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Corps park ranger protects habitat, national symbol

By Joe Barison
San Francisco District

The bald eagle is the symbol of the United States in much the same way as the family of bald eagles living above San Francisco District's Lake Sonoma is a symbol of the Corps' longstanding commitment to wildlife stewardship.

The nesting pair of adult eagles, Lake Sonoma "residents" since at least as far back as 2001, is caring for their two, 4-week-old chicks under the watchful eye of Lake Sonoma Park Ranger Joseph Lishka.

Corps environmentalists, such as Lishka and Wade Eakle, an ecologist and raptor expert with the South Pacific Division's Regulatory Division, point out that the eaglets' presence at a lake close to human communities and receiving more than 500,000 recreational visitors per year, is evidence of the eagle's comeback from endangerment.

The eagle was placed on the U.S. government's endangered-species list in 1967, but has since thrived. In 1995, the bird received reclassification to the less-severe "threatened" list and, in 2007, was completely delisted.

Still, the birds require a certain distance from humans. Lishka maintains a 400-foot radius, people-free zone around the nest.

"Alternating between two nests in nearby snags, [the adult eagles] hatched one to three offspring a year since [2001], with at least one chick successfully fledging each year," Lishka said. Lake Sonoma's mild climate allows the eagles to remain in the winter.

"Bald eagles reuse their nests, adding to them every year until sometimes they grow as large as Volkswagen bugs..." Lishka said. The eagle family occupies a nest 100 feet above ground, with a panoramic view of the 2,700-acre lake.

See Eagles, page 6



This pair of eagles has been together since at least 2001 and has produced offspring each year at Lake Sonoma, Calif., a heavily used recreation area managed by the Corps of Engineers. (Courtesy photo.)

Community of practice continues transformation

By Candice Walters
Headquarters USACE

With a goal of sustaining technical capability to deliver quality environmental services and products to customers, the U.S. Army Corps of Engineers Environmental Transformation (eT) initiative is making good progress. So says Stacey K. Hirata, acting director of the Environmental Community of Practice (eCoP).

"The transformation of our environmental programs is a continuous process that I've been involved with since joining the Corps Headquarters in 2003," Hirata said. "Most recently, we've refocused and re-energized the environmental transfor-

mation by hosting the January 2008 Environmental Summit.

"The project delivery teams we formed after that summit continue to make progress on the nine approved recommendations (see graphic, page 5). Several teams have completed their work, others are nearing completion. We're making good progress and are on track to complete these current activities this year," he said.

While transforming operations is never easy, Hirata said he believes the USACE environmental community must adapt to the changes around it. "Our customers, programs and policies continue to evolve and change. We need to be able to recognize these changing conditions and adjust accordingly," he said.

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Fort Bragg's new Community Emergency Service Station will not only serve Soldiers and their Families in the Linden Oaks area, but it will also do a great service to the environment. (Illustration courtesy of HSSM, Inc.)

Fire station planned as 'Platinum'

By Tracy Ammons
Savannah District

Right now, a new fire station at Fort Bragg, N.C., is merely a design on paper. But by summer 2010, the project will emerge as an environmental milestone for the U.S. Army Corps of Engineers Savannah District.

Upon completion, the facility will seek Platinum certification — the highest rating in the Leadership in Energy and Environmental Design (LEED) Green Building Rating System.

Once certified, the Fort Bragg Community Emergency Service Station will become the first LEED Platinum facility in the federal government and possibly the first Platinum-level fire station in the United States.

"A LEED Platinum building is one that typically excels in the areas of energy reduction, water conservation, incorporation of new energy technology and minimizing the negative environmental impacts of site development," said

Judy Milton, an architect and LEED expert for the Savannah District. "LEED Platinum goes above and beyond what most would consider exceptional practices."

A program of the U.S. Green Building Council, the LEED rating system is a voluntary, third-party certification that promotes and recognizes the design, construction and operation of environmentally sustainable buildings. The four levels of LEED — Certified, Silver, Gold and Platinum — incrementally strive to achieve minimal harm and maximum sustainability for the environment.

To earn LEED certification, a project must meet all prerequisites and earn a specified number of LEED credits. Credits are awarded in five areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

LEED Certified projects need at least 26 of 69

possible points, while LEED Silver — the Army's standard achievement level — requires at least 33. The threshold increases to 39 points for LEED Gold, while Platinum — the highest level — requires 52.

Slated for construction in Fort Bragg's Linden Oaks northern training area, the 8,300-square-foot fire station will supply ample room for firefighters, police officers and Emergency Medical Service professionals. The garage area will house two fire engines and one emergency vehicle.

The \$2.6 million contract was awarded in April to R.A. Connelly, Inc., of Bradenton, Fla. Ground breaking is expected as soon as this summer, with an estimated completion in summer 2010.

Designed by HSM (Hayes, Seay, Mattern & Mattern) Inc., based in Charlotte, N.C., the facility will incorporate several mechanisms to conserve water, save energy and improve air quality.

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Scientist calls for energy independence

By Dana Finney
Engineer Research and Development Center

In conjunction with Earth Day, Amory Lovins, world-renowned energy and resource innovator and chief scientist at Rocky Mountain Institute (RMI), was a guest speaker for the Engineer Research and Development Center’s Construction Engineering Research Laboratory (CERL) and the University of Illinois in Champaign, Ill. Lovins’ talk was titled “Energy and Resource Sustainability in the Twenty-First Century.”

Lovins has long held that the U.S. can free itself from oil imports using a market-driven approach with investments in areas that improve efficiency and support renewable energy.

“The last time anyone paid attention to this was after the first Arab oil embargo in the 70s,” he said. “In the 15 years that followed, we became very good at improving our energy efficiency — and we were cutting our oil consumption by more than five percent per year. During that time, our economy grew by 27 percent and oil imports declined by 87 percent.”

But around 1985, with oil prices bottomed out, “we spent the next 15 years forgetting everything we learned.” Fuel was cheap again and U.S. highways became congested with gas-guzzling, pollution-causing automobiles such as sport utility vehicles.

Lovins said he believes the U.S. can completely end dependence on oil by the year

2050 at only one-fifth the current cost of oil while largely eliminating the carbon dioxide emissions that cause what he terms “global weirding.” For example, investing \$180 billion to upgrade car, truck and airplane manufacturing plants to make these vehicles more efficient would return \$70 billion per year in profits by 2025.

“Only 0.3 percent of the fuel you put into an automobile is used to move the driver. Most of the remaining fuel is needed to move

the car. Switching to ultra-light materials such as carbon fiber composites can increase efficiency and safety at no extra cost,” he said, noting that Boeing regained its world market edge by using composites to build the new 767 jet.

Lovins also advocates greater use of micropower — making heat and power together in large plants and decentralizing small renewables such as photovoltaics, windmills, biomass and fuel cells. “The technology to conserve energy keeps getting bigger and cheaper, which is the opposite of oil,” he said.

His approach would also eliminate nuclear power plants, which he said have never been a sound investment. In addition to being unprofitable, nuclear facilities provide access to materials and expertise to make bombs.

“I’m not saying that the world’s despots couldn’t make a dirty bomb, but without easy access to nuclear materials, it would be harder

See Energy, page 6



Amory Lovins (left) accepts the ERDC coin from CERL Director Dr. Ilker Adiguzel. (Courtesy photo)

More stories available online

Internet exclusive stories for this issue can be found at https://environment.usace.army.mil/corps_environment/ and include:

- Endangered species protected during Wiesbaden construction
- Corps employees lead the way with environmental stewardship at Libby Dam
- District removes practice rounds at Martha’s Vineyard
- Corps partners with Student Conservation Association
- Corps, Riverkeepers team up

Student recounts work in Corps program

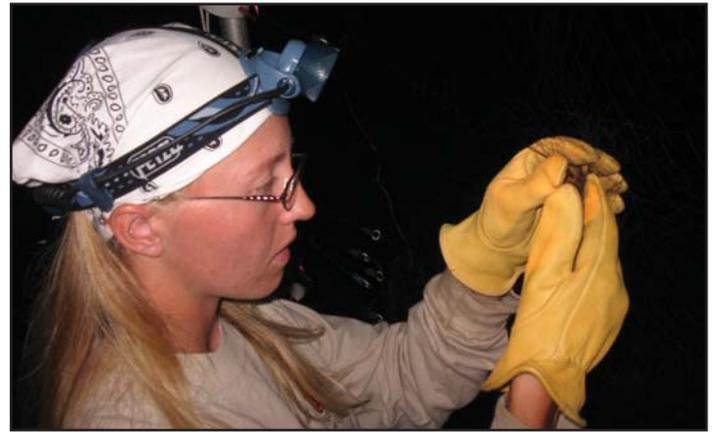
By Elly Schmidt
SCA Intern

Getting up at 4:30 a.m. to listen for birds. Staying up until 2:30 a.m. collecting bat data. Jumping into a canoe and attempting to stay dry searching for invasive plants. Entering boundary line data and creating geographic information system (GIS) maps. Performing an interpretive program for the public. Getting dirty maintaining a public use trail and loving every minute of it.

These are just a few of the many U.S. Army Corps of Engineers projects that have been going on across the nation with the help of Student Conservation Association (SCA) interns.

My name is Elly, and I worked for a year and a half as an SCA intern for the Corps in the Upper Connecticut River Basin. During my time I learned a great deal about myself, the Corps and how other interns felt about their own experiences. SCA Interns are seeking the similar experience of working in an internship related to conservation and the outdoors, but they come from a wide variety of educational backgrounds. There is an intern for almost anything you would want to do.

In the year and a half I interned with the Corps, I worked with other interns who had, or were pursuing, degrees in:



Elly Schmidt, Student Conservation Association intern, examines a bat to collect data for a Corps project. (Courtesy photo.)

environmental science, GIS, geography, history, international studies, meteorology, zoology, forestry and biology. SCA Interns also tend to be young individuals who are either recently graduated or are still in college or high school. They are looking for a mentor and/or an experience to help shape what they plan to do professionally and the Corps can play a large part in that.

Before this internship, the Corps was only locks and dams on the Mississippi River to me. As a result of this internship, I will consider the Corps in my future job plans and know that other interns — past, present and future — will do the same. (*The Corps Environment* online edition has more information on this program.)

Division, Audubon Society sign regional agreement

By Mississippi Valley Division
U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers Mississippi Valley Division and the National Audubon Society recently signed a regional agreement to strengthen their environmental partnership.

The U.S. Army Corps of Engineers' Mississippi Valley Division (MVD) and the National Audubon Society signed an agreement April 1 to strengthen collaboration and communication aimed at restoring and protecting habitat and water quality along the Mississippi River, one of this nation's greatest natural and economic assets.

The regional Memorandum of Understanding (MOU) unites ecosystem restoration experts from the environmental and natural resources staff of MVD's six districts with those of Audubon's Mississippi River Initiative to collaborate on key conservation initiatives within the 12 states and 370,000-square-mile geographic boundary of MVD that stretches from Canada to the Gulf of Mexico.

Corps and Audubon staff have already begun exploring sustainable management of important habitats such as the Atchafalaya River system in Louisiana, Mississippi River di-

versions to restore wetlands and strengthen storm protection below New Orleans; and conservation education projects at places such as the Mississippi and Missouri River confluence near St. Louis.

"A strengthened relationship between the Corps and Audubon is absolutely essential," said Brig. Gen. Michael Walsh. "And the MOU will foster even greater collaborative achievements as both organizations strive to preserve our nation's environment."

"Together, we can meet the broad array of challenges to keep this vital working river a river that works," said Audubon Vice President Roger Still. "We can advance the restoration of Mississippi Delta habitats that ensure a sustainable future for the people of coastal Louisiana. We can make certain the Mississippi remains as a globally significant migratory flyway for birds, and that it supports other important wildlife species. And we can protect water quality along the entire length of the river."

"This agreement must be more than a piece of paper," Walsh said. "The importance of this great river to our nation's economy and to our natural heritage demands that we work together for a balanced, sustainable future."

Transformation

Continued from page 1

The mission is to provide valued services and quality products, on time and under budget if the environmental community is to remain the provider of choice for its reimbursable customers, Hirata said. “We must continue to improve our quality, schedule, and cost to meet our internal goals of moving from good to great and exceeding our customers’ expectations.”

The January 2008 Environmental Summit used a detailed Strengths, Weakness, Opportunities and Threat analysis to produce recommendations that required further study. The project delivery teams, using vertical teams with multiple disciplines and diverse perspectives, are producing excellent executable products.

“JR Gibson, the overall eT program manager, has done a magnificent job of leading, managing, being the puppet master pulling all the strings, orchestrating/synchronizing the activities of the nine project delivery teams, keeping everything and everyone focused and on track to get it done,” Hirata said.

“The Regional Environmental Management Plan, which incorporates many of the nine project deliver team products, and the National Acquisition Strategic Plan are enduring documents that provide us great value,” Hirata said. “Environmental Transformation linked existing process with new initiatives to create these documents. The transformed systematic process focuses senior leader attention to make informed decisions that will have long-term impacts to sustaining our technical expertise and continuing to ensure that we are the provider of choice.”

Key to ensuring that the eCoP is the “provider of choice” is working with its customers. “We’ve kept our customers informed of our progress and earlier this spring, we hosted our first Listening and Exchange Workshop with our customers to report on our progress and fine tune our transformation recommendations,” he said, adding that the workshop provided the team with “valuable feedback that we will pursue as we continue on this journey.”

Hirata said he believes Environmental Transformation will result in an improved ability to deliver quality products and services faster, more consistently and less expensively because the workload and technical expertise will be massed in a few locations.

“We’ll transform from a district-centric organization to a regional organization. Regional focus permits our environmental reimbursable program to concentrate workload at a few districts within any given region to sustain our technical capability – our people in the right grades with a career path. Our workload and technical expertise will not be diluted across 21 production centers. We’ll be able to sustain our-

selfes through lean and robust program years,” he said.

And Hirata said he is seeing examples of that transformation almost daily. “I’m seeing more and more examples of inter- and intra-regional team execution of environmental projects. We’re leveraging technical expertise wherever it resides. As a result, our products and services are improving – we’re getting faster, better, less expensive,” he said.

“As our community of practice matures, we’re going to see stronger communication vehicles, better identification and use of our technical experts, more sharing, and growth.”

Helping with the maturation is the revitalized eCoP Steering Committee that Hirata says is “critical” to the process. “The eT focus is on people, the eCoP Steering Committee focus is on people — it goes together,” he said. “The eCoP Steering Committee builds upon the environmental community’s knowledge, technical competency, people, communication techniques and the ability to share lessons learned. It crosses all major missions and business lines as its 23 to 24 members represent Civil Works, Military Programs, the Engineer Research and Development Center and other major programs. It’s a good blend of people who are charged with moving the community and eT efforts forward.”

Environmental Transformation Initiatives

Transforming Customer Care

- Standardize Customer Communications on the Cost of Doing Business – Completed
- Use a Corporate Environmental Communications and Outreach Plan

Transforming Management of Programs

- Align Portfolio Management to USACE Vision
- Increase Regional Use of Virtual Teams/Move to Optimization

Transforming Environmental Capabilities

- Assess Environmental Corporate Resource Planning and Recommend Improvements – Completed
- Improve Technology Information Dissemination and Infusion*
- Improve Technology Access and Management Process*

Transforming HQ USACE Management

- Revitalize eCoP Steering Committee – Completed
- Align National/Regional Environmental Listening and Exchange Workshops – Completed

* These two initiatives are being linked to the USACE Campaign Plan Goal 3, Objective 3d — Develop and apply innovative approaches to delivering quality infrastructure.

Gold mining equipment sorts lead bullets from soil

Scott Kranz, a contractor, works with equipment originally designed for gold mining to remove bullets from soil in a former firing range at Camp Withycombe in Clackamas, Ore. The project is part of a reclamation effort to remove the potentially dangerous lead projectiles and to return the land to its original condition.

(Courtesy photo)



Eagles

Continued from page 1

Ranger Lishka monitors and records the birds' behavior, and 2009 marks his eighth year following the lives of this eagle pair. Eagles typically mate for life. The job is still exciting for Lishka, who said, "I have as much fun now as I did the first time [I saw the birds]." The Lake Sonoma eagles are the only pair in the region known to the Corps to be formally monitored.

Historically, eaglets have a 50-percent probability of surviving their first year, due to inadequate hunting skills or environmental hazards. And the young "do fall out of the nest, and they do crash and burn on their first flight quite often," Lishka said.

Energy

Continued from page 3

to get them, more expensive and politically more costly to be caught trying to get them because now there would be no doubt you're making bombs, not electricity."

Lovins has been a frequent consultant for the Department of Defense and, with three colleagues, authored "Winning the Oil Endgame" at DoD's request. Some 70 percent of the tonnage moved for defense logistics is fuel. Transporting this fuel introduces multiple vulnerabilities for Soldiers whose convoys are often targeted.

In addition, military installations share the same energy security issues as the rest of the nation in being connected to

Lake Sonoma, created by Warm Springs Dam in 1983, has ample fish and water birds. The surrounding forest is comprised of 17,000 acres of public land supporting oak woodlands, mixed evergreen forests, chaparral, grasslands and riparian woodlands — all habitat for small mammals. Eagles hunt fish, injured waterfowl and small mammals, and will eat carrion.

Lake Sonoma and its surroundings are home not just to bald eagles. The habit also supports the osprey, American kestrel, red-tailed hawk, red-shouldered hawk, white-tailed kite, turkey vulture, barn owl and the great horned owl. Golden eagles, Cooper's and sharp-shinned hawks, and Northern harriers are common seasonally at the lake.

what Lovins calls a "brittle grid." Comprised of millions of miles of transmission wires, the grid lacks the flexibility and resiliency to be quickly restored in the event of a natural or man-made disaster.

As part of Lovins' Champaign trip, he visited CERL to discuss partnership opportunities between RMI and the Center for Advancement of Sustainability Innovations (CASI). Of particular interest to CASI and CERL's energy branch is to tap into RMI's expertise to support research on Net Zero Energy installations, in which an entire post would produce as much energy as it uses on a macro scale. The key will be to integrate energy supplies using a systems approach, and as Lovins said, "Doing the right things at the right time."

Platinum

Continued from page 2

“We look at the building system holistically and use off-the-shelf technologies to ensure the finished product is economical,” said Catherine Bingham, project manager. “And most of the time, that means it will also be environmentally sound. Saving water and saving energy helps our environment, but it also saves money in the building’s lifecycle.”

To help conserve water at the fire station, all showers and faucets will have low-flow, high efficiency water fixtures. A captured water system will provide rain water for washing fire engines and flushing toilets.

“Flushing clean, drinkable water down the toilet isn’t the best use of water,” said Anne Rogers, LEED project manager with Southface Energy Institute. “But, using high efficiency fixtures and reusing captured rain water will save energy at the water treatment plant, while also reducing potable water consumption by 83 percent, which ultimately benefits the environment.”

A solar water heater will offset at least 7.5 percent of total building energy costs, while high-efficiency heat pumps and sophisticated light sensors will further reduce the use of electricity.

“We will have occupancy sensors on the lights, so when someone enters or exits a room, the light will turn on and off accordingly,” Rogers said. “Also, daylight sensors will keep the lights off when there is sufficient natural lighting in the room.”

The roof will incorporate energy-saving technology to reflect sunlight and heat away from the building, thus reducing roof temperature. This solar reflectance material will keep the roof nearly 50 degrees Fahrenheit cooler than conventional roof materials during peak summer weather.

The design incorporates a majority of recycled building materials, like recycled concrete and steel. Most of these materials will come from local and regional suppliers, reducing the amount of energy needed to transport them. Other materials like carpet, paints, adhesives and sealants will be low-emitting and environmentally friendly.

A permanent recycling area for paper, plastic, cardboard and other household items will enhance the building’s sustainability, along with bicycle storage areas and the use of low-emitting, fuel-efficient vehicles.

The green design incorporates several mechanisms to control indoor environmental quality – another essential part of LEED.

“When more people come into a room, they release more carbon dioxide into the air, which can negatively affect indoor air quality,” Rogers said. “But the ventilating system will have sensors to detect certain levels of carbon dioxide. Those sensors will sound off to alert the occupants to adjust the ventilation system, which will bring in fresh, outdoor air to fill those spaces as necessary.”

The station will also have exhaust systems that create negative pressure and remove any contaminated air that comes inside.

A variety of green cleaning products — free of volatile organic compounds (VOCs) that compromise indoor air quality — will make routine cleaning more environmentally friendly.

The fire station project received funding through a federal grant with the Environmental Security Technology Certi-

fication Program (ESTCP). Under the terms of the grant, ESTCP will monitor the station’s performance during use.

After data is collected, ESTCP will compare the building’s initial and life-cycle costs to similar fire

stations that did not achieve a high LEED level.

“This will serve as a helpful comparison tool, and it will also be a learning experience for the Corps of Engineers,” Milton said. “We can take the lessons learned and the technologies used and apply them to other projects.”

Because of the nature of the grant, ESTCP needed a well-defined, standardized type of building to accurately conduct the comparison. The fire station made a suitable choice, since the Corps’ recent push toward Centers of Standardization requires all fire stations to have near-identical designs.

“Since we switched to LEED, the Army is now using the same tool that the private sector uses,” Milton said. “Currently, the Army’s military construction program is at historic proportions. We have a significant volume of construction coming out of the Army, and the vast majority of it carries LEED Silver requirements. The Army’s commitment is important to our nation, because we’re helping to transform the industry just by virtue of our demand for sustainable design and construction.”

“We’ve come a long way as far as conforming to the same standards as USGBC,” she said. “And we’re bringing all of our construction contractors and designers along with us. It’s part of how we do business now.”

The Army’s commitment is important to our nation, because we’re helping to transform the industry just by virtue of our demand for sustainable design and construction.”

*Judy Milton
Architect
Savannah District*



Crews assemble floating island modules on the specialized launch ramp at Dutchy Lake. (Photo by Kitia Chambers)

Terns get new island nesting spots

Project aims to lure birds away from endangered salmon

By Amy Echols
Portland District

Combine the enthusiasm of an environmental engineer and the challenging setting of a remote lake, add a few tons of recycled plastic and migrating Caspian terns and—*voilà*: a floating island to help save threatened and endangered salmon.

Spurred by her commitment to make a difference in the world, Kitia Chambers, an environmental engineer with Portland District's Design Branch, worked with Corps biologists and a cutting-edge recycling contractor to launch a 22,000 square foot floating island.

Chambers is part of an avian predation team creating nesting habitat for Caspian terns to draw them away from islands in the Columbia River estuary, where annually they feast on more than 4 million juvenile salmon listed under the Endangered Species Act.

The estuary islands formed over many years from material from Corps dredging in the Columbia River. The barren, sandy terrain, ideal for nesting, attracts terns to the estuary. The abundant supply of fish contributes to the creation of the world's largest colony of terns and a marked impact on

juvenile salmon populations making their way to the Pacific Ocean.

The Corps identified Dutchy Lake, in remote south-central Oregon, as a viable location for alternative tern nesting. However, filled with water year-round, the lake presented some challenges to building an island.

"Terns historically nested in the area and we were confident we could lure them back, if only an island could be built," Chambers said. "At other project locations, we built roads and constructed conventional rock islands during the dry season. We couldn't lower the water levels at Dutchy so building the same type of island was cost prohibitive and environmentally disruptive. Then the concept of a barge-like island came to mind."

Chambers conducted an Internet search on the subject, which led her to Floating Island International in Shepherd, Mont.

"I researched the company's BioHaven floating islands, which were already in place as habitat enhancements around the country. Adding to the attraction was their use of recycled plastics and an environmentally sensitive design," Chambers said.

Project managers were not initially sold on this alternative. However, after studying a prototype in Montana, negotiating the design details, and clearly understanding its cost effectiveness and environmental sustainability (compared to islands made of new materials), the Corps decided to take the step.

In a specialized factory in Montana, a crew of 13 built the 328 modules that make up the main part of the nearly oval island. Each module measured approximately 5 feet by 14 feet and used 200 pounds of polypropylene (from recycled carpet) and 125 pounds of polyester (from recycled drinking bottles). These materials would otherwise occupy acres of landfill space.

Floating Island International trucked the modules in 14, 53-foot containers to the site. Their actual on-site assembly required minimal equipment, but creating an island habitat in the middle of winter meant running a tight show. The five-week window between the waterfowl hunting and bird migration seasons meant crews had to move fast.

The Corps' construction contractor built a unique shore-based launch ramp for an assembly-line type installation mimicking a Lego project of huge proportions. In freezing temperatures, crews first connected several rows of the modules on the dry ramp. Next, crews stapled tree fabric over these rows to prevent plant growth, over which they spread a 7-inch layer of lightweight pumice as the tern's nesting material. Crews slid the assembled portions down the ramp into the lake, just far enough to get them floating but keeping one side exposed to connect onto the next assemblage of modules. Finally, boats pulled the completed island — modules,



The manufacturer tests a small prototype island in Montana.
(Photo by Kitia Chambers)

pumice, flagstone and a decoy system floating together — to the middle of an icy Dutchy Lake. There it is anchored, awaiting its first occupants with their northward, spring migration.

“Since the island was not built up from the lake bottom or require the construction of a causeway, we did not disrupt aquatic life and we can position the island anywhere we desire,” Chambers said. “I made a commitment that my career would help make the world a better place. I think this is a fantastic project where we made a difference.”

The Corps plans to construct eight more islands in Oregon and California. According to Chambers, it is entirely possible that the Corps will consider floating islands at other locations, where environmental and cost considerations lend themselves to this approach.

Meanwhile, biologists spotted Caspian terns near Dutchy Lake this spring. Chambers and the team are watching closely for signs of a new colony settling on the floating island and have noted 10 nesting pairs this month.



The island, now in place, includes social attraction decoys and speakers to broadcast bird calls and is ready for occupation. *(Photo by Dan Battaglia, Oregon State University)*

Laredo project tests methods for removing non-native cane along Rio Grande River

By Jim Frisinger

Engineering and Construction Support Office

Immigrants who followed the explorers to the New World sometimes brought with them favorite Old World species. *Arundo donax* L., a fast-growing cane from the Iberian Peninsula prized for a wide variety of fiber uses, was probably brought here by Spanish immigrants in the 1500s.

The bamboo-like plant, known to us as Carrizo cane, thrived in its new riparian habitat along the Rio Grande River without the natural predators it had back home. This invasive species is a biological powerhouse — it can grow several inches in a single day — that establishes itself in thick stands up to 27 feet tall with dense root masses 3 feet deep. Aerial surveys estimate 20,000 acres of the Rio Grande Basin is covered by Carrizo.

But for the Department of Homeland Security (DHS), Carrizo cane is a green shroud that cloaks the activities of smugglers and others trying to cross the Rio Grande illegally. These border blind spots endanger Border Patrol agents on foot patrol unable to gauge threats from illegal entrants at a distance.

The Engineering and Construction Support Office (ECSO) of the U.S.



These cane stumps have been painted with a chemical as part of an overall eradication strategy. (Courtesy photo)

Army Corps of Engineers is part of a joint Federal research effort in Laredo, Texas, studying this non-native species. ECSO is a Fort Worth District office dedicated to supporting DHS.

The Tactical Infrastructure Program — through U.S. Customs and Border Protection's (CBP's) Facilities Management and Engineering (FM&E) Division — selected ECSO to execute a pilot project on 25 acres along 1.1 miles of the nation's second-longest river. The Border Patrol's Laredo Sector Carrizo Cane Removal and Control Pilot Project is the first effort by CBP to remove and control Carrizo cane along the Rio Grande. Because it is the first attempt, CBP is using this project to identify the pros and cons of different methods for cane removal.

"The pilot project is intended to evaluate the efficiency and effectiveness of various removal and long-term control strategies," said Bob Hardbarger, ECSO's first project manager in Laredo. "The intended result is to achieve a new steady state in the vegetation mix along the Rio Grande. Carrizo cane will still persist, but with much reduced population density and smaller individual plant size."

Jesus A. Chan, a special operations supervisor for the Border Patrol, says the clearing of the cane will re-establish the Rio Grande as a natural barrier to border crossing.

For years, canebreaks kept agents on the patrol road from seeing the Mexican riverbank where would-be border crossers gather before crossing. Worse, after crossing, the illegal entrants could stay hidden in the cane all day waiting for the right moment to continue their journey.



Workers survey an area overgrown with Carrizo cane. The plants can grow to more than 27 feet. (Courtesy photo)

"You could be walking right next to the road where a group of 20 aliens would be hidden and you wouldn't even see them," Chan said. Even if a group were spotted, the only way to get to them would be using a machete to chop through the cane.

CKY Inc. was awarded a \$1.118 million contract to test two removal methods. One is mechanical, digging out the cane, roots and all. The cane propagates by its rhizomes, which will be chipped into small pieces. The other method uses a harvester to cut the cane leaving a 12- to 18-inch stem.

Workers trail a minute or two behind the harvester and use back-pack sprayers to paint the stems with herbicide. Imazapyr is the primary herbicide being used, with glyphosate used on a small tract. The plant generally will die within 45 to 60 days.

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District biologist Leighann Gipson and U.S. Fish and Wildlife biologist Jason Phillips work to lower their canoe into the Rivervale Outlet Ditch a tributary of the St. Francis River in Marked Tree, Ark., as part of a survey project on endangered mussel species. (Photo by Stacy A. Ouellette)

Surveys seek data on endangered mussels

By Stacy A. Ouellette
Memphis District

Memphis District biologists Mark Smith and Leighann Gipson conducted freshwater mussel surveys along a tributary of the St. Francis River in Marked Tree, Ark., April 27.

“The trip’s objective was to obtain additional information on the freshwater mussel densities and distribution in the Rivervale Outlet Ditch so the appropriate quantitative sampling design could be determined,” Smith said.

He explained the quantitative study will yield a relatively accurate estimate of the number of federally endangered fat pocketbook mussels in a 5-mile reach of Rivervale Outlet Ditch, which is scheduled for clean out later this year.

Memphis District biologists conducted initial surveys in proposed project areas to determine whether any federally threatened or endangered mussel species are present.

“We collected mussels representing 15 species during the initial surveys,” Gipson said. “All mussels were col-

lected, identified and returned to the general vicinity in which they were found.”

The fat pocketbook mussel can be identified by its round to oblong type of shell, which is usually greatly inflated. The thickness and color of the shell as well as the size depends on the mussel’s age.

Gipson and Smith worked on this effort with Jason Phillips, U.S. Fish and Wildlife Service (FWS) biologist, representing the Arkansas Field Office.

Phillips is responsible for ensuring that federal agencies follow the Endangered Species Act (ESA) of 1973, as amended.

FWS often assists the Memphis District in efforts to identify streams and other habitats supporting species listed as federally threatened or endangered.

“We have a very good working relationship with the

Corps’ Memphis District,” Phillips said.

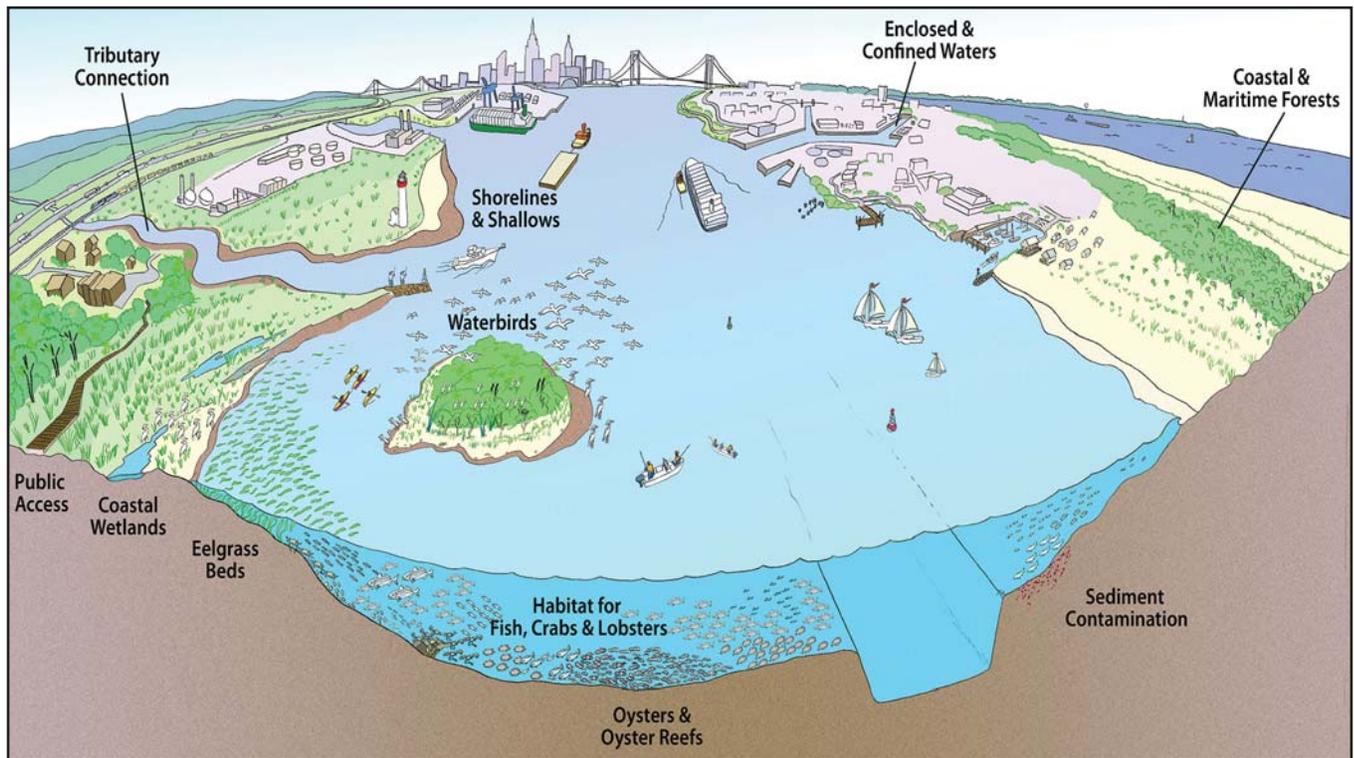
“Although our agencies have different missions, we are both responsible for adhering to some of the same laws such as the ESA,” he added.

The joint-agency team conducted both visual and hand searches of all available habitats at eight different sites along Rivervale Outlet Ditch.

Biologists hope to use the information collected during these surveys to better understand the habitat requirements of the fat pocketbook and determine the effects of required Corps maintenance activities on the mussel populations, Smith said.



A mussel found by the survey team. (Photo by Leighann Gipson)



This illustration shows target ecosystem characteristics for restoration. These targets reflect a broad interest of stakeholders and address habitat improvement, water quality, contamination and public access in an urban estuary. (Illustration courtesy of New York District.)

Corps, partners announce plan to restore urban estuary

By Vince Elias
Harbor Programs Branch, New York District

The U.S. Army Corps of Engineers New York District and The Port Authority of New York and New Jersey announced the release of the Draft Hudson-Raritan Estuary (HRE) Comprehensive Restoration Plan (CRP).

The CRP was developed in partnership with the NY/NJ Harbor Estuary Program (HEP). The HEP is a consortium of federal, state, municipal, non-governmental organizations and other regional stakeholders focused on improving the quality of the harbor estuary. The CRP sets forth a consensus vision, master plan and strategy for future ecosystem restoration in the NY/NJ Harbor. The NY/NJ HEP intends to adopt the CRP as its future restoration plan for the region. There will be public outreach meetings throughout the year to obtain input, comments and further build consensus on important restoration projects and priorities within the region.

Surrounding the Hudson-Raritan Estuary is one of the nation's most populated urban areas. Balancing the economic needs of this metropolitan area with the estuary's environmental integrity is a challenging responsibility. To achieve this balance, and fulfill the recommendations of the Harbor Estuary Program, Congress authorized the Hudson-Raritan Estuary Ecosystem Restoration Feasibility Study in 1999.

The study has been conducted by the U.S. Army Corps of Engineers and The Port Authority of New York and New

Jersey. A major product of the study is the CRP, which aims to restore the NY/NJ Harbor Estuary — an area that encompasses approximately 2,000 square miles with an average density of nearly 6,000 people per square mile. The restoration outlined in the CRP will protect, preserve and restore habitat, improve degraded water and sediment quality and reconnect the communities to this valuable resource.

The overall goal of the CRP is to develop a mosaic of habitats that provides society with renewed and increased benefits from the estuary environment.

“The Corps is proud to have served as a facilitator to bring the region together to develop this historic plan. It is envisioned that regional stakeholders will work toward a series of common restoration goals that will create and restore habitat, improve water and sediment quality and provide access and recreational benefits to the region,” said Col. Nello Tortora, the Army Corps’ New York District commander. “The Comprehensive Restoration Plan will be the road map that will enable us to see short-term and long-term environmental improvements that will help us achieve our vision of a world-class estuary.”

The Port Authority serves as the local sponsor and equal cost-sharing partner for this project to complement port redevelopment efforts, improve natural resource values and allow for greater public access and use opportunities within the estuary.

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The Corps
Environment

Harbor

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“Our multi-billion in investments in the region’s transportation infrastructure must be accompanied by an equally ambitious vision to make sure our environmental resources are preserved for future generations,” said Chris Ward, Port Authority executive director.

“We’ve taken steps in recent years to be good environmental stewards, and this report will set the bar higher as we look at what must be done in the future to protect the critical estuary in New York Harbor,” Ward said.

Along with a cost-sharing role, the Port Authority is taking an active role in the restoration initiatives as well, such as land preservation.

“We’ve taken on a regional leadership role over the years to ensure our environmental resources are preserved, including our ambitious program to spend \$60 million to buy and preserve environmentally sensitive tracts of property,” said Susan Bass Levin, Port Authority deputy executive director. “This study will build on the past efforts as we look to the

future and the need to facilitate even more environmental initiatives in the region.”

The U.S. Environmental Protection Agency is another key player in this environmental initiative. “This plan will go a long way toward restoring the harbor so that it can better support fish and wildlife and so that people can enjoy the myriad benefits the harbor provides,” said George Pavlou, U.S. EPA acting regional administrator, Region II. “The harbor faces numerous stresses from the urban environment that surrounds it, and it is only through concerted efforts, such as the multi-agency NY/NJ Harbor Estuary Program, that we can effectively address them.”

“Protecting our precious natural resources is about keeping the Garden State green, but it’s also about securing things like clean water for our families. It is important that we map out this strategy to preserve the Hudson-Raritan Estuary by taking into account the voices of advocates and area residents and create awareness of how important this effort is for future generations,” said Sen. Robert Menendez of New Jersey.

Cane

Continued from page 10

Re-sprouts will be monitored and hand-treated with herbicide beginning in the summer of 2009 and over the next five years.

Nearby, the U.S. Department of Agriculture (USDA) is testing a biological alternative by releasing insects known to prey on the cane. Scientists used plant genetics to trace the genotype of *Arundo donax* that dominates the Rio Grande Basin back to an area in Barcelona, Spain. They then selected cane predators native to that region. The USDA began releasing the Arundo wasp (*Tetramesa romana*) April 29, near Laredo. The Arundo scale (*Rhizaspidiotus donacis*) is expected to be released later this summer. The wasp lays its eggs in the cane stem where the larvae cause lethal galls to form. The scale feeds on the rhizomes.

The USDA effort is also being supported by DHS funds. Some insect release sites will overlap with ECSO’s site so researchers can measure the effectiveness of combining both chemical and biological treatments.

Once the non-native cane is removed at the ECSO site, Gulf South Research Corp., operating under a \$1.015 million contract, will re-vegetate the site with native plants, some of which had been crowded out by the cane’s prolific growth. These will provide erosion protection and may boost habitat for native wildlife and endangered species.

Studies show that Carrizo cane provides little food or habitat for native wildlife. Cane stems and leaves contain a wide array of noxious chemicals, which may protect it from most native insects and grazers.

A native grass seed mix consisting of buffalograss, hairy grama and matted grama, will be spread over the project area after clearing to stabilize soils. Native trees, shrubs and perennial plants such as retama, Texas persimmon, spiny hackberry and Mexican ash, will be planted in the wet season of late fall and early winter 2009 at a density of 250 plants per acre. They will be irrigated for three years to help them get established.

Water resources in this arid area may be enhanced by the removal of the thirsty cane. Salt cedar, already notorious for its water-gorging ways, uses around 7 millimeters (0.3 inches) a day on average. A new study suggests Carrizo may consume even more – 9 millimeters (0.4 inches) or higher per day – says Georgianne Moore, an assistant professor of ecohydrology at Texas A&M University.

The ultimate goal for the treatment area is a return to a natural environment that supports native wildlife on a 135-mile stretch of the river while enhancing the capabilities of the Border Patrol. Although the pilot plot clearing won’t finish until sometime this summer, it is already having an impact.

“It’s like day and night,” said Chan. “You can drive along the patrol road just south of the railroad bridge and you can see Mexico and you can see people standing on the south side [waiting to cross].” Agents never realized how close the river was to the patrol road there “because nobody had ever seen it before.”

South Carolina, Corps enter partnership, receive help to preserve valued sweetgrass

By Mimi Williams

Plant Materials Specialist,
NRCS Brooksville Plant Material Center

Dr. Robert Dufault

Professor of Horticulture,
Coastal Research and Education Center
Clemson University

Sweetgrass (*Gulf hairawn muhlygrass*, *Muhlenbergia filipes*) is native to the coastal areas of the south Atlantic and along the Gulf of Mexico.

In addition to being an important component of the coastal plant community, sweetgrass is the foundation material for African-coiled basketry in the Southeast, particularly in the Gullah/Geechee community around Mt. Pleasant and Charleston, S.C.

Development along the South Carolina coastline has greatly reduced the number of sweetgrass stands and endangered the basket-weaving tradition in the area. Sweetgrass is the only source of grass that is used for the famous Sweetgrass Baskets.

The art of making these baskets is seen as a direct link to the African heritage of the craftsmen. Their baskets today are considered objects of art and highly prized in the market place.

Charleston basket makers are the direct descendants of enslaved Africans originally native to the West African



The 5 different types of plants that were planted from left to right are Sea Oats, Marshhay Cordgrass, Seashore Elder, Bitter Panicum, and Sweetgrass.

(Photo by Rick Rhodes)

“Rice Kingdom,” who brought this style of crafting baskets with them.

Production of sweetgrass baskets were an integral component of the colonial rice plantations in the Lowcountry and were used in the processing, storage and transport of rice.

At the request of Tommy Socha, U.S. Army Corps of Engineers’ Charleston District, the Brooksville Plant Materials Center (PMC) is helping to preserve the sweetgrass plant for future generations.

Socha asked the PMC to place the sweetgrass accession that had been given to him from Clemson University staff into the U.S. Department of Agriculture (USDA), NRCS Plant Materials Program, to preserve the plant for future use.

In addition to focusing on plants as a natural way to solve conservation issues, the mission of the USDA, NRCS Plant Materials Program is to assist in the protection and production of culturally significant plants.

As part of the Corps Dune Vegetation Shore Protection Project which started in 2005, sweetgrass plants were test planted at Folly Beach, S.C, in addition to the normally used beach species



Two project contractors dig holes prior to planting various beneficial grasses. Development of real estate along the South Carolina coast has reduced stands of native grasses.

(Photo by Rick Rhodes)

such as sea oats (*Uniola paniculata*), bitter panicum (*Panicum amarum*), and marshhay cordgrass (*Spatina patens*).

This work and subsequent test plantings made in 2007-08 by the Brooksville PMC and Clemson University’s Coastal Research and Education Center staff confirmed that the sweetgrass, currently known as 9060701, was indigenous to South Carolina coastal conditions.

Corps teams share in top-level awards

White House “Closing the Circle Awards”

An Omaha District construction project shared in an Honorable Mention at the White House “Closing the Circle Awards” for the 1st Brigade, 4th Infantry Division Brigade and Battalion Headquarters building constructed at Fort Carson, Colo.

The project achieved a Leadership in Energy and Environmental Design (LEED) Gold certification, from the U.S. Green Building Council (USGBC). The award winners were announced April 30. The April issue of *The Corps Environment* featured an in-depth story about the project.

2009 Secretary of Defense Environmental Award

Included in the 2009 Secretary of Defense Environmental Award presented to the Defense Logistics Agency (DLA) for the environmental clean up at the former Defense Depot Memphis, was the team from Environmental Protection & Utility Branch, U.S. Army Engineering and Support Center, Huntsville. The awards were presented at an event June 3 at the Pentagon, Arlington, Va.

Since 1998, 414 acres of the site have been found environmentally suitable for transfer and returned to productive community use.

DoD releases vapor intrusion guidance

By **Mark J. Fisher, CIH**
*Environmental and Munitions
Center of Expertise*

Vapor intrusion exposure happens when volatile organic chemicals (VOCs) from VOC-contaminated soil and groundwater sources volatilize and are carried by soil vapors and diffuse through cracks and other openings in foundations and floors into occupied buildings. This exposure pathway is troublesome to U.S. Army Corps of Engineers organizations performing cleanup operations if their clients, or former Department of Defense (DoD) activities at Formerly Used Defense Sites program properties, were responsible for the release causing soil or groundwater to become contaminated. This pathway has remained uncharacterized on many sites because only recently has the pathway been considered a legitimate liability at hazardous waste site cleanup projects.

In order to provide good technical guidance and bring about consistency among department of defense organizations who are or will become responsible for evaluating and where necessary mitigating exposure via this pathway, the tri-services risk assessment working group, with support from qualified contractors, developed and published the DoD Vapor Intrusion Handbook <https://www.denix.osd.mil/portal/page/portal/denix/environment/cleanup>.

One of the most significant impacts to environmental cleanup programs in the handbook is a recommendation to perform, at the very least, a rudimentary screening level vapor intrusion pathway evaluation at sites where inhabitable buildings are or will be located near VOC contaminated soil or groundwater. If the screening level analysis does not eliminate the pathway from consideration then a more detailed evaluation involving modeling and/or monitoring (sampling and analysis) may have to be performed. Detailed



A contractor takes soil samples at a formerly used defense site.
(Courtesy photo)

modeling and monitoring (sampling and analysis) procedures are described in the handbook.

The detailed modeling and monitoring techniques described in the manual should not be confused with a cookie cutter generic strategy for evaluating the vapor intrusion pathway.

There are no cookie cutter generic strategies for evaluating vapor intrusion exposure. Strategies for evaluation and mitigation of the pathway should include the detailed model-

ing and monitoring procedures described in the handbook.

The overall best strategy for making decisions about exposure and mitigation are best developed on a project specific basis by a qualified multidisciplinary project team and requires the use of Technical Project Planning concepts described in the EM 200-1-2, Technical Project Planning (TPP) Process. Project teams should be made up of geologists for modeling, risk assessors for development of action levels, industrial hygienists and chemists for sampling and analysis procedures, and engineers for evaluation of mitigation measures.

The DoD Vapor Intrusion Handbook should be consulted by organizations to determine if vapor intrusion (VI) exposure evaluation is necessary and how to evaluate VI exposure and necessary mitigation techniques.

Conservation through source reduction

Waste prevention, also known as “source reduction,” is the practice of designing, manufacturing, purchasing, or using materials, such as products and packaging, in ways that reduce the amount or toxicity of trash created. Reusing items is another way to stop waste at the source because it delays or avoids that item’s entry in the waste collection and disposal system.

Source reduction, including reuse, can help reduce waste disposal and handling costs, because it avoids the costs of recycling, municipal composting, landfilling, and combustion. Source reduction also conserves resources and reduces pollution, including greenhouse gases that contribute to global warming.

Source Reduction and Reuse Facts

- More than 55 million tons of municipal solid waste (MSW) were source reduced in the United States in 2000, the latest year for which these figures are available.
- Containers and packaging represented approximately 28 percent of the materials source reduced in 2000, in addition to nondurable goods (e.g., newspapers, clothing) at 17 percent, durable goods (e.g., appliances, furniture, tires) at 10 percent, and other MSW at 45 percent.
- There are more than 6,000 reuse centers around the country, ranging from specialized programs for building materials or unneeded materials in schools to local programs such as Goodwill and the Salvation Army, according to the Reuse Development Organization.

- Between two and five percent of the waste stream is potentially reusable according to local studies in Berkeley, California, and Leverett, Massachusetts.
- Since 1977, the weight of 2-liter plastic soft drink bottles has been reduced from 68 grams each to 51 grams. That means that 250 million pounds of plastic per year has been kept out of the waste stream

Benefits of Reduction

Waste is not just created when consumers throw items away. Throughout the lifecycle of a product from extraction of raw materials to transportation to processing and manufacturing facilities to manufacture and use, waste is generated. Reusing items or making them with less material decreases waste dramatically. Ultimately, less materials will need to be recycled or sent to landfills or waste combustion facilities.

Selecting nonhazardous or less hazardous items is another important component of source reduction. Using less hazardous alternatives for certain items (e.g., cleaning products and pesticides), sharing products that contain hazardous chemicals instead of throwing out leftovers, reading label directions carefully, and using the smallest amount necessary are ways to reduce waste toxicity.

The benefits of preventing waste go beyond reducing reliance on other forms of waste disposal. Preventing waste also can mean economic savings for communities, businesses, schools, and individual consumers.

For more information on source reduction at home or in the workplace, visit <http://www.epa.gov/>

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