD treatment systems and the creation of enjoyable, educational, park-like community landscapes. Since 1995, AMD & ART has been working to destabilize the typical negative expectations of this region with large-scale, artful public places that directly address the problems of AMD by combining science, community engagement and innovative design.

AMD & ART selected three sites in Southeastern Pennsylvania to focus their efforts on: Vintondale, Hughes Bore Hole, and the Dark Shade Creek Watershed. Vintondale was the first site selected by AMD & ART and serves to demonstrate new remediation techniques that can handle the massive amount of the AMD discharge at the site. The Hughes Bore Hole site serves to demonstrate new remediation techniques capable of handling large discharges and to maintain the current visual integrity of the area through an educational center. At the Dark Shade Creek, AMD & ART and partners are engaging an entire watershed to prove that their approach can work on the scale necessary to effectively deal with AMD as a watershed problem and to find a regional solution.

One weekend last spring, a few students from universities throughout the US and I had the opportunity to volunteer at AMD & ART’s Vintondale site, under the supervision of Dr. T. Allan Comp, the Founder and Project Historian of AMD & ART. Upon our arrival on Friday, we were given a comprehensive introduction to the history of the area, AMD & ART, and the logistics behind the Vintondale site. After receiving a wonderful lesson in soil science, we proceeded to mix boney, fertilizer, lime and a few other ingredients and to plant various trees and shrubs.

The Vintondale site is situated on 35 acres of reclaimed mine land. The eastern and southern boundaries host the South Branch of Blacklick Creek, beyond which is the Borough of Vintondale with a population of approximately 580. On the northern edge of this site is the Ghost Town Rail Trail, which has an annual visitation of 75,000+. The Blacklick Creek has been severely impacted by AMD, with the pH ranging from as low as 2.5 up to 4.5, which is several orders of magnitude lower than the pH of healthy streams.

The design of the Vintondale site includes incorporating a sequence of manmade wetlands and an AMD treatment pond system which will cleanse the contaminated water of metallic pollutants and increase its pH before the water flows into the creek. The once barren landscape marked by black boney, barely supporting scrubby grasses and stunted trees, is now home to native plants, selected to reflect the increasing health of the water and its transition from deep orange to silver-green. A picnic and recreation area, alongside the highly visited Rail Trail, serve to increase community enrichment.

‘AMD and ART’ continued on page 22
The War-Board. A full wall of white board covered with organized colored marker lists, definitions, calendars, deadlines, notes, messages, and ideas in an office of the Old Saybrook Town Hall. I looked at the War-Board, rightfully entitled and created by Christine Nelson and Chris Costa, every day when I came into work. Sometimes I walked into the office and half expected secret troops to storm in, as commanded by some attack plan that I had inadvertently overlooked or not understood due to technical jargon. My less than 2-month duty in the battle was to find missing land parcels of Old Saybrook that were designated as open space but not documented in reports.

My internship this summer with the Land Use Department in Old Saybrook, Connecticut consisted of organizing a comprehensive review on the town Natural Resource Inventory. I worked alongside members of the Conservation Commission, River Gateway Commission, Zoning Enforcement Officers, members of the Water Pollution Control Authority, and the Town Planners. In some ways, it resembled a war: I would be confined to the “dungeon” basement, a musty room with harsh lighting, where I overturned property maps, looked at assessor lots, and scribbled onto legal pads. If not in the dungeon, I was out investigating properties dressed in outdoor gear, scaling stone walls or otherwise in the office entering information into computers and highlighting maps.

My hometown is unique in that it is small (roughly 4 square miles and under 10,000 year-round residents) but has a wide range of terrestrial and aquatic ecosystems. Old Saybrook is located “Where the Connecticut River Meets Long Island Sound,” as our town slogan states, enabling Old Saybrook to be home to both freshwater and saltwater ecosystems. Over a third of the town property is within 1000 feet of Connecticut’s shoreline. In the center of town, we have the Great Cedars Conservation Area, a parcel of land totaling more than 300 acres designated as committed open space for conservation purposes.

The War-Board defined open space as land specifically not designated for current development or already developed. Open space can be categorized as committed or uncommitted. Committed open space is any land set aside to remain unbuilt, either for public or private use. Examples of committed open space in Old Saybrook are: Town Beach, Fenwick Golf Course, Town Park, and all marshes and wetlands. Uncommitted open space is land that is undeveloped but could potentially be developed in the future if property ownership transfers or the current owner decides to build, for instance, vacant lots or schools. Ten to eleven percent of our town’s area is designated as open space, either committed or uncommitted as property for land use such as marinas, playgrounds and recreational areas and preservation and conservation areas.

This summer, Christine, Chris, and I documented over 300 land parcels officially designated as open space and totaling over 900 acres. Having dealt with adverse conditions, we successfully completed the investigation September 1. The Natural Resource Inventory report was presented in September to the town.

‘WASTE’ continued from page 5

The Women’s Action Agenda (WAA2002) focuses even more specifically on women’s issues in the environmental movement. The original Women’s Action Agenda 21 was created at the First Women’s World Congress for a Healthy Planet, organized by WEDO, which took place in Nov. 1991. Since then it has been specifically noticed by women in the environmental movement because it acknowledges gender in its proposals and thus incorporates women at every level of environmental decision-making and the legislative processes. This is especially important to relevant UN agencies and is ground breaking for communities worldwide.
Stream of Consciousness

WAA2002 to have lots of discussion and feedback as a fundamental part of its creation so that it truly reflects women around the world at the World Summit in Johannesburg. The WASTE summit provided a lot of good insight, suggestions, and discussion that will be added to the WAA2002. The complete, evolving text of Women's Action Agenda 21 can be found at www.wedo.org, where feedback is welcome.

As noted above, The Women's Action Agenda that will move on to Johannesburg for the World Summit on Sustainable Development will have evolved through feedback from many women's social and environmental action groups. It will also have changed through decisions made at conferences over the last ten years concerning these issues. The WASTE registration materials say, "It is our hope that WAA2002 will serve as a document of principles that women worldwide will both contribute to and use for their own advocacy globally, nationally and locally." Once again, this document (in progress) is available on line, so that WEDO can receive more feedback.

The WASTE summit addressed all the topics included in the Women's Action Agenda 21 through panels, discussions and speakers. The specific topics included: issues of governance and decision making; environmental ethics and accountability; militarism; global economic issues such as trade and debt; poverty, land rights and food security; women's rights, reproductive health and environmental health; biodiversity and biotechnology; energy; science and technology; women's consumer power; and information and education. I thought the Summit was wonderfully interactive and creative.

Prior to The Summit, The WASTE staff outlined five goals to focus on at the Summit, and incorporated them into the panels and discussions offered. They are as follows: to create a strong and knowledgeable network of women in the US, to develop a US women's environmental action agenda, to recommend proposals for US domestic and global policy, to connect US women to the United Nations World Summit on Sustainable Development, and to spark collaborative projects and advocacy campaigns.

A specific highlight of my weekend was at the closing plenary when Lois Gibbs spoke. Lois Gibbs is an incredible pillar for grassroots environmental activism, because she was the main grassroots drive in the New York Love Canal case of 1978. The conference was full of inspirational women and Lois was no exception. She did a phenomenal job of bringing all the creativity, inspiration and power of the conference together to incite the conference-goers to go out into their communities and the world and create change.

Lois related environmental activism to a bake sale. She said that it isn't necessary for everyone to organize the entire bake sale, but that the individuals that bake the goods and deliver them and sell them are just as important as those doing the organizing. Furthermore, it is frequently the individuals on the front line, for example, baking the goods and/or selling them that are immediately effected by environmental discrimination and injustice. They are also the ones that don't often get recognized for their hard work. This scenario is all too familiar and poignant for women worldwide. She brought the Summit to a phenomenal closing as she talked about applying the knowledge we had all learned throughout the conference. I felt that this was really vital because it is too easy to become discouraged by the overwhelming local and global issues that need to be resolved instead of taking action.

Lois asserted that women aren't in control around the world, and that this needs to change in order for the world to move in a sustainable direction. Rather than telling the room to "think globally and act locally" as many do, Lois told the crowd to "act locally and to act globally!" She stressed taking action and how important it is to be on the front lines. I walked away from her speech and the entire conference feeling armed and empowered.
AMD & ART’s efforts in Vintondale are incredible, not just because they are cleaning up the environmental legacy of AMD, but also for the positive impacts they are having on the local community. In an old coal-mining town with an average per capita income of $10,000, AMD & ART is helping to restore community pride and to restore the local economy. Once finished, the site will be a recreational area that will draw visitors and provide a habitat for abundant wildlife. When the other students and I were buying supplies in town, locals approached us and expressed how happy they were that we were out there planting trees and helping their community with this project. We are all planning to go back to the site in a few years to witness the beauty of the finished project. For more information on AMD & ART, visit their website at www.amdandart.org or write them at AMD&ART, Inc., c/o The Bottleworks, 411 Third Avenue, Johnstown, PA 15906.

organization, The Consortium for Scientific Assistance to Watersheds (or “C-SAW”), was made possible by a Growing Greener Grant from the Pennsylvania Department of Environmental Protection this past spring.

Over the next two years, C-SAW will be providing no-cost assistance to eligible organizations in the areas of program management, scientific technical assistance and quality control for water quality monitoring and macroinvertebrate sampling. This assistance will be available on a short-term basis as well as a long-term, intensive mentoring program for a smaller number of organizations.

The goal of the Consortium is to transfer knowledge and skills to watershed groups and local project sponsors, thereby helping to build their capacity to plan and conduct locally-appropriate watershed assessments and monitoring. Through the partnering of C-SAW groups with applicant organizations, we hope to help these groups utilize their resources as effectively and efficiently as possible. Of particular interest to Stream of Consciousness readers is the quality control component of C-SAW: ALLARM, the Stroud Water Research Center and USGS have opened their labs to organizations who express a desire to help ensure water chemistry quality or macroinvertebrate monitoring data and sampling techniques!

ALLARM currently has three new mentoring partners through C-SAW: the Spring Creek Watershed Community, the Lackawanna County Conservation District, and the Watershed Alliance of York County (WAY). Although each group has different needs, ALLARM will be working with USGS in the coming months to help these three organizations develop new programs and improve those that already exist. The types of assistance requested by the groups include: review and evaluation of monitoring protocols for water quality and quantity; skills workshops for staff and volunteers who will train other volunteers; guidance with study design, database management and data entry; assistance recruiting, managing and maintaining volunteer monitors; and help developing watershed and county-based networks for better watershed protection and assessment.

For more information on the types of C-SAW assistance available and how you can apply, visit the C-SAW website at http://pa.water.usgs.gov/csaw/, or contact Alissa Barron at ALLARM at 717-245-1021, or by email at barrona@dickinson.edu.
ALLARM and the LeTort Regional Authority teamed up for a day of community education and action November 4, 2001 by sponsoring a stream-walk and cleanup along the LeTort Spring Run and the Mully Grub.

ALLARM and the LeTort Regional Authority are currently implementing a restoration project on the Mully Grub and LeTort Spring Run. Volunteers and interested community members joined ALLARM staff members at the event to hear about the improvements that have been made and learn what restoration efforts will be implemented in the near future.

The LeTort Spring Run, a stream that runs through Carlisle, has been degraded by urbanization. It is a relatively pristine stream until it reaches LeTort Park, where it is joined by another stream, the Mully Grub. The Mully Grub originates in a limestone spring under Carlisle and is channeled through storm sewers, carrying most of the town's storm water runoff. This runoff includes gasoline, heavy metals, pesticides and fertilizers. Increased sedimentation has destroyed habitat that is essential for fish and the organisms they depend on. In addition, litter sometimes affects the streams.

The restoration project, funded by a Pennsylvania Department of Environmental Protection Growing Greener Grant, is an effort to correct these negative effects of urbanization. Planting of native vegetation helps to filter runoff and decrease the sediments that enter the stream. Habitat enhancing structures will provide a place for fish and other organisms to live. Community outreach and education programs aim to foster a sense of stewardship in the community and to minimize littering and other activities that adversely impact the Mully Grub and LeTort Spring Run.

The presentations were followed by a garbage and debris pickup along the Mully Grub and the Letort. Wearing waders and equipped with trash bags and rubber gloves, volunteers of all ages collected over 15 bags full of trash from the stream bank. Items found included Wendy's takeout containers, a pair of old boots, aluminum cans, a few baseballs, and glass bottles.