

The
**Appalachian
VOICE**

August/September 2015

The
**Water
Issue**

Protecting our most
precious resource

Also Inside: A Deluge of Dam Removals | Green Solutions to Stormwater | Native Crawfish In Danger

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A Note from Our Executive Director

On July 16, the Department of the Interior released a draft of the long-awaited Stream Protection Rule to regulate surface coal mining. If done right, the final rule could safeguard streams and people by reining in the ravages of mountaintop removal.

While the proposed rule appears to take steps in that direction, it is far too weak and would still allow coal companies to blow the tops off mountains and bury mountain streams with the waste. Comments from citizens like you demanding a strong rule will be critical.

In announcing the proposal, Interior Secretary Sally Jewell spoke of the body of science that demonstrates the health threats and ecological harm caused by mountaintop removal. We commend this recognition of the facts.

She also tacitly acknowledged that the destruction wrought by mountaintop removal severely impedes efforts to make "coalfield communities more resilient for a diversified economic future," and we vigorously applaud her appreciation of that.

But we emphatically disagree with the secretary's statement that the proposed rule as-is represents a "balanced approach to energy development." There is nothing balanced about blowing the tops off ancient mountains and jeopardizing the health of thousands of Americans.

Appalachian Voices, our partner groups and citizens directly impacted by mountaintop removal have met repeatedly with the Obama administration to press for a rule that would make a positive and profound difference on the ground. Still, this proposal falls short.

This is the administration's first, and probably only, rule directly addressing mountaintop removal, and it's taken five years. In the meantime, mountaintop removal is still happening. It remains the overwhelming environmental threat to Appalachia's communities and natural heritage, and it's moving closer to communities. This rule is the president's best opportunity to institute lasting protections against the abuse this region has suffered for decades. It needs to work.

For Appalachia,



Tom

Tom Cormons, Executive Director

GET INVOLVED



environmental & cultural events

See more at appvoices.org/calendar

Wonder of Hummingbirds Festival

Aug. 22, 8 a.m.-2 p.m.: Speakers, wildlife presentations and vendors. \$5. Ijams Nature Center, Knoxville, Tenn. Call (865) 577-4717 or visit ijams.org/hummingbird-festival

MountainCraft and Music Gathering

Sep 10-13: Workshops on tree and plant identification, bows and arrows, drumming, fire craft and more. Hedgesville, W.Va. \$75-\$145. Call (202) 649-0017 or visit mountaincraft.org

Appalachian Symposium

Sept. 9-10: Public conversations on literature and Appalachia with the some of the region's best-known authors. Free. Berea, Ky. Call (859) 985-3700 or visit berea.edu/appalachian-center/as15

Organic Growers School Harvest Conference

Sept. 11-12: Learn about organic gardening, nourishing foods, renewable energy and more. Intensive pre-conference workshops Friday, cost and location vary; seven themed tracks Saturday, \$45. AB Tech Main Campus, Asheville, N.C. Call (828) 772-5846 or visit organicgrowersschool.org/events

The Ground Beneath Our Hearts

Sept. 12, 11 a.m.: Global day of art and action to honor communities affected by fossil fuel extraction, organized by Radical Joy for Hard Times. Host a local event, or join the main Appalachian event with Ohio Valley Environmental

Coalition. Shelter #6, Kanawha State Forest, Charleston W.Va. Free. Call (304) 522-0246 or visit ohvec.org/ground-beneath-our-hearts

Southwest Virginia Outdoor Expo

Sept. 12-13, 10 a.m.-4 p.m.: Outdoor clinics, interactive demos, live music, vendors and local brews on Saturday. Off-site excursions and activities on Sunday. Free. One Heartwood Circle, Abingdon, Va. Call (276) 492-2412 or visit swvaoutdoorexpo.com

Presbyterians for Earth Care Conference

Sept. 15-18: Explore down-to-earth advocacy and action through worship, workshops and field trips. Topics include permaculture, faith and environmental and social justice. \$40-\$275. Montreat, N.C. Call (828) 277-7342 or visit presbyearthcare.org

Appalachian Catholics

Sept. 18-20: Learn about the practical, political and spiritual implications of water use. \$10-35. Charleston, W.Va. Call (304) 927-5798 or visit ccappal.org/events/annual-gathering

Looking At Appalachia

Sept. 19- Oct. 31: View an exhibition of 75 images depicting modern Appalachia as seen by a variety of photographers. Reception and discussion with curator Roger May on Sept. 26, 4 p.m. Free. Sparta, N.C. Call (336) 372-1525 or visit lookingatappalachia.org

Create West Virginia Conference

Sept. 24-26: Experts in education, technology, quality of place, diversity and entrepreneurship discuss tools and strategies for economically revitalizing West Virginia. \$124-\$199, scholarships may be available. Fayetteville, W.Va. Call (304) 205-9755 or visit createwv.org

The High Knob Naturalist Rally

Sept. 26 11 a.m.-4 p.m.: Hiking and family activities like games and races. Bark Camp Lake, Scott County, Va. Free. Call (423) 948-5538 or visit highknobnaturalist.wordpress.com

National Storytelling Festival

Oct. 2-4: Professional storytellers, story slam contest, workshops and more. Price varies. Jonesboro, Tenn. Call (423) 753-2171 or visit storytellingcenter.net

Autumn Wild Mushroom Retreat

Oct. 3: Learn about edible fungi identification and mushroom anatomy. Farm tour and vegetarian meal. Deadline for registration is Sept. 19. Date is tentative, depending on mushrooms. Berea, Ky. Call (858) 986-3734 or visit forestretreats.net/mushroom_retreat.php

Shakori Hills GrassRoots Festival of Music & Dance

Oct. 8-11: Live music, movement workshops, yoga, healing arts. Appalachian Voices will have a table, so come by and meet our

staff. Pittsboro, N.C. Price varies. Call (919) 542-8142 or visit shakorihillsgrassroots.org

Annual Cranberry Festival

Oct. 10: Crafts, music, demonstrations. Tours of the Cranberry Bog restoration area offered by the Nature Conservancy. Free. Shady Valley, Tenn. Call (423) 727-5800 or visit bit.ly/1TRCEf

Fall Festival

Oct. 10, 10 a.m.-2 p.m.: Celebrate the deciduous trees of the Rockcastle River Wilderness Demonstration Site. Hikes, bug hunts, nature center, organic gardens and more. Free. Livingston, Ky. Call (606) 256-0077 or visit appalachia-spi.org

Chestnut Restoration Celebration

Oct. 17, 2-6 p.m.: Learn about American chestnut restoration and tour the research lab. Live music, raffle, chestnut beer, roasted chestnuts and a chestnut drop contest. Free. Glenn C. Price research laboratory and grounds, Meadowview, Va. Contact Dick Olson at olson627@juno.com or (276) 466-3130

New River Gorge Bridge Day

Oct. 17, 9 a.m.-3 p.m.: The bridge will close to traffic and open to BASE jumpers, repellers, vendors and spectators. Free to attend, \$50 to jump. Call (800) 927-0263 or visit officialbridgeday.com/new-river-gorge

Across Appalachia

Environmental News From Around the Region

Star Parks Shine in the Appalachian Region

By Julia Lindsay

On July 17, Staunton River State Park in Scottsburg, Va., joined 24 other parks across the world in receiving an International Dark Sky Park designation. The International Dark Sky Association, which grants the designations, seeks to preserve areas of dark sky, a dwindling natural resource.

Eastern Tennessee's Pickett State Park and Pogue Creek Canyon State Natural Area are also recent additions, along with North Carolina's Mayland Community College Blue Ridge Observatory and Star Park.

"The Appalachian region is a little bit darker than the [regions] around it, but pretty much anywhere east of the Great Plains has a lot of light," says Dark Sky Places program manager, Dr. John Barentine. Most of the country's population lives along the coastal states, concentrating immense light pollution. The rural nature of Appalachia dilutes light pollution, making it a prime location for stargazers.

Parks wishing to get on the list must follow rigorous standards set by the association, such as brightness and color guidelines for park lights. A color temperature standard below 3000 kelvin,

Barentine says, ensures that parks use a warmer white color lighting instead of bluer lights.

Parks also have to include programming to share with the park's visitors about the value of dark skies and the need to protect them. "Without the inspiration from night sky objects," IDA's website states, "most of the world's history, art, culture ... would not have been created." Park coordinators usually combine educational talks with night-time stargazing programs.

Dark Sky Parks are popular among tourists, from camping families to amateur astronomers. Roanoke Times reports that more than 140 visitors came to Staunton River State Park's star party last fall. "A star party," Barentine explains, "is an event where you get a bunch of people to come together, usually amateur astronomers ... the visitors go from telescope to telescope and talk to the operators and ask questions."

"People in areas that are relatively light polluted can learn and can help solve this problem," Barentine says, through actions as simple as putting a shield atop porch lights.

Learn more at darksky.org

N.C. Legislature Addresses Environment

In North Carolina, where the state legislative session continues through much of summer, several bills with environmental ramifications have passed the General Assembly and, at press time, were awaiting either the governor's signature or a committee to reconcile the House and Senate versions.

One bill, the Regulatory Reform Act of 2015, would provide broader immunity for companies charged with environmental violations, make it easier for the state to recoup attorney's fees from environmental groups, and reduce the number of air quality monitors

to the federal minimum. Another pending bill would allow property owners to build closer to streams, within the vegetated buffer that protects waterways from pollutants.

Despite a veto from Gov. McCrory, in June a bill became law that will render it illegal for employees to disclose activities happening in a long list of workplaces. Critics say the bill will have a chilling effect on whistleblowers, particularly at factory farms. And a bill to make resident petitions against zoning changes less effective was signed by the governor in July. — *Laura Marion*



About the Cover

Photographer and Appalachian Voices member D. Rex Miller captured this photo of North Carolina's Upper Whitewater Falls during a late summer visit. The impressive waters seen in this image merely represent the upper third of the towering 411-foot-tall cascade. A native to Appalachia, Miller is passionate about sharing the region's splendor. View his art at drexmillerphotography.com

Train Fire Sparks Evacuations, Water Concerns

Late at night on July 1, more than 5,000 citizens of Maryville, Tenn., awoke to knocks on their doors after a CSX train caught fire. Officials evacuated citizens within two miles of the accident. The train was hauling acrylonitrile, a carcinogenic chemical used to produce plastics.

After the 17-hour burn, the U.S. Environmental Protection Agency tested the local air and water, deeming the area safe for repopulation on July

3. Two days later, biologists in Culton Creek found dead fish whose deaths, they believe, align with the time of the derailment, CNN reported.

Acrylonitrile has been detected in a well about 300 feet from the derailment site. According to a local TV station, all other wells tested negative for the chemical, but the EPA will drill new wells to monitor potential contamination. — *Julia Lindsay*

Farmer Education Programs Blossom

A new program in western North Carolina is slated to open in 2016.

Farm Pathways, an education program designed for young farmers, aims to pair classroom learning with experience on established farms. Program creators, Organic Growers School, WNC FarmLink and Southern Appalachian Highlands Conservancy, hope to foster support networks between students and mentors.

With help from a U.S. Dept. of Agriculture fund and community support, project

planners hope to attract young farmers to the continually aging business.

Blue Ridge Women and Agriculture, based in Boone, N.C., adopted a similar program, Collaborative Regional Alliance For Farmer Training, connecting farmers to apprentices and providing structured training opportunities.

For more information visit organic-growersschool.org and craft.brwia.org — *Julia Lindsay*

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Trout Introduction Efforts Show Promise in Southwest Virginia

By Kevin Ridder

Fishing is a favorite pastime throughout Appalachia, and as such the demand for fisheries is ever-rising. Among the many attempts to introduce trout into regional waterways are the efforts by Trout Unlimited, a group that has been stocking trout in streams across the nation.

Mark Leonard, the president of a Trout Unlimited chapter in Virginia that oversees Stony Creek and Mountain Fork River in the southwest portion of the state, has worked with the Virginia Department of Forest and Fisheries to help introduce tens of thousands of trout into the two streams.

"We get a group together and line their backpacks with contractor-grade trash bags," says Leonard. "Then we fill each pack up with four to five gallons of water and a few hundred fingerling trout, hike a mile upstream and release them into the stream."

In 2010, the first year Leonard's chapter carried their cargo upstream, they released 30,000 brook trout in Mountain Fork River and 20,000 brown trout in Little Stony Creek. Each year they reduce the number of trout they introduce in an effort to encourage fish reproduction; their most recent delivery was half of what it was five years ago. While brown trout aren't native to America and can even edge out the native brook trout, state fisheries biologist Jeff Williams says that the introduction of brown trout in Little Stony Creek isn't a problem because

trout weren't native to these two streams in the first place.

"If this stream had already had a native brook trout population, we would only be stocking brook trout," says Williams. "We only stock brown trout in the warmer Little Stony Creek, since they are more tolerable of higher temperatures, and we only stock brook trout in Mountain Fork."

"The habitat to support a trout population was there, along with the desire to provide a fishable population for anglers in the area," he says. "Eventually we hope the trout will ultimately start reproducing and establish self-sustaining populations."

In addition to stocking streams, Trout Unlimited hosts a Trout in the Classroom program in local schools to teach biology and coldwater conservation. The schoolchildren raise the fish from hatchlings to fingerling size, releasing them at the end of the school year.

"We take them for a nature hike out to the stream at the end of the year and teach them about aquatic life, how to use a fly rod, and do a scavenger hunt," says Leonard. "You'd be surprised how many kids in the area have never been out in the woods."

Learn more at virginiatru.org



Photo courtesy Trout Unlimited

Paying Tribute to a Beloved Daughter of Appalachia

By Kimber Ray

Jean Ritchie, Kentucky-born folk hero, environmentalist and activist, died this June in her Berea, Ky. home at the age of 92. Widely regarded as "The Mother of Folk," Ritchie was born in the foothills of the Cumberland Mountains. Her family is renowned by folk music scholars for their astounding repertoire of traditional songs and centuries-old ballads, but it was Ritchie's sweet, distinct voice which carried these Appalachian tunes to a broad audience of listeners.

This same voice also spoke out against environmental and social injustices, particularly those surrounding coal mining communities in Appalachia. Among Ritchie's most celebrated songs is "Black Waters," which describes the painful realities of surface mining in Kentucky.

*"The hillside explodes with the dynamite's roar
And the voices of the small birds will sound there no more
And the mountain comes a-sliding so awful and grand
And the flooding black waters rise over my land"*
— "Black Waters" by Jean Ritchie, 1971

In recent years, her friends — including artists such as Kathy Mattea and Pete Seeger — produced a tribute album called "Dear Jean," and Appalachian Voices had the opportunity to celebrate with Ritchie at a concert in her honor last year. As per her wishes, Ritchie's family is donating a portion of the proceeds from the album to Appalachian Voices.

Author, activist and Appalachian Voices board member Silas House considered Ritchie a dear friend. "She was a source of incredible pride for my people," he writes. "Everyone I knew loved Jean Ritchie, and they especially loved the way she represented Appalachian people: with generosity and sweetness, yes. But also with defiance and strength."

Read his full remembrance at appvoices.org/rememering-jean-ritchie

Kentucky Flood Kills 4, Destroys 120 Homes

By Laura Marion

On July 13, an Ohio Valley flood devastated parts of southern Indiana and eastern Kentucky. Among the four known casualties was Scott Johnson, a Johnson County resident who reportedly saved several residents before he was lost in the flood.

An estimated 120 homes were

destroyed. Kentucky Gov. Steve Beshear declared a state of emergency, which will make state funds and resources available to those affected by this flooding.

Cash donations are being accepted at: Johnson County Long-Term Recovery Committee, c/o Johnson County Fiscal Court, P.O. Box 868, Paintsville, KY, 41240

No Reason to Fear the Weevil Outbreak

By Julia Lindsay

Those who spent much time outdoors in Appalachia this summer might have found themselves bespeckled with weevils. A black, vegetarian bug about three millimeters in length, yellow-poplar weevils materialize annually each spring and hibernate by late July.

This year, an outbreak unparalleled for the past 40 years has garnered concerns, mostly due to the weevil's similar appearance to disease-carrying deer ticks. An entomologist at West Virginia University, Dr. Daniel Frank, explains that while deer ticks have eight legs, a weevil has six. "The weevil

looks like it has a little snout," he adds, unlike the deer tick.

He posits that this deluge of weevils that spread from West Virginia and Pennsylvania to North Carolina could have resulted from favorable environmental conditions or low numbers of weevil predators, like parasitic wasps. Weevils prefer to feed on only a few species of trees, such as yellow poplars and magnolias. Though weevils' increased numbers will impact young or damaged trees, Frank says, "regions have experienced episodes like this through history," and he assures little to no lasting environmental effect.

UNPLUG BEFORE HEADING BACK TO SCHOOL

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Mounting Threats Imperil Two Appalachian Crayfish

By Dac Collins

There are more than 300 different species of crayfish in the southeastern United States alone. The adaptable freshwater crustaceans look like small lobsters, and they live in all sorts of environments, from low-lying swamps to high mountain streams.

Those who never grew up catching crayfish in mountain streams are probably most familiar with the abundant Red Swamp and White River varieties, which are sold commercially. They can be found burrowed in the mud in the brackish marshes of Louisiana and along murky waterways throughout the deep South.

The crayfish that live in coldwater creeks are generally smaller than their Cajun cousins, and hide from predators in the crevices of the creek bottom. Crawdads, as they are also known, spend a majority of their lives wedged into these nooks and crannies, which also serve as places to lie dormant during the winter months. But when these rocky creek beds are smothered in sediment, the habitat that these creatures depend on to survive is lost.

The effects of sedimentation on Appalachian crayfish populations is evident in the Big Sandy and Guyandotte River drainages of West Virginia. A recent report issued by the U.S. Fish and Wildlife Service recommends that the two crayfish species native to these watersheds be added to the federal list of endangered species.

"The Big Sandy crayfish and Guyandotte River crayfish are in danger



The Big Sandy crayfish, which is currently considered endangered by Virginia officials, may also be listed as federally endangered. Photo by Zachary Loughman, West Liberty University

of extinction, primarily due to the threats of land-disturbing activities that increase erosion and sedimentation, which degrades the stream habitat required by both species," the Fish and Wildlife Service determined in the report. "An immediate threat to the continued existence of the Guyandotte River crayfish is several active and inactive surface coal mines, including [mountaintop removal] mines, in the mid and upper reaches of the Pinnacle Creek watershed."

Along with coal mining, the report attributed the high sediment levels in the two rivers to logging, road construction and off-road vehicle use, and called attention to the impaired water quality and hazardous concentrations of sulfate and aluminum even after mine reclamation efforts.

Crayfish are especially susceptible

to poor water quality because they rely on delicate, feather-like gills that act as ultra-fine filters. High levels of silt or pollutants can clog these gills and inhibit their ability to breathe.

The Fish and Wildlife Service released its report on the Guyandotte and Big Sandy crayfish in April. Despite petitions from groups such as the National Mining Association and the West Virginia Coal Association, the public comment period regarding the proposed endangered species listing ended in June. A timeline for a final decision has not been announced.

Deep in the Ozark Mountains of Arkansas lives another unique and isolated species, one that has been on the endangered species list since 1987. Hell Creek Cave crayfish are rarely seen by researchers because they inhabit underground caves and channels filled with groundwater. This subterranean maze is all but inaccessible to humans, but occasionally one of the blind, albino crayfish is spotted on the surface near an emerging spring of groundwater.

According to a Fish and Wildlife Service report from 2012, this cave-dwelling crawdad's habitat is jeopardized by poor water quality. Despite ongoing conservation efforts, water quality specialists are finding it difficult to effectively protect groundwater from nearby human influences such as stormwater runoff and sewage plant pollution.

The Scoop on Crawdads

> Once considered one and the same, the Big Sandy crayfish was recognized as a distinct species from the Guyandotte crayfish this past December

> Both measure three to four inches in length

> Only four isolated populations of the Big Sandy crayfish remain, located in southwest Virginia, southern West Virginia and eastern Kentucky

> There is just one known population of the Guyandotte crayfish, in West Virginia's Pinnacle Creek in Wyoming County

> Unlike the Big Sandy and Guyandotte crayfish, which live five to ten years and mate during their third or fourth year of life, the Hell Creek Cave crayfish is suspected to live up to 40 years, laying eggs every five years

Although some species of crayfish live in muddy swamps and others inhabit rocky creeks or dark caves, all of them need clean water to survive. And as good housekeepers, the tiny scavengers contribute to their watery environment by feeding on decaying matter. They do such a good job at this that some private landowners and farmers introduce them into their ponds in order to clean them up.

If a crayfish population were to disappear completely, the ecology of both the associated water body and the surrounding environment could drastically change. Crayfish are a primary food source for native fish species such as the brook trout, and are also preyed upon by a variety of creatures such as the hellbender salamander, river otters and birds of prey.

Crayfish are nature's form of underwater custodians. The cleanliness of the region's streams, ponds and other drinking water sources is contingent upon their survival.



Hiking the Highlands Cooling off in the Devil's Bathtub

By Joe Tennis

Devil's Fork Trail

On a typical summer weekend, you can expect to find a crowd on the back roads of Scott County, Va., as dozens venture into the Jefferson National Forest near Fort Blackmore.

Destination: the fabled Devil's Bathtub on the Devil's Fork of Big Stony Creek — a natural wonder tucked away behind two tough trail miles.

What was once essentially a secret in southwest Virginia is now virtually a mainstream hangout, thanks to ever-spreading fame through YouTube videos and social media.

"It is a cool spot," says Ishmael Richardson, Jr., the assistant park manager at nearby Natural Tunnel State Park.

Over time, the noisy waters of the Devil's Fork have carved a hole about 20 feet long and eight feet wide in solid rock. Dubbed "The Devil's Bathtub," the name fits: the 12-foot-deep depression in the creek bed is shaped just like a bathtub, and a small waterfall drips into the basin like a faucet.

Problem: not everyone hiking here has prepared for the moderate — or even strenuous — hike that is required to reach this natural wonder.

"This is a hiker's trail," says Bill Cawood, a longtime interpreter for Natural Tunnel State Park. "It is not a groomed trail."

The Devil's Fork Trail makes a gradual uphill climb through a lush cove forest, says Cawood, a high school biology teacher in nearby Wise County, Va. "It's high plant diversity and a unique micro-habitat. It's rich soil, big trees."

Want to hike? Come prepared with the proper footwear such as tennis shoes or hiking boots. Avoid flip-flops. But, you will get your feet wet. Over the roughly two miles it takes to reach the Devil's Bathtub, you'll step through running waters about a dozen times.

A gated road above the parking lot marks the start of the trail. From here, go about a quarter-mile and cross a stream.

"It's easy to find the first stream crossing," Cawood says. "And there's where they seem to go wrong. Most people look at the right-hand fork of

Difficulty: Moderate (includes stream crossings)
Length: About four miles (up and back)
Directions: From the intersection of State Routes 65 and 72 at Fort Blackmore, Va., follow SR 619 north for about 5 miles to the crossroads of SR 619 and SR 657. From here, turn left on SR 619 for about a quarter-mile. Then turn left on a gravel lane next to a white house. Follow this for about a half-mile to the parking area.
Guided hikes: Natural Tunnel State Park offers guided hikes to the Devil's Bathtub once per month during the summer, weather permitting. View the schedule at dcr.virginia.gov/state-parks/natural-tunnel.shtml. Reservations are required by calling 276-940-2674.
Contact: Call the Clinch Ranger District of the Jefferson National Forest at 276-328-2931.



A resident of Big Island, Va., wades into the swimming hole on the Devil's Fork Trail, which hikers encounter before reaching the Devil's Bathtub. Photo by Joe Tennis

the trail, which seems to be a little more heavily used, and they go that way. That's the wrong fork. The actual fork for the Devil's Bathtub Trail is the left." Making that left, continue to follow the trail for about 20 yards. Then bear right and continue to follow the yellow-blazed trail as it goes up the creek.

Next, the trail makes its most dramatic crossing: it hops across a long row of rocks for about 60 yards in what appears to be a stream bed. Watch each step as you navigate this section and aim for a yellow blaze, marked on a tree, on the far bank.

Regaining level ground, look just beyond a small clearing to see an old, abandoned rail car. This rusty relic remains as evidence that this trail was once the path of a rail line hauling logs and coal.

From that rail car, the trail continues up the valley of the Devil's Fork. It crosses the stream again and again for nearly another mile. Ultimately, the trail scales a small yet sometimes-slippery cliff on the creek's left bank.

Just beyond the cliff lies the trail's most popular point: the swimming hole.

"Lots of folks that I have brought up here thought we had achieved our goal when we got here," Cawood says, pointing to the swimming hole. "They like the waterfall coming down into the swimming hole. This is what they expected."

This is also where you'll find a crowd when the temperature rises in the summertime. The creek runs cold year-round, and hikers like to take a dip in the cool waters.

The actual Devil's Bathtub lies just about 100 yards beyond the swimming hole. At that point, though, most hikers turn back as the path grows more narrow and difficult to follow.

About once a month during the summer, Cawood leads guided hikes to the Devil's Bathtub from Natural Tunnel State

Park. "We have had nothing but positive comments and lots of thankful folks who told me that they would never have been able to come up here, find it or experience it without us helping them," he says.

Joe Tennis is the author of "Virginia Rail Trails: Crossing the Commonwealth," which features a chapter on the Devil's Bathtub.

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A Deluge of Dam Removals Why Some Stand Tall and Others Must Fall

By Julia Lindsay

The high-profile failure of some of the United States' aging infrastructure has caused devastation. In 2007, a bridge on I-35 over the Mississippi River in Minneapolis collapsed. Two years prior, levee breaches in New Orleans during Hurricane Katrina had catastrophic consequences. With the public eye focused on infrastructure, the game-changing removal of the Elwha Dam and Glines Canyon Dam in Washington state, the largest dam removal project in history, opened up national discussion on the role of dams in this country.

Initially, dams were erected for hydropower, irrigation, flood control and water storage for consumption and agriculture. According to the U.S. Fish and Wildlife Service, only 42 rivers in the country continue to flow free of dams, and a National Geographic article published this year notes that "some 80,000 dams taller than six feet — along with tens of thousands of smaller dams — still obstruct U.S. rivers."

The advent of new techniques in energy production, wastewater treatment, irrigation and transportation renders many of these structures useless. As a result, a torrent of dam removals has occurred across the country in the past decade. A hydrologist with the U.S. Forest Service told Oregon Public Broadcasting that 548 dams were removed between 2006 and 2014 — nearly double the 298 removed between 1996 and 2005. The aim of most of these removals is stream restoration, as dams come with a host of negative environmental impacts, recreational restrictions and safety hazards.

Erin McCombs, regional associate



Fontana Dam, run by the Tennessee Valley Authority, is 480 feet high, making it the tallest dam in the Eastern United States. Photo by Ashley Bradford. At left, a boat pulls tubing kids in the reservoir created by Fontana Dam. Photo by the Fontana Village Resort



director of the nonprofit American Rivers, estimates that there are 5,600 dams in North Carolina alone, many of which belong to long-closed textile mills and sawmills and no longer serve any purpose. "We look to remove a lot of these structures," she says. "That's really our angle."

Dams Condemned

Currently, McCombs and her team are working on removing around 15 dams in the region, with one in eastern Tennessee slated to be removed this fall. The Citico Creek Dam in Monroe County was constructed in 1966 due to concerns that migrating warm-water fish would compete with native trout. Since then, researchers have found that the habitat would be inhospitable to warm-water fish, rendering the dam pointless. For half a century, the dam has segregated species into upstream and downstream populations, hampering genetic diversity, restricting nutrient flow and rendering

aquatic organisms more susceptible to threats such as global climate change, poor water quality and disease.

According to McCombs, as dams slow the flow, water temperature increases. Ecosystems require balance, and wildlife are sensitive to unnatural shifts to their habitat. Some damage can be easily rectified; all that it requires, says McCombs, is "removing barriers to allow species to be resilient to climate change."

Damage in other waterways, however, has been more extreme. Dams disorient migrating fish, the American Rivers website says, lengthening their journeys. Anadromous fish such as shad, herring and salmon, which move to salt water after birth and return to spawn in freshwater, find themselves blocked from returning to spawn. This has contributed to the dwindling populations of salmon in the Pacific Northwest and shad in the Atlantic states.

According to the Delaware River Shad Fishermen's Association, "Between 1990 and the present, shad returning to the Delaware River to spawn declined from 500,000 to approximately 300,000 today." Across the Southeast and farther north, a moratorium stands against harvesting these popular and profitable fish.

Diminished habitat due to fragmentation caused by dams also contributed to the decline of the Appalachian elktoe mussel, says McCombs, which is now federally listed as an endangered species.

Relicensing Difficulties

American Rivers approximates that 2,540 dams produce electricity in the United States. Due to their generally larger size and the high cost of

removal, most of these dams are not the aim of removal projects.

Hydroelectric power may be a relatively clean energy source, but the environmental degradation caused by dams is leading communities to tighten the reins on energy companies.

Since the spate of dam building in the mid-20th century, many of the long-term hydroelectric dam licenses granted by the Federal Energy Regulatory Commission have run their course. Energy companies face challenges when applying to renew their licenses, as FERC convenes with representatives of environmental, community, recreational and power companies' perspectives to determine if a plant's benefits outweigh the drawbacks.

In the spring of this year, the state of North Carolina sued Alcoa Power Generating, Inc., for control of the 40 miles of the Yadkin River where Alcoa operates. The lawsuit was an attempt to keep Alcoa from renewing its license to operate four hydroelectric facilities on the river. These dams had previously powered an aluminum smelter in Stanly County, providing hundreds of jobs. With the smelter's closing in 2007, Alcoa began selling the energy on the national market. Community members vied for state control of the Yadkin's flow because, as Will Scott of Yadkin Riverkeeper puts it, "You get into the question of 'is there a public benefit anymore?'"

Complications arose for North Carolina in April and June of this year. "At the time of statehood," Scott says, "this is a water that was used and navigated [therefore] it belongs to the

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Dam Removals continued from previous page

state." A judge concluded, however, that the section of river holding the dams was not navigable at that time, making it difficult for North Carolina to claim ownership. Later, a judge overturned the N.C. Division of Water Resources' denial of a water quality certificate to Alcoa, effectively pushing the division to grant Alcoa the certificate. Scott remains hopeful, saying the state has other angles, like challenging whether Alcoa can prove a chain of title.

The lawsuit also unveiled emails suggesting that Alcoa misled state regulators regarding water quality. According to WFAE, Alcoa had entered a settlement agreement in 2007 with 22 community, business and environmental groups, promising to make land and water improvements in exchange for their support in relicensing, but the 2010 email revelations caused the North Carolina Wildlife Resources Commission to withdraw support for relicensing and churned up concern among other conservationist groups.

Keeping Carp in Check

In the 1970s, a monster was introduced to the Mississippi River. Asian carp, a destructive, non-native species, have spread to 20 states along the Mississippi River watershed and have been detected in the Great Lakes.

These rapidly reproducing fish with no natural predators have recently been found spawning in the Ohio River near Louisville, Ky., crowding out profitable fish such as bass and catfish, according to Mark Marraccini of the Kentucky Department of Fish and Wildlife Resources. In 2013, commercial fisherman competing in a tournament pulled 82,953 pounds of

Asian carp from Kentucky and Barkley lakes in only a weekend's time.

The U.S. Fish and Wildlife Services reports that approximately 10,000 non-indigenous aquatic species exist in U.S. waterways, with many posing threats to the local environment. Large dams which block fish migration actually help when those fish are invasive, acting as, Marraccini says, "natural barriers to [carp] migration."

In Kentucky, the state's Department of Fish and Wildlife Resources plans to assess the feasibility of closing locks in dams along the Monongahela, Muskingum, and Allegheny rivers in its strategy to reduce the population of Asian carp. Locks on dams assist ships in essentially stepping up or down the river one water level at a time. "Every time that you open the locks to allow boats to go through," Mark says, "you're allowing a lot of fish to go back and forth." Closing them keeps the population contained in one space, which helps commercial fishermen pull in more fish. These dams buy time and keep damage caused by the carp low while agencies search for more permanent solutions.

Reservoir Recreation

While some dams are removed to open up recreational activity, others provide it. The Federal Emergency Management Agency accredits 38.4 percent of U.S. dams with providing recreational opportunities. Fontana Dam, a 1940s-era hydroelectric power producer

American Rivers' 2009 Steeles Mill Dam removal project in North Carolina revitalized the area, opening up 15 miles of habitat for shad fish and fostering the creation of a paddling trail. The 15-foot tall dam powered a cotton mill, but at the turn of the millennium was no longer being used. Photo courtesy American Rivers

located in the Great Smoky Mountains of North Carolina, gave rise to the Fontana Village Resort which brings in 100,000 tourists annually.

Visitors come, in part, to see the historic Fontana Village, a construction town that housed the workers who built the tallest hydroelectric dam in the Eastern United States. The original buildings serve as the resort's current lodgings; only 33 people reside in Fontana Village full time, most of whom work for the resort.

"We wouldn't be here as a town, as a resort, if it weren't for the dam," town board member and employee of the resort, Sara Locke, says. "Most residents come by their ability to live here by living in the company's housing."

Recreational opportunities provided

by Fontana Lake and the surrounding area keep the town strong. Those hiking the Appalachian Trail cross the approximately half-mile dam and marvel at the view from the top. Dam operators schedule water releases for whitewater rafting, and the Fontana Lake provides 238 miles of shoreline for swimming and boating.

Far below the surface, however, lies the remnants of five towns. The people of Proctor, Judson, Bushnell, Sugar Fork and Ja'pan had to relocate in 1941 so the Tennessee Valley Authority could flood their homes and form the basin.

Dams play a complex role, and there is no immediate resolution regarding the state of dams in this country, but finding balance is key. "We want to protect [rivers] for all their uses," Scott says.

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Water Privatization

A Utility Company's Troubles Raise Questions About Drinking Water Ownership

By Molly Moore

When two water main accidents within the space of a week interrupted water service for up to 25,000 customers this summer, West Virginia American Water took out a full-page ad in the Sunday edition of the Charleston Gazette-Mail to say "sorry" to the ratepayers who were required to either fill tubs and jugs with water, buy bottled water or do without.

The incident wasn't the investor-owned, private utility's first apology to its ratepayers, nor their customers' first experience going without potable water.

In January 2014, a chemical storage tank upstream of West Virginia American Water's intake — the only drinking water source for 300,000 residents — leaked approximately 7,500 gallons of the coal-washing chemical MCHM and 400 gallons of the chemical mixture PPH.

The licorice-scented chemical mix infiltrated the company's water system undetected, and the resulting contamination led to "do not use" orders lasting a week or more, a state of emergency that lasted a month, and resident reports of water use leading to rashes, headaches, dizziness and other ailments for months to follow.

This June, soon after the faulty water mains were repaired, citizens filed a brief in a lawsuit regarding damages from the 2014 chemical spill. The brief stated that while Freedom Industries, the now-bankrupt owner of the leaky chemical tank, was responsible for the spill itself, "the resulting tap water loss would not have occurred but for a decades-long string of negligent acts and misfeasance by [West Virginia American Water Company] and Eastman Chemical Company [the manufacturer of MCHM]."

Adding to the public scrutiny, West Virginia American Water — a subsidiary of the national company American Water — is currently seeking state approval for a general 28 percent rate increase,

including a nearly 30 percent increase for residential customers. The request, filed April 30, has attracted media and public attention toward the company's business model and plans for infrastructure improvements. The Public Services Commission must decide whether to approve the request by February 2016.

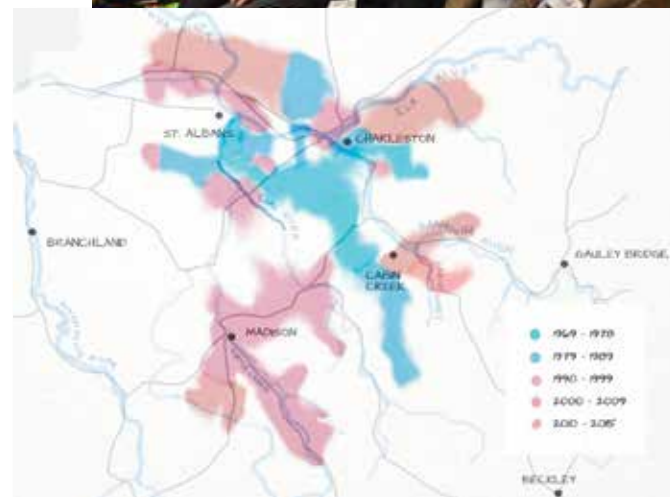
At the end of June, Advocates for a Safe Water System, a volunteer-run citizens group that formed in the wake of the chemical spill, was granted permission to intervene in the rate case.

"We originally came together as people who were upset about being billed for contaminated water during the crisis," says Steering Committee Member Cathy Kunkel. The citizens group is scrutinizing the company's plans for the more than \$35 million in potential additional annual revenue from the rate increase, and is raising questions about whether the company's long-term plans fit with the region's water needs, or whether West Virginia residents would be better served by a public utility.

"We kept meeting, learned more, and realized the water company had been really not doing what it should to protect people from this kind of event, and we didn't have a safe water system, which means we were still vulnerable to having something like this happen again."

Moving Toward Municipalization

Nationally, water ownership is moving toward more municipal control, according to Mary Grant, water privatization researcher for the advocacy organization Food & Water Watch. She cites data from the U.S. Environmental



Residents from the greater Charleston area gather for a panel discussion regarding public water safety facilitated by Advocates for a Safe Water System in November 2014. Photo by Joe Solomon. At left, a map shows the expansion of West Virginia American Water since 1969. Map by Alicia Willett.

owned water companies are often bad deals for cash-strapped governments.

The southwest Virginia town of Coeburn, Va., is one such example. Coeburn entered into a contract with Veolia Water North America, a subsidiary of a French multinational corporation, in 2009. But after financial difficulties following the Great Recession, the town council voted in 2013 not to renew the contract. At that point, the contract cost the town \$1.41 million of its \$1.47 million annual budget.

Coeburn had run its own public works department before the 2009 deal. "When we ran the numbers ourselves, it was about \$400,000 cheaper [for the town to run the water utility]," then-mayor Jess Powers told the Bristol Herald Courier.

But regaining public control is not always so straightforward. In the early 2000s, dissatisfied residents in Lexington, Ky., attempted to replace Kentucky American Water with local, public ownership.

Citizens in favor of public purchase gathered 26,000 signatures during the summer of 2005 to put the issue on the November ballot. The water company sued to block the vote, but dropped its legal challenge the following year. During the 2006 election, the public voted to remain with the company by a 20-point margin. Kentucky American Water spent \$2.71 million on the campaign, according to Food & Water Watch.

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Water Privatization

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Company Policy

"Remunicipalization" may be the general national trend, but there are still exceptions. American Water is the largest investor-owned utility in the country. In western Pennsylvania, it has expanded service lines to reach gas companies engaging in the water-intensive process of natural gas fracking.

"As they expand to serve these gas companies, they're also connecting households along the way who have their groundwater contaminated, possibly because of those gas drilling operations," Grant says.

The company's expansion in Pennsylvania due to the loss of private wells to polluted water has also occurred in West Virginia.

"One interesting thing about West Virginia is that American Water received subsidies to expand in Putnam County, but then after [the company] was denied a rate increase, it wanted to renege on those promises to expand service to areas where household wells had been contaminated ... by the coal industry," Grant says. Ultimately, the state ruled that the company had to expand services to the affected areas.

Between 2004 and 2009, local groundwater and household wells were contaminated in Boone County, W.Va., when coal slurry — a toxic sludge that remains after washing coal — was injected into abandoned underground mines. In 2009, a state moratorium on underground injections took effect. Also that year, a partnership between Boone County and West Virginia American Water used \$1.5 million from a federal grant, combined with smaller contributions from the county and company, to expand the company's service to residents of the town of Prenter, 35 miles south of Charleston.

"So we got city water up here, and it took them two or three years to get it up here," Prenter resident D.J. Estep told Gabe Schwartzman, a fellow at University of California - Berkeley who researched and wrote the website www.waterhistory.com. "And then a year later the MCHM spill happened. And we were stuck. Now it's like you've got to choose between two evils. The one you're used to and the one you've got."

Expansion to serve remote communities with polluted water explains just one part of the growing number of customers served from the Elk River intake. On his website, Schwartzman, also a member of Advocates For A Safe Water System, describes how West Virginia Water Company, the predecessor to West Virginia American Water, built its large Elk River intake in 1976 with the intention of serving industrial customers. Those customers didn't materialize, he writes, so in the '80s the company "launched an aggressive expansion strategy, pushing to take over small municipal systems and public rural systems."

In 1994, the Charleston Gazette reported on the company's effort to expand to the town of Clendenin. At a meeting, then-president of WVAM Chris Jarrett told town council members, "It is simply more efficient and more economical, the more customers you can serve from one large production facility."

Water Costs

A single intake might be cost-efficient, but the Elk River chemical spill in January 2014 displayed the pitfalls of reliance on one facility. And it turned out that, to save money, West Virginia American Water Company had sold its chemical monitoring equipment upstream of the Elk River intake in 2004. A new chemical monitoring system wasn't installed until after the 2014 spill. The new equipment falls short of being able to detect MCHM and a host of other chemicals — technology that is in use at major water plants around the region — according to a chemist and a chemical engineer who are also members of Advocates for a Safe Water System.

A state investigation into West Virginia American Water's response to the spill is currently stalled until Gov. Earl Ray Tomblin appoints another member to the three-person commission.

According to a utility press release, the company's request for a 28 percent rate increase is driven by "the approximately \$105 million of system improvements the company has made since 2012 as well as an additional \$98 million that the company plans to expend on recurring

Website Explores History of WV Water Company

Discover maps and more information about the history of West Virginia American Water, and hear audio clips from West Virginians regarding the impact of the 2014 chemical spill at www.waterhistory.com. The multimedia website, authored by Gabe Schwartzman with web and graphics by Alicia Willett, was created with support from the Judith Lee Stronach Baccalaureate Prize at the University of California-Berkeley.



"You can just see how being poor affects you when there is a crisis. The initial places for the water distribution were such that if you didn't have transportation it would be hard for you to get water because you could only carry it so many blocks. We believe that many people in this community probably did use the water when they were advised not to use it, because they just could not get enough water." — Pastor Michael J. Watts, Grace Bible Church of Charleston, W.Va.



"It was during the early 1980s when ... [West Virginia American Water] did take over many systems were near the brink of failure. Many of those systems were not economically viable, with the changing in water economy over the years. The Putnam System was economically viable, and one of the few areas where it would have been profitable for them to take over the system. So they were very aggressive and approached us in a very hostile manner." — Fred Stottlmyer, former director of the Putnam Public Service District, which is still community owned and operated

and investment projects through February 2017." The rate hike would also increase the West Virginia subsidiary's profit margin from 4-5 percent to 10.75 percent.

Cathy Kunkel of the citizens' group claims this is at odds with customers' experiences. "You say you're raising rates due to major capital expenditures you've made, but it doesn't seem like we're benefiting from them," she says.

In the Frequently Asked Questions section of its website, the company acknowledges that it is replacing infrastructure at the rate of once every 400 years, but notes that rate is faster than it had been, and that the the cost of reducing that replacement cycle to 100 years — the target rate — would place heavy costs on ratepayers.

Yet Kunkel is concerned that replacing water mains will not be a priority, despite this summer's repeated breaks. Advocates For a Safe Water System has also proposed construction of a reservoir to serve as an alternate water source for Charleston and the surrounding area, a plan that the water company has not publicly considered.

When asked what an ideal water system would look like, Kunkel is clear. "Fundamentally, it needs to be transparent — people need to have a clear idea of how the water system is making decisions with our money," she says. "[It needs to be] responsive to citizen concerns, and it needs to be fair. People should get the service that they're paying for."

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Black and Blue

Stories of Coal and Water

The saying “oil and water don’t mix” is equally applicable to coal. The black rock that powered America’s Industrial Revolution touches water throughout its lifecycle, from mining to burning. When coal and water mingle, the results can be dangerous for people and the environment.

Formidable Costs

Coal Company Conducts Business As Usual Near Kanawha State Forest

By Tarence Ray

Seven miles south of Charleston, W.Va., sits a 9,300-acre expanse of trails, streams and wildlife known as the Kanawha State Forest. The forest’s diverse wildflower and bird species attract naturalists from all over the region, and trails and fully-equipped campgrounds bring in a variety of visitors, from mountain bikers and campers to students on field trips.

When Keystone Industries applied to open a 413-acre mountaintop removal coal mine adjacent to the forest in spring 2014, concern for the land’s recreational and ecological diversity prompted outrage from West Virginians. During the mine’s permitting process, the West Virginia Department of Natural Resources received 180 comments from the general public. Every single one of them opposed the mine.

The state’s Department of Environmental Protection acknowledged some of these concerns when reviewing Keystone’s permit for the KD #2 mine. According to a statement from the DEP, the agency included provisions in the permit that would have minimized the mine’s impact

on tourism and water quality. These provisions required that a ridge facing the forest be mined last, that the buffer between the mining and the forest would be increased, and that blasting would be prohibited during times of heavy forest usage, such as holidays and weekends.

But many residents in the area still had questions. Dale Boulis lives roughly 2,000 feet from the mine in the small community of Loudendale, five miles south of the state’s capital, Charleston. Her house faces the state forest, and she relies on well water. During the January 2014 Charleston water crisis, when a chemical spill contaminated Elk River and the city water supply, residents of the city came to her house to shower and fill jugs with fresh water.

Boulis first heard about the Keystone mine through a local news affiliate’s coverage of the permit on Facebook. “This thing pops up on my newsfeed with a map of the mine,” she says. “I’m looking at the map and I’m thinking, wait a minute, I think that’s my house right there!”

Many of Boulis’ and her neighbor’s anxieties about the mine centered on water quality and flooding. In 2003 the community of Loudendale experienced a horrific flood. Houses were lost; one person was killed. Because of the increased risks of flooding associated with mountaintop re-

moval, and because Loudendale is located in a narrow valley that is already prone to flooding, the trauma of this experience resurfaced when the KD #2 permit was approved. “We were so concerned about water that we had to remind [our neighbors] that we were [also] going to have to worry about air quality.”

Since the DEP approved the permit in May 2014, the mine has accumulated more than 20 violations — many of them water-related — as well as three cessation-of-work orders. Many of these violations are water quality issues that are not easily mitigated, such as the orange-tinted acid drainage that runs off of many mine sites in the Appalachian coalfields. Despite the DEP’s attempts to create a buffer between the KD #2 mine and the forest’s watershed, acid mine runoff from the mine is now contaminating the nearby Davis Creek watershed.

“This [was] the tightest, best-written permit in the state of West Virginia — which for me, that single sentence is probably the scariest description [of the KD #2 mine],” says Boulis, referring to the fact that the state’s heightened scrutiny still could not prevent the amount of subsequent violations.

Jim Waggy and his colleagues at the grassroots Kanawha Forest Coalition were fully aware of the danger to the forest’s



Acid mine drainage collects at the KD #2 mine site shortly after the state halted work at the mine. A recent inspection recorded pH values between 3 and 4, which is 100 to 1,000 times more acidic than allowed by law. Photo courtesy the Kanawha Forest Coalition

watershed when the permit was issued. At a WVDEP Surface Mine Board hearing in August 2014, Waggy and Doug Wood, a retired DEP water quality specialist, testified to the company’s prior history, as well as the potential water quality issues at the site. “[The agency’s] response was, ‘well we can’t just say there might be acid mine drainage problems,’” Waggy says.

In light of the 20-plus violations that the company has amassed since the mine opened, Waggy is dismayed by the agency’s dismissive attitude. “You would think that with this being such a controversial permit and with so much attention

focused on it that the companies would have been so careful to follow the rules and to engage in the best practices possible,” Waggy says. “But apparently the companies are just so accustomed to bending or ignoring the rules — and getting away with it — that that’s how they behaved on this site as well.”

In June 2015, the amount of violations, in addition to political pressure and water monitoring efforts from citizens, finally forced the state’s hand. The DEP halted work at the mine, and placed Keystone

and its operator, Revelation Energy, on the federal Office of Surface Mining’s Applicant Violator System. Inclusion in this nationwide database forbids them from holding another mining permit in the nation until the WVDEP approves their plans to mitigate the environmental problems on the site. This does not necessarily mean that Keystone could lose its KD #2 permit — but there is always that possibility.

Revoking Keystone’s permit would not repair the environmental damages

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Proposed Stream Protection Rule Released

By Erin Savage

The agency responsible for regulating surface coal mining across the country released a proposed Stream Protection Rule on July 16, which is intended to limit mining impacts on streams.

The long-awaited rule is not the federal Office of Surface Mining Reclamation and Enforcement’s first attempt to control the effects of surface mining on public waterways.

Currently, a 1983 Stream Buffer Zone Rule regulates mining within 100 feet of streams. In practice, the ‘83 rule allows mining activities such as filling streams with waste rock. A 2008 revision attempted

to clarify circumstances under which streams could be filled, but was vacated by a federal court for violating the Endangered Species Act. This reinstated the 1983 rule.

The newly proposed rule states that it attempts to revise regulations to “improve the balance between environmental protection and the Nation’s need for coal as a source of energy.” Community and environmental groups have criticized the proposal for failing to end the construction of valley fills and other mining activities that can heavily impact water quality.

In central Appalachia, where steep terrain and a high concentration of streams make water quality

impacts from mining more difficult to avoid, the rule would have its greatest effect. Overall, the rule would clarify protections given to streams during the mining process, and provide more detail about when states may grant exceptions to those protections. It would also increase baseline data collection for water quality, include provisions that increase the likelihood that mined land would be reclaimed as forest, and mandate more stringent bonding requirements for coal companies. Despite these changes, the rule would allow mountaintop removal mining to continue.

“This proposal doesn’t go far enough to protect streams and communities,” says Earthjustice attorney Neil Gormley. “In the final rule, the Obama Administration should change course and preserve the buffer that

protects streams from direct mining damage.”

The coal industry is critical of the rule’s potential impact on coal jobs. The Office of Surface Mining’s analysis examines a range of potential employment outcomes. Most scenarios predict almost no job loss over a 21-year time period due to jobs created through compliance with the rule. Worst-case scenarios predict a net job loss of roughly 120 jobs over the same period.

The agency will host public hearings on the proposed rule in Pittsburgh, Pa., Lexington, Ky., St. Louis, Mo., Charleston, W.Va., and Denver, Colo. Dates have not been announced. Appalachian Voices and other environmental groups are drafting input on the rule and plan to collaborate with impacted communities in the public comment process over the next several months.



Polluted water runs off a surface mine valley fill in eastern Kentucky. Photo by Matt Wasson

Clean Water Laws Wrestle With Coal

By Molly Moore

America’s clean water laws have hampered the coal industry to varying degrees for decades, with the strength of various laws often determined by political winds. The effectiveness of the Clean Water Act and other laws often depends on whether the regulations reflect the latest advances in science and technology, and whether state and federal agencies have the will and resources to enforce the rules. That saga continues today.

Acid Mine Drainage

What: Mining exposes metal sulfides to air and water, which react to form acidic discharges. Affected water can harm or kill aquatic life and is not safe for recreation or drinking.

Where: Generated by surface and underground coal mines — both active and inactive — as well as hardrock mines.

It’s Still Happening: Acid mine drainage was among the 2015 water-quality violations at the KD #2 mountaintop removal mine in West Virginia. See story at left.

The Laws: The Clean Water Act and Surface Mine Control and Reclamation Act require that waterways meet state and federal water quality standards.

The Problem: The Clean Water Act allows mining companies to declare that a natural body of water is not a legally protected waterway but is instead a “waste treatment system,” exempt from the law. In 2002, a change to the Clean Water Act allowed companies to begin using untreated mining waste as construction “fill material.” Also, state enforcement of the federal surface mining law is inconsistent, and acid mine drainage can begin decades after mining ceases, which can leave state governments responsible for cleanup.

Selenium

What: A mineral necessary for life in extremely small amounts, but even low levels of contamination can harm or kill aquatic life.

Where: Affects ground and surface water near coal mines and coal ash ponds.

It’s Still Happening: In a landmark 2012 settlement, Patriot Coal Corp. agreed to phase out its use of mountaintop removal coal mining in order to resolve \$400 million in liability for selenium pollution cleanup in West Virginia.

The Law: The Clean Water Act and Surface Mine Control and Reclamation Act require that companies cannot pollute in excess of state and federal water quality standards.

The Problem: In 2013, Kentucky adopted weaker state selenium standards approved by the U.S. Environmental Protection Agency. Appalachian Voices and partner organizations filed a lawsuit challenging Kentucky’s changes. And in May 2014, the EPA proposed a new federal standard that is less protective of aquatic life than the current standard.

Total Maximum Daily Loads

What: The amount of a pollutant that a waterway can tolerate while meeting water quality standards.

Where: TMDLs can be calculated for any pollutant in any impaired waterway.

It’s Still Happening: Virginia regulators set a TMDL for the South Fork Pound River. Citizens groups, including Appalachian Voices, alleged in a 2014 lawsuit that four mines owned by Red River Coal Company were violating their permits because the company’s discharges exceeded the TMDL for the entire watershed.

The Law: The Clean Water Act requires that states keep a list of impaired waterways and calculate how much of each pollutant each of those water bodies can safely handle.

The Problem: Many states have not completed their TMDL obligations. Kentucky, for example, had only assessed a quarter of state rivers and streams as of 2012. Of those, 67 percent were impaired, but officials set TMDLs for just 11 percent of those streams.

Coal Slurry

What: Sludge leftover from washing coal, this mixture consists of water, coal dust, clay and chemicals, and includes toxic heavy metals.

Where: Stored in massive, often unlined impoundments, and has also been injected into underground mines. Leaches into ground and surface water.

It’s Still Happening: Studies from 2012 show that underground slurry injections contaminated drinking water in Prenter, W.Va. In 2013, the Brushy Fork slurry impoundment was permitted to increase its capacity to 8.5 billion gallons. And in 2014, more than 100,000 gallons of slurry spilled into Fields Creek at a West Virginia coal processing plant.

The Law: The Mining Safety and Health Administration is responsible for the structural safety of a slurry impoundment, and the Clean Water Act requires state and federal enforcement of water quality standards.

The Problem: State and federal enforcement of water pollution standards can be weak and intermittent, and MSHA-inspected impoundments have failed in the past, raising concerns about dam stability.

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Clean Water Laws & Coal

Power Plant Wastewater

What: Wastewater from coal-fired power plants includes heavy metals, carcinogens, neurotoxins and other pollutants.

Where: Rivers, streams, lakes and ponds near coal-fired power plants. Comprises half of all industrial surface water pollution, and contributes to problems such as high mercury and lead levels in fish.

It's Still Happening: From 2008 to 2011, Eden, N.C., noticed harmful trihalomethanes in city drinking water. Investigation revealed that a nearby coal-fired power plant was releasing bromides into the Dan River, which react with water-treatment chemicals to form trihalomethanes — compounds linked to bladder cancer. In June 2015, Duke Energy settled with Eden and a nearby town.

The Law: Under the Clean Water Act, EPA regulates industrial pollution of surface water, and sets maximum levels for contaminants in drinking water under the Safe Drinking Water Act.

The Problem: The rules governing power plant wastewater were last updated in 1982, and do not regulate heavy metals and a range of other pollutants. In April 2013, the EPA proposed a range of scenarios for updated regulations — two would lead to a 96% reduction in pollution, while others include modest reductions in some pollutants and no reduction in arsenic and lead levels. The agency intends to finalize the rules by Sept. 30, 2015 and is currently accepting public comments.

Coal Ash

What: The waste left over from burning coal for electricity, coal ash contains 25 heavy metals and other chemicals.

Where: Often mixed with water and other industrial waste and stored in unlined impoundments near power plants, but can also be kept dry and stored in landfills. Dry ash contributes to air pollution, and liquid storage can infiltrate ground and surface water.

It's Still Happening: Contamination of groundwater has occurred near all of North Carolina's coal ash ponds. Between April and mid-July of 2015, the state health department deemed 301 wells near coal ash ponds unfit to drink. Duke Energy denies that the contamination is related to its ash ponds. See story at right.

The Law: The EPA established the first federal regulations for coal ash in 2014. North Carolina passed its own regulations earlier that year following an impoundment failure that dumped 39,000 tons of ash into the Dan River.

The Problem: Federal rules do not classify coal ash as a hazardous waste. States are not required to adopt the EPA's new standards, nor are those standards federally enforceable. The federal rule also leaves much of the responsibility for identifying coal ash contamination and seeking legal protection to citizens.

To learn more and take action, visit our online edition at appvoices.org/thevoice and follow the links to more resources.



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In the Neighborhood: Living with Coal Ash

By Sandra Diaz

Tracey Edwards, a lifelong resident of Stokes County, resides within three miles of the coal-fired Belews Creek Steam Station, and is concerned about the coal ash the plant generates.

As a child growing up in the mostly African-American neighborhood of Walnut Tree, Edwards played outside and ate from neighborhood apple and cherry trees. She remembers the same ash that fell on the neighborhood also covered her father's clothes when he came from work at the Belews Station.

Today, that ash is captured by air pollution controls and is stored with other waste the plant produces. The Belews Steam Station has one unlined, 350-acre pit of ash and water, as well as three dry landfills, one unlined, scattered within a mile of the plant. The ash is contaminating nearby groundwater and may also be affecting well water, which many residents rely on for drinking and other household uses.

Edwards' family has a history of inexplicable health issues. Her father was diagnosed with bladder cancer in 2002. Her mother, Annie, began to have neurological issues, which eventually her left hand clenched up into a permanent fist; puzzled doctors tentatively diagnosed it as multiple sclerosis.

By 44, she had suffered three strokes, and now she has a defibrillator. Her neighbors have also experienced abnormally high incidences of illnesses, Edwards says, such as strokes and cancers.

Due to a new state law, Duke Energy is now required to test drinking water wells within 1,500 feet of all North Carolina ash ponds. So far, several homes near the Belews plant have received "do-not-drink" notices, but Duke has not sampled dozens more within the testing radius. Of the 446 wells identified for testing statewide, results

Formidable Costs

Continued from page 13

that have already occurred. In fact, the evidence seems to indicate that a great deal of the damage is permanent. As Waggy noted in a Charleston Gazette editorial, "The citizens of West Virginia will have to choose between accepting a biologically degraded watershed or paying the formidable costs of perpetual water treatment."

But despite the scrutiny the DEP has given to this mine, when asked if the more rigorous KD #2 permit process would have an effect on how the agency issues future mining permits in the state, a DEP spokesperson responded, "While the



Tracey Edwards speaks in Walnut Cove, N.C., where the NAACP announced it would investigate whether black communities are disproportionately affected by environmental contamination. Photo by Jaimie McGirt

from 327 have been analyzed by the state health department, and 301 homeowners have received "do not drink" notices. Most of the wells tested high for vanadium or hexavalent chromium, both known carcinogens.

In 2014 Edwards and her mother helped form Residents for Coal Ash Cleanup, which hosts monthly meetings to discuss how to hold Duke Energy accountable for their coal ash pollution. After her mother passed away last September, Edwards continued to work with the group.

In May, Stokes County commissioners allowed the state to take a core sample for natural gas, and the preliminary results hinted that gas may be present, raising new concerns that fracking operations could create seismic activity that could damage the coal ash impoundment.

"I live here, my children live here. and I don't want anyone else to get sick," says Edwards. "We just want safe clean air and water. We can't exist without clean water."

agency is always looking to improve how it operates, there is nothing about this particular situation that would warrant an immediate change in procedures."

For residents in the more rural and economically distressed areas of the state, the lack of legal resources, time and political capital to hold the DEP and the companies it permits accountable continues to be a problem. Because the KD #2 mine is not far from relatively affluent neighborhoods in the greater Charleston area, Waggy says, "There is a very strong feeling that if other [mountaintop removal] sites in West Virginia were given the same level of attention and scrutiny, a large majority — if not all of them — would reveal the same degree of acid drainage and environmental impact."

Yet Dale Boullis remains determined to fight back against what she perceives as the coal industry's indifference to West Virginia's communities. "I don't deserve to be treated like a cost of business," she says. "In fact I refuse to be treated as a cost of doing business."

Appalachian Coal

Strip Mine Proposal in Northern Alabama

By Kimber Ray

Even to those familiar with Appalachia's historically destructive relationship with coal, the proposal for the 1,773-acre Shepherd Bend strip mine in northern Alabama seemed unprecedented.

Flowing through the mountains of Alabama's largest coal-producing region, the Mulberry Fork tributary of the Black Warrior River houses the drinking water intake for more than 200,000 residents in Birmingham, Ala., nearly 75 percent of whom are black or African-American. Just 800 feet from this intake was one of 29 outfall points where Drummond Company, Inc., planned to release toxic mining waste directly into the waterway.

Drummond is no stranger to controversy. Since 2002, the coal mining company has been sued at least four times regarding allegations that it hired the paramilitary gunmen responsible for the kidnap, torture and murder of unionized mine workers and their families at its Colombian operations. But until recently, the company faced limited public criticism in its home state of Alabama.

"The proximity to a major drinking water source was the perfect storm," explains Black Warrior Riverkeeper Nelson Brooke. "The challenge was getting the word out."

For the past eight years, Brooke's organization waged a grassroots campaign against the Shepherd Bend Mine proposal. Confronted with a progressively vocal opposition, Drummond withdrew their permit applications last June. Although the company claims the decision was solely based on a poor market for coal, Brooke suspects that "without this campaign, the mine probably would have gone forward."

Alabama has an almost 200-year-old history with coal mining. Along with the rest of Appalachia, however, jobs in the industry began to decline by the 1960s as machines increasingly replaced workers. Yet according to Brooke, there has been "[limited] public awareness just at the fact that there is mining [in Alabama] — strip mining and underground — and a lot of people didn't realize this was happening here except in immediately

affected communities."

Since the Alabama Department of Environmental Management first granted a wastewater discharge permit for Shepherd's Bend in 2008, public understanding and opposition has grown. Once Drummond received an additional permit to mine the area in 2010, students from the University of Alabama began to protest.

As owner of most of the property where the mine would have been located, the university had requested proposals to lease the land as recently as 2007. With the negative attention brought on by the protests, the school took no further action after this request expired.

Opposition expanded in 2014 when the story caught the attention of lawyer and activist Natilee McGruder. The disconnect between social and environmental justice movements in her home state of Alabama — particularly in terms of racial demographics — had long troubled McGruder. Joined by her friend William Isom II, co-founder of the direct action campaign known as Hands Off Appalachia!, McGruder encouraged students at nearby historically black colleges and universities to rally around opposition to the Shepherd Bend Mine.

"We started talking about how we wanted more people of color and particularly students, the young folks, engaged [on this issue] and how we thought the students would be a cool way to get this whole idea out that Alabama is Appalachia and Appalachia is Alabama," says McGruder.

McGruder and Isom visited several schools, hosting workshops and film screenings, and sharing social media and community engagement strategies from central Appalachia. Though the Drummond permit is now withdrawn, Isom's group is continuing to examine ways to diversify grassroots action in Alabama.

The Black Warrior Riverkeepers remain on guard. The University of Alabama has never stated whether it has future plans to lease its land for mining, and the lax environmental regulations in Alabama which allowed for the Shepherd



The water intake for more than 200,000 residents of Birmingham, Ala., is just across the river from a proposed strip mine — now withdrawn — that would have released toxic pollution directly into the river, including one discharge location a mere 800 feet away. Photos courtesy of Black Warrior Riverkeepers

Bend proposal in the first place are still in effect, although the Riverkeepers and others have initiated several legal challenges.

Isom hopes to see continued cross-over between social justice and environmental activism. "The same machine

that chews up black men on the streets of America is the same machine that's chewing up the mountains of Alabama," he says. "And dumping poison in your water and screwing up your air or making your grandmother have asthma."

Allure of the Alabama Appalachians

By Eliza Laubach

The Appalachian mountain range extends into northeastern Alabama, with its highest peak, Mount Cheaha, at a 2,407 feet. Attractions include abundant caves, old-growth pines and rare plant communities.

✧ See the nation's longest flowing mountaintop river at Little River Canyon National Preserve. A spectacular 700-foot gorge, one of the deepest east of the Mississippi, runs for 28 miles atop Lookout Mountain.



Upper DeSoto Falls. Photo by Kerry Sanders

✧ The quaint village of Mentone on Lookout Mountain boasts a high concentration of youth summer camps, as well as Alabama's only ski resort.

✧ Look for the rare carnivorous pitcher plant in DeSoto State Park and boulder the sandstone cliffs near DeSoto Falls.

✧ Sauta Cave shelters the largest concentration of the Indiana gray bat in the world. Up to 200,000 bats have emerged at dusk in the summer months.



Green pitcher plant. Photo by Brad Lackey

✧ Kayak or raft class three and four rapids in South Sauty Creek, with a take-out at Buck Pocket State Park, and in Short Creek, which empties into Lake Guntersville.

✧ Spot scarce cerulean warblers, whose habitat is threatened by mountaintop removal and strip coal mining, on the northeast loop of the North Alabama Birding Trail.

✧ Stand under 200-year-old longleaf pines at Mountain Longleaf National Wildlife Refuge, which protects the largest remaining stand of these pines north of the state's coastal plains — less than 10 percent of the longleaf pine ecosystem survives. These forests also host an endemic daisy.

✧ The Chief Ladiga Trail is a 33-mile biking trail that was once a railroad bed. Chief Ladiga was a Creek Indian chief who signed a treaty giving most of the land in the area to the United States.

Communities Working Together to Create a Solution to Stormwater

By Laura Marion

On average, Chattanooga, Tenn., receives 53 inches of rainfall per year. Combined with the city's steady growth and development in recent time, the rainfall began to overwhelm old drainage systems, causing flooding and erosion in the city. This stormwater washed into the Tennessee River, pollutants in tow. In 2010, the U.S. Environmental Protection Agency and the Tennessee Clean Water Network sued the city for violations of the Clean Water Act. Under the resulting settlement, the city agreed to pay an estimated \$250 million to minimize or eliminate sewage overflows and improve their sewer system.

Stormwater runoff in Appalachia can be attributed to several factors. One major issue is the spread of development into natural areas that trap rainwater and allow it to slowly seep into the earth. The replacement of permeable soil with roads, buildings and parking lots causes issues with erosion and flooding. The U.S. Forest Service predicts that central Appalachian summer droughts will be accompanied by increased flooding in the spring and winter.

Since the EPA expanded the Clean Water Act in 1987 to include a program for stormwater runoff, many communities across the country have been required to implement plans to manage the problem. The use of green infrastructure — the replication of natural areas

with plants and other organic materials as a means of trapping and filtering stormwater — has been encouraged by the agency since 2007.

Mounir Minkara, the water quality manager for Chattanooga, predicts that the plan will have many long-term benefits for the city.

"[We were] looking at a roadway project here that would have cost a lot of money to actually fix a drainage issue on the streets or on the neighborhood that floods a lot," Minkara says.

"Now we're looking to address it through green infrastructure. We feel like the cost may be half of what it had been if we do it through [the storm drain system]."

According to Minkara, benefits of using natural stormwater retention also include aesthetic improvement, increased property value and environmental stewardship. As part of its plan, Chattanooga implemented several sustainable projects including green roofs and water-permeable pavement.

Converting to green infrastructure is a team effort, Minkara says, and takes work from city planners, engineers, property owners and volunteers alike.

Jay Squires, the streets and stormwater manager for the City of Spartanburg, S.C., is also looking at the long-term benefits of stormwater management. A 2013 project sponsored by the EPA,



This Renaissance Park Bioretention area in Chattanooga, Tenn., collects water from the parking lot and allows it to infiltrate into the ground. Photo courtesy of the city of Chattanooga

the Northside Project, will incorporate green infrastructure such as rain gardens, permeable pavers, open green spaces, and green rooftops. Squires also hopes to restore a stream as an amenity for the Northside neighborhood. In addition to helping with water quality, Squires believes that the green infrastructure will solve drainage issues in Northside, and help increase property values. He and his team are obtaining permits to begin implementation.

"It's an important project, but it's a long-range project that we need to always be on the tip of our tongue and not something that we stick in the background," Squires says.

Community Partnerships

In mid-July, the EPA recognized the Eastern Band of Cherokee Indians in western North Carolina for their Native Plant Nursery Facility, which provides plants for projects to restore streams and habitat on tribal lands. The community uses two 6,000-gallon cisterns to collect and store rainfall to water their plants, which reduced their water withdrawals from an on-site stream by 36 percent during the first year.

At the University of Kentucky, a rain garden is aiding education. The rain garden, located near the headwaters of the Wolf Run Watershed in Fayette County, was funded through a stormwater incentive grant from Lexington, Ky., and the university's student sustainability council.

"It's functioning as a living-learning lab," says Rebecca McCulley, interim director of Tracy Farmer Institute for Sustainability and the Environment and associate professor of Plant and

Soil Sciences. "We have students and faculty that are actually out there pretty regularly collecting data."

To prevent the university's stormwater runoff from polluting nearby water bodies such as streams and ponds, school officials are required to obtain a National Pollutant Discharge Elimination System permit and develop a stormwater management program that includes public education. Suzette Walling, administrative support for the Tracy Farmer Institute for Sustainability and the Environment at the University of Kentucky, says that student involvement in the rain garden contributes to that outreach.

"Being a community partner is certainly important," Walling says.

There are many schools that have implemented creative stormwater management solutions in the Appalachian region, including Appalachian State University in Boone, N.C., ranked number 22 in the nation among the Sierra Club's green schools of 2014. Among the projects the school implemented are a rainwater retention cistern that captures runoff and releases it into the watershed by way of a low dam that regulates the waterflow to prevent flooding, and a broadcasting center that collects stormwater and uses it as non-potable water in the restrooms.

In Chattanooga, innovative stormwater management through green infrastructure has become more than just addressing the EPA's original lawsuit.

"We feel like this has been the right approach," Minkara says of Chattanooga's sustainable stormwater management program. "We anticipate that property value will improve and it will have better benefits for the environment for sure."

Virginia Town Tests Natural Pollution Treatment Techniques

By Cody Burchett

For decades prior to the 1970s, local industries dumped polychlorinated biphenyls, or PCBs, into the six-acre emergency overflow pond of the Altavista, Va., wastewater treatment plant. This toxic chemical cocktail, manufactured in the United States starting in 1929, was banned fifty years later. Now, the strategies being adopted to eliminate the high levels of PCB contamination at this site in southwestern Virginia are rooted in natural capability.

Although utilizing plants, fungi and microorganisms to remove toxic material from soil and water is an ancient practice, bioremediation has not been well-studied. A new project in Altavista could be the first to show that this strategy can successfully treat PCBs — and at a lower cost than current methods.

After Altavista was told by the Virginia Department of Environmental Quality in 2002 to remediate the contaminated sediment in their pond, the town joined the state's Volunteer Remediation Program and began evaluating potential

treatment options. The most popular option today involves removing contaminated sludge to be either burned or shipped to a landfill, but after learning this would cost more than \$4 million, the town began searching for a more practical and affordable option.

One outcome of this search is a 2012 experiment that planted nearly 170 willow and poplar trees around the banks of the contaminated pond. Ecolotree, a small private company, is known for these phytoremediation projects which use plants to soak up toxic contaminants. That same year, researchers from the University of Maryland-Baltimore County also began participating at the Altavista site, where Dr. Kevin Sowers and his team are testing how effectively microorganisms can break down PCBs.

In an email, Sowers reports that results from his lab suggest "that we could reduce PCB levels by 80 percent over a 2.5 year period with bioaug-



Scientists implement bioremediation techniques in an effort to reduce the volume of PCBs at the overflow pond in Altavista, Va. Photo by Kevin Sowers

mentation — a decrease that would normally take decades."

Field results remain uncertain, however, and could take many years to establish. In June, a peer-reviewed analysis of these two experiments was presented at a workshop which attracted scientists from across the country. With funding from the Altavista town council, this review was conducted by the Danville, Va.-based Institute of Advanced Learning and Research. The institute also received

town support to initiate its own bioremediation project at the pond last March. Dr. Scott Lowman, a scientist at IALR, says the workshop was likely the first of its kind in the United States.

Lowman and his team are experimenting with a perennial switchgrass which they have injected with a rhizosphere bacteria that can metabolize or break down PCBs. The first sample results of the project are expected this summer.

"[L]iterature has shown that this works in the lab, but now we are trying it in the field," Lowman says.

The town has yet to decide on a full-scale treatment project to fund, but if the results from Lowman's favorable, a phase two may be initiated. "This is a worldwide problem," Lowman says. "If this project is successful, it would not only benefit the town of Altavista but many other localities as well."

Bioremedial Botany

Plants and fungi found in Appalachia that can be used for bioremediation purposes



Ladder Brake Ferns

Bioremedial Benefit: Brake ferns draw heavy metals into their tissues and out of the earth to accumulate high levels of arsenic
Native to: China
Interesting fact: Able to grow in heavily polluted soil, and high arsenic concentrations may even boost the fern's growth

Brassica Family (kale, mustard greens, collards, broccoli, etc.)

Bioremedial Benefit: Able to remove lead from soil; just don't eat them if that's what they're being used for!
Native to: Europe and temperate Asia
Interesting fact: There are about 30 different species of Brassicaceae, most of which are highly regarded for the nutritional value

Oyster Mushrooms

Bioremedial Benefit: Breaks down organic bonds in toxic chemicals
Native to: Tropical and temperate climates around the world
Interesting fact: These mushrooms secrete enzymes that break down the carbon-hydrogen bonds in wood, which are similar to those found in oil and pesticides

Sunflowers

Bioremedial Benefit: Able to absorb lead, arsenic, zinc, chromium, copper and manganese from polluted soil
Native to: North and South America
Interesting fact: Sunflowers were successfully used to clean up uranium and strontium-90 from contaminated soil in Ukraine after the Chernobyl disaster, the worst nuclear power plant accident in history

Photo credits, left-right: Peter Woodard, Uwe H. Friese Bremerhaven, Biswarup Ganguly, A.Bower



The University of Kentucky's rain garden is used as a living-learning lab for students. Photo courtesy of the University of Kentucky

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Disposing of a Chemical Past

Kentucky chemical weapons stockpile slated for destruction by 2023

By Dan Radmacher

In a series of bunkers on the sprawling 14,500-acre Blue Grass Army Depot near Richmond, Ky., more than 100,000 rockets and projectiles containing more than 500 tons of nerve gas and other chemical weapons from World War II and the Vietnam War era are stored.

If all goes according to plan, those weapons will be destroyed over the next few years in a multi-billion facility in final stages of construction at the depot, finishing out a decades-long project that began when the United States joined the 1993 Chemical Weapons Convention.

The aging rockets and projectiles at the Blue Grass Army Depot are stacked in concrete igloos which have deteriorated over the years; about a third of them are covered with green plastic sheeting to keep out rain.

Low-level chemical leaks from the weapons have occurred over the past 10 years, including emissions of Sarin and mustard gas. Yet Army officials stress that no major leaks have escaped the igloos or threatened the surrounding community of Madison County, a fast-growing area of 85,000 residents.

The depot in Kentucky and Pueblo Chemical Depot in Colorado hold the country's last remaining stockpiles of chemical weapons from the early-to-mid-20th century. The process to destroy them has taken much longer and cost much more than anticipated, largely because of wide-scale opposition to the original planned disposal method. The original budget for the the entire project was around \$2 billion; the final cost will

surpass \$40 billion. Destruction of the Pueblo stockpile began in May.

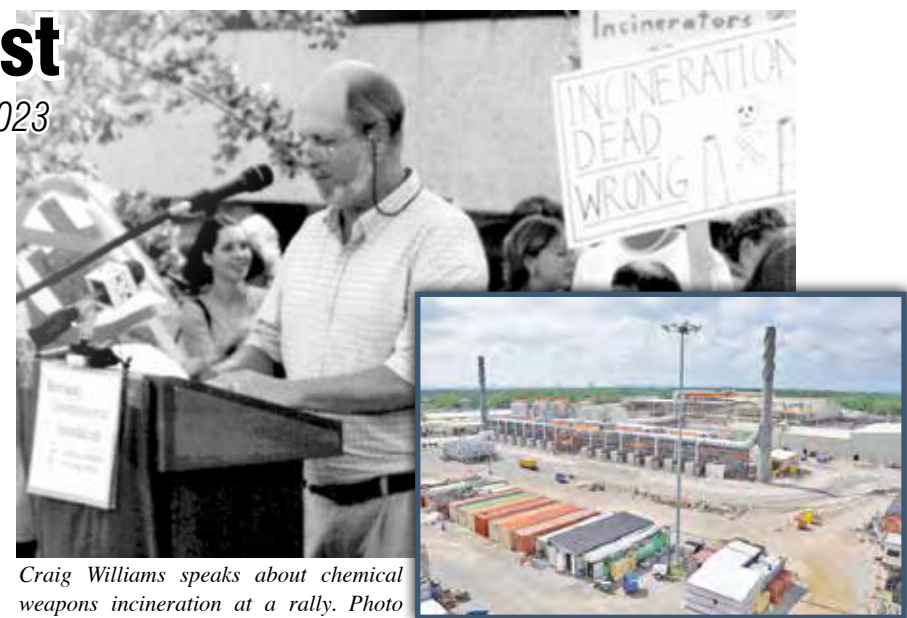
When the United States first agreed to destroy its stockpile of chemical weapons in the 1980s, the Pentagon planned to incinerate most of it — including those stored at the Kentucky depot, much of which has been stored there since the 1940s.

That didn't sit well with a lot of residents near the stockpiles, including Craig Williams, a Vietnam veteran and winner of the 2006 Goldman Environmental Prize for grassroots activism.

From the moment the Army publicly announced plans for an incinerator at Blue Grass in 1984, Williams and others lobbied for a more controlled and safer method of disposal. In 1992, the Chemical Weapons Working Group, part of the Kentucky Environmental Foundation that Williams helped found, released a report that described a dozen potential approaches that didn't involve incineration.

"We took that report to the Army and to Congress and state regulators and to anyone else who would entertain the idea of listening," says Williams. "We finally convinced Congress that there were viable options the Pentagon refused to research directly."

According to Paul Walker, a former staff member of the U.S. House of Representatives Armed Services Committee, "The chemical weapons demilitarization process has shown that we can treat highly toxic and dangerous waste in a way that can be a win-win for everybody. We don't have to push toxic remnants of war into the environment."



Craig Williams speaks about chemical weapons incineration at a rally. Photo courtesy Kentucky Environmental Foundation. At right, a view of the Blue Grass Chemical Agent-Destruction Pilot Plant. Photo courtesy Blue Grass Chemical Stockpile Outreach Office

Walker, who witnessed and helped guide the congressional response to the controversy in the early '90s, remained involved in the disposal process as head of the Security and Sustainability Program at Global Green USA, the U.S. national affiliate of Green Cross International, a nonprofit organization started by former Soviet Union president Mikhail Gorbachev.

"We are in the final few yards of eliminating an entire class of weapons of mass destruction," Walker says.

The contentious political fight between Congress, local communities and the Pentagon, in the end, made for a better process, Walker says, and recognition that protecting the public health and the environment ultimately trumped cost or treaty deadlines.

At the Blue Grass facility, the Army settled on a method that breaks down the chemical bonds in the agents that make them lethal, a process that can be better controlled than incineration.

Changes have taken place as the disposal facility has been designed and built. In one instance, the contractor recently suggested eliminating a step that

involved rinsing rockets after they are disassembled to remove any remaining chemical agent, a process that could have created problems since water reacts with some of the agents, creating an acidic and corrosive material that could have compromised internal piping systems. According to Williams, the contractor developed an alternative method involving a thermal oxidizer and huge banks of carbon filters, along with a sophisticated detection and alarm system, which should safely neutralize any dangerous residue left on the rockets.

"Nothing's perfect," Williams says, "But our confidence is extremely high in the technology and the engineering of the facility. The risk mitigation efforts that have been taken will ensure that any issue or incident is minor compared to what it could have been with an incinerator."

Walker hopes the lessons learned over the last 20 years of dealing with chemical weapons stockpiles will help the nation and world deal with other toxic legacies of war — like the chemical and conventional weapons dumped at various locations in the oceans.

"Most weapons were built to be used, not disposed of," Walker says. "But historically, we never fire about 90 percent of the weapons we build. I'm not sure we'll ever understand the public health impact of it all."



NERVE: How a Small Kentucky Town Led the Fight to Safely Dismantle the World's Chemical Weapons

The Kentucky Environmental Foundation is creating a documentary about the community's successful effort to stop the incineration of toxic nerve gas and other chemical weapons. Watch the trailer at kyenvironmentalfoundation.org/nerve-the-film.html

Appalachia's Political Landscape

Caught Between a Budget and a Hard Place

By Brian Sewell

After watching economic development efforts in Appalachia break ground, Washington wants to help the region rebuild. It's what tools to use that the federal government can't agree on.

The Obama administration's strategy is to direct funds to workforce training and reemployment programs and increase the budgets of agencies focused on economic development. Congressional opponents of the president remain primarily concerned with rolling back environmental protections and blocking limits on carbon pollution from coal-fired power plants.

While Appalachian communities struggle to weather coal's decline, lawmakers are sticking to their sides during this year's congressional budget process.

A Powerful Plan Meets Resistance

When President Obama presented his proposed 2016 budget to Congress earlier this year, a sliver of the \$4 trillion plan was carved out with Appalachia specifically in mind.

The POWER+ Plan, as it's called by the White House, is designed to have bipartisan appeal. It supports efforts to

reduce Appalachia's reliance on coal alongside strategies to promote coal's future viability as an energy source in the form of tax incentives for carbon capture technology.

The plan calls for \$1 billion over the next five years to be allocated through the Abandoned Mine Lands Reclamation program to areas with high unemployment and where jobs to restore previously mined lands would help revitalize local economies. Communities in Appalachia would be first in line.

The counties that stand to benefit most from the POWER+ plan are some of the poorest in the United States. And lawmakers representing those counties in Congress, including Rep. Hal Rogers (R-Ky.), the chair of the House Appropriations Committee, and Senate Majority Leader Mitch McConnell (R-Ky.), are positioned to rally other influential legislators around the plan.

But rather than receiving the POWER+ Plan with enthusiasm, many Appalachian lawmakers' comments echoed past criticisms of the U.S. Environmental Protection Agency and claims of a war on coal.

"The administration has instituted sweeping regulations that have destroyed our economy's very

foundation without considering the real-world impacts, and funding alone won't fix that," a spokesperson for Sen. Shelley Moore Capito (R-W.Va.) told the Charleston Gazette. Earlier this year, Capito introduced legislation to prevent the EPA from regulating carbon pollution.

When asked about the plan, a spokesperson for first-term Rep. Alex Mooney (R-W.Va.) responded to the Gazette with a simple "No, Representative Mooney does not support the [POWER+] Plan."

Mooney has introduced a bill to prevent the U.S. Department of the Interior from finalizing the Stream Protection Rule to reduce the impacts of mountaintop removal coal mining. He has called stopping the rule his "top priority."

Falling Over The Flag

In June, the House Appropriations Committee scaled back elements of the POWER+ Plan during negotiations over a bill to fund the EPA and Interior Department.

Instead of providing \$200 million for the Abandoned Mine Lands program next year under the White House budget, committee members recommend \$30 million be divvied up between Kentucky, West Virginia and

Pennsylvania. Some agencies and programs that would see a bigger budget under the president's plan lose existing funding under the House bill.

After the full House announced it would vote on the bill, the White House issued a veto threat, citing the House's efforts to undermine carbon pollution limits and block the Stream Protection Rule, among other reasons.

But it was ultimately disagreement among Republicans over an amendment to prohibit the Confederate flag from being displayed at federal cemeteries that forced House Majority Leader John Boehner to abruptly cancel the vote.

"I actually think it is time for some adults in Congress to actually sit down and have a conversation about how to address this issue," Boehner said at a press conference referring to the flag debate.

Some local leaders, however, believe Appalachia has waited long enough. On July 21, the City Council of Norton, Va., voted unanimously in favor of a resolution supporting the POWER+ Plan. The resolution calls on Sens. Mark Warner (D-Va.) and Tim Kaine (D-Va.), and Rep. Morgan Griffith (R-Va.) to champion the proposal in Congress.

114 TH CONGRESS: Below are recent congressional bills and amendments on environmental issues and how central and southern Appalachian representatives voted. To see other recent votes, or for congressional representatives outside of the five-state area, visit thomas.gov . ● = pro-environment vote ✗ = anti-environment vote ○ = no vote	Kentucky		Tennessee		North Carolina		Virginia		West Virginia							
	T. Massie (R) KY-04	H. Rogers (R) KY-05	A. Barr (R) KY-06	P. Roe (R) TN-01	J. Duncan (R) TN-02	F. Fleischman (R) TN-03	S. Desjardais (R) TN-04	V. Foxx (R) NC-05	P. McHenry (R) NC-10	M. Meadows (R) NC-11	R. Hurt (R) VA-05	B. Goodlatte (R) VA-06	M. Griffith (R) VA-09	D. McKinley (R) WV-01	A. Mooney (R) WV-02	E. Jenkins (D) WV-03
HOUSE																
H.R.1734 would permanently classify coal ash as nonhazardous waste and block certain provisions of the EPA's recent coal ash rule, including restrictions against siting unlined coal ash impoundments near drinking water sources. 258 AYES, 166 NOES, NV 14 PASSED	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
H.Amdt.573 to H.R.2822 would strike a provision in the Dept. of Interior appropriations bill that blocks the development of new ozone standards for smog. 180 AYES, 249 NOES, NV 4 FAILED	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
H.Amdt.582 to H.R.2822 would prevent efforts to block three species from obtaining protection under the Endangered Species Act, including the northern long-eared bat. 186 AYES, 243 NOES, 4 NV FAILED	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
H.R.2042 would allow states to opt out of carbon regulations for fossil-fuel power plants, and extend the deadline for compliance. 247 AYES, 180 NOES, 6 NV PASSED	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
H.R.1335 would reauthorize a fisheries management bill and loosen certain provisions to allow greater flexibility for the fishing industry. 247 AYES, 180 NOES, 6 NV PASSED	✗	✗	✗	○	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
SENATE																
Note: Senate legislation needs 60 votes to pass	M. McConnell (R)	R. Paul (R)	L. Alexander (R)	B. Corker (R)	R. Burr (R)	T. Tillis (R)	T. Kaine (D)	M. Warner (D)	J. Manchin (D)	S. M. Capito (R)						
S. Amdt. 2176 to S.1177 would develop and improve climate science curriculum for K-12 education and create green building policies for state schools. 44 AYES, 53 NAYS, 3 NV FAILED	✗	✗	✗	✗	✗	✗	●	●	✗	✗						

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Report Analyzes Economic Impact of Abandoned Mine Lands Program

By Eliza Laubach

Central Appalachia, which hosts an estimated 25 percent of the country's abandoned mine lands, is disproportionately burdened with 65 percent of the total economic impacts associated with the decline of coal mining, according to a landmark July report by the Abandoned Mine Lands Policy Priorities Group.

The policy group, which formed last

year, obtained data on the Abandoned Mine Lands program through Freedom of Information Act requests.

Congress established the AML program in 1977 to address post-production mine lands abandoned by coal companies prior to that year. Since then, the program has spent more than \$5.7 billion to reclaim nearly 800,000 acres of abandoned mines across the

country. But the remaining 6.2 million acres "ravaged by abandoned coal mine problems" will require nearly twice that investment, the authors report. The program is also facing declining revenue and is set to expire in 2021.

The policy analysis describes how a formula based on recent coal production currently determines distribution of funds, which are sourced partly from a tax on each ton of coal a company produces and partly from the federal treasury. The authors suggest replacing that formula with one that is based on need. Determining that need should be guided by an updated inventory of AMLs, the report states.

Currently, the remaining \$2.5 billion in the AML fund is being invested in treasury securities, with the interest supporting the United Mine Workers Association's health and pension plans.

Distribution of these funds should be accelerated, especially in communities with economies that are hardest hit by coal's decline, the report's authors suggest. The report also calls on Congress to find an alternative financial support for UMWA pensions.

The POWER+ Plan, a part of the Obama administration's 2016 budget proposal, seeks to reform the AML program and encourage sustainable redevelopment of unreclaimed mines across the country, a revitalization effort that could create an estimated 3,117 jobs nationwide.

But although the POWER+ Plan would base funding on historic coal production, it does not go far enough, the report's authors say, because it "ignores any factor of economic distress," and central Appalachia is experiencing "unprecedented economic decline, environmental damage and inequality."

Groups Test Boundaries of N.C. Solar Laws

By Julia Lindsay

In a direct challenge to North Carolina laws governing electricity sales, clean energy group NC WARN financed a 5.2-kilowatt solar project on the roof of Greensboro's Faith Community Church and plans to sell the energy to the church for about half of Duke Energy's solar rate.

Duke's attorney cautioned that the project is prohibited by law, but said the utility would connect the solar array to its grid "in order to not inconvenience" the church. The state is one of four that forbid entities other than regulated monopolies from selling electricity to consumers.

NC WARN asked the state utilities commission to allow their direct sales to help the church sidestep upfront costs. The nonprofit has also backed N.C. House Bill 245, dubbed the Energy Freedom Act, a bipartisan measure that would legalize third party sales, which the organization says stimulate competition and incentivize energy companies to expand their renewables programs.

Duke Energy's Robert Caldwell told news outlet Utility Dive that Duke welcomes the competition provided that the third parties "pay us what it costs to stay connected to our grid."

N.C. Solar Snapshot



A 20-megawatt solar farm under construction near Biscoe, N.C., covers 120 acres and is projected to power the equivalent of 3,500 homes when it is completed in November. The Montgomery County solar array, built by NC-based company O2 Energies EMC, will be grazed by sheep to reduce the need for mowers and synthetic pesticides. At a July event at the construction site, Sen. Richard Burr (R-N.C.) spoke about the role of renewable energy development in making North Carolina economically competitive. — Lauren Essick

Fracking Investigations Stir Questions, Fines

By Eliza Laubach

A test well drilled in North Carolina by state scientists this spring has suggested there may be natural gas beneath the Walnut Tree community, a majority African-American neighborhood that shares groundwater with the largest coal ash pond in the state. Laboratory analysis, yet to be funded, will determine the nature of the deposit and guide speculation for hydraulic fracturing in the region.

Oil and gas test wells in eastern Kentucky have increased speculation into whether the Rogersville shale is profitable to frack. Considering the link between fracking and earthquakes, scientists with the Kentucky Geological

Survey are establishing baseline data by burying sensitive seismic activity monitoring devices this summer.

In Morgantown, W. Va., atop the Marcellus shale, a university fracking site will provide a long-term study of the light, noise, air and water pollution these sites emit. One of the drilling sites is dangerously close to the city's water intake on the Monongahela River, environmental groups say.

Range Resources faces an \$8.9 million fine for contaminating groundwater with methane near a fracking rig in Pennsylvania. This record fine, being challenged by the company, comes after a two-year dispute over this well with the state.

Court Ruling Sets Back EPA Mercury Standards

The U.S. Supreme Court ruled in June that the U.S. Environmental Protection Agency did not properly consider the price of a rule to curb mercury pollution and other toxic emissions from coal plants.

The Mercury and Air Toxics Standard is one of the Obama administration's most significant efforts to combat harmful air pollution and protect public health. But industry groups and several states sued the EPA soon after the rule was finalized in 2011 for not factoring in compliance costs when it

decided regulating mercury is "appropriate and necessary."

The EPA argues that the projected annual \$9.6 billion compliance cost of the rule is well exceeded by an estimated \$80 billion in health benefits each year.

The 5-4 ruling sends the case back to the U.S. Court of Appeals for the District of Columbia Circuit, which could order the EPA to revise the mercury rule or to craft a new plan altogether. Until then, the rule remains in effect. — Brian Sewell

Contaminated Drinking Wells Near Ash Ponds

By Kimber Ray

North Carolina officials are requiring Duke Energy to test 446 wells located near the utility's coal ash ponds, which contain the waste left over from burning coal. As of July, the state health department had analyzed results from 327 of these wells, and sent "do not drink" notices to 301 homeowners whose water contains dangerous levels of heavy metals and other contaminants associated with coal ash, such as lead, vanadium and hexavalent chromium.

Duke Energy, recently fined \$102 million for nine violations of the Clean Water Act at its coal ash ponds, denies responsibility for the drinking water contamination. The state is conducting tests to determine the cause.

The utility currently plans to excavate ash from 20 of its 32 unlined coal ash ponds. The 12 that remain unaddressed account for 70 percent of the company's statewide ash deposits, according to the Charlotte Observer. Duke is considering plans to close these ponds by leaving the waste in place and installing an earthen cap on top.

Clean Water Act Clarified

The U.S. Environmental Protection Agency and the Army Corps of Engineers issued the final Clean Water Rule this past May, reducing the scope of waterways subject to the Clean Water Act and reinforcing exemptions that have legalized toxic water pollution since 2001. The majority of drainage ditches and artificial lakes used for livestock will no longer be regulated. Coal and agricultural industries retain permission to convert streams into waste impoundments. Eight states, including West Virginia and Kentucky, have criticized the new rule as overbearing and filed a federal lawsuit in June. — Cody Burchett

Air Pollution Standards Challenged in N.C.

The Federal District Court of Appeals rejected North Carolina's attempt to bypass air pollution standards concerning fine particle pollution. The state waited too long to contest a standard set forth by the Environmental Protection Agency in 2010 that limits increases in soot, largely emitted by coal-fired power plants or motor vehicles. — Eliza Laubach

Data Showing Decline in Surface Coal Production Raises Questions

By Brian Sewell

Data reported by the U.S. Energy Information Administration in July shows a steep decline in coal produced by mountaintop removal mining in three central Appalachian states.

According to the agency, production from mountaintop removal mines in Kentucky, West Virginia and Virginia fell 62 percent between 2008 and 2014, while surface coal mining production nationwide decreased by 21 percent over the same period.

Analysts say this recent data reinforces national trends depressing demand for coal and expanding the roles of natural gas and renewable energy. But environmental groups caution that the figures may be misleading and raise questions about what constitutes "mountaintop removal."

"The amount of coal being mined

doesn't convey the extent of surface mining's environmental or human health impacts," Appalachian Voices Legislative Associate Thom Kay says. "Mine location, blasting extent, and water quality problems are much more important indicators of the damage done to communities."

Several factors make singling out mountaintop removal production difficult. The EIA pointed out in its report that a variety of other surface mining techniques can be performed on sites where mountaintop removal is also used. Also, mines that Appalachian residents and environmental groups refer to as mountaintop removal are sometimes not considered as such under the Surface Mine Control and Reclamation Act.

Mines that span the "upper fraction of a mountain" or cross a ridge line and are exempt from returning the land

to its "approximate original contour" are generally considered by state and federal regulators to be mountaintop removal operations. But other surface mines that clearcut forests, blast away ridgelines and dump waste into adjacent valleys are not.

In recent years, this nuance has allowed Appalachian coal companies to dispute their reputation for using mountaintop removal. Alpha Natural Resources, for example, has active surface mines in West Virginia and Virginia, and is currently seeking a permit for an 847-acre surface mine in West Virginia's Coal River Valley. But the company claims it has not used mountaintop removal since the end of 2013 and has no plans to this year.

Virginia Utilities Release Generation Plans

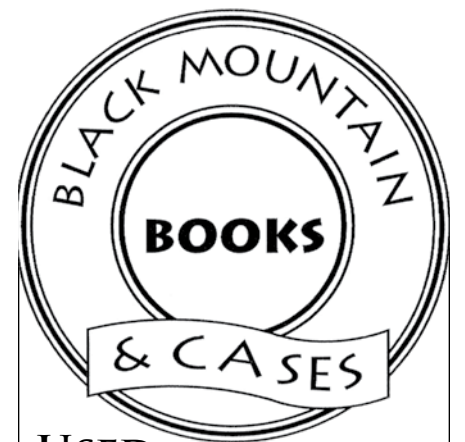
By Eliza Laubach

Appalachian Power Company and Dominion Power released their electric power generation plans this July. While APC released a comprehensive energy generation plan plotting the next 15 years, Dominion released a short-term plan with different options emphasizing solar, wind, nuclear or natural gas for the long-term. Dominion commented that, before committing to long-term goals, it awaits the August release of a final federal rule to cut carbon emissions from domestic power plants.

APC plans to substantially increase their clean energy capacity up to 22

percent from the current one percent of wind, solar and efficiency sources. Following a region-wide trend, APC will also increase its natural gas generation by building new plants or retrofitting coal-fired ones. Coal power generation will decrease about 20 percent. Dominion also pledged to decrease coal generation, but suggested that this will cause a capacity shortfall with expected increases in demand by 2020.

Virginia Gov. Terry McAuliffe is calling for 21 percent of Virginia's energy needs to be met with renewables and efficiency by 2030 and a 10 percent total energy consumption decrease by 2020.



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Promoting the Power Plan as a Plus for Appalachia

The POWER+ Plan, a budget proposal made by the White House earlier this year, would steer tens of millions of dollars to help diversify the economies of communities in Appalachia that have for decades relied heavily on coal.

Appalachian Voices has been busy promoting the plan, which would among other things support job retraining for former miners, provide funds for communities to make critical infrastructure improvements and direct new funding to clean up abandoned mines while creating new jobs (read more about abandoned mine lands on page 20).

At the end of July, Norton, Va., became the first city in the U.S. to formally adopt a resolution supporting POWER+. The City Council also urged the state's congressional representa-

tives to support "any plan that targets redevelopment funding opportunities for our region." Appalachian Voices championed the resolution with Norton's leaders, and we commend them for leading the way on this vital issue.

Unfortunately, members of Congress, including representatives from Appalachia, have been less than supportive of the measure, with the U.S. House budget bill cutting Virginia entirely out of the Abandoned Mined Lands funding reforms that were spelled out in the plan and the U.S. Senate propping a budget through committee that leaves out any mention of POWER+ altogether (read more on page 19).

Keep up-to-date on this evolving issue at appvoices.org/frontporchblog.

Ask the Experts: First Webinar Series A Success

This year marked our first online webinar series. The four free webinars were led by AmeriCorps Associate Editor Kimber Ray, and featured topics that were covered in *The Appalachian Voice* publication. During the webinars,

academics, professionals, local residents and Appalachian Voices staff members shared information and answered questions from the public. Join us online next year when we kick off round two! Visit appvoices.org/webinars.

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Saving Energy, One Utility at a Time

Our Energy Savings for Appalachia team has been campaigning to bring energy efficiency to the High Country of North Carolina, a region that spends nearly three times more of their income on electric bills than the average American.

The campaign's current focus is encouraging Blue Ridge Electric Membership Cooperative to offer an on-bill financing program to make home energy upgrades available to their members of all income levels. On July 29, we hosted a press conference and event in Boone, N.C., where community members spoke about how energy savings has reduced their electric bills, and thanked Blue Ridge



Violet Scholar, a volunteer from Lansing, N.C., explains on-bill financing and energy efficiency at a tabling event.

Electric for taking the necessary steps to consider an on-bill finance program.

To date, the team has gathered the signatures of more than 1,000 residents and 20 businesses and service agencies in support of the program. Learn more at appvoices.org/highcountry.



Eric Chance

The Appalachian Voices family would like to bid a very fond farewell to two long-time members of the team. Maeve Gould, who served on our outreach and development teams since 2012, helped to fine-tune our membership outreach. She also functioned for four years as the Distribution Manager of *The Appalachian Voice*, single-handedly overseeing the movement of 60,000-plus newspapers every other month through our network of paid and volunteer distributors (over 90 now!) and delivered straight to the hands of our loyal readers. Eric Chance, Water Quality Specialist and resident GIS expert since 2009, was responsible for sifting through reams of water quality data. His analysis helped uncover tens of thousands of Clean Water Act violations and led to lawsuits against three different coal companies for breaking the law. Maeve and Chance are heading to Virginia Tech this fall to pursue graduate degrees, and we will miss them very much!



Jaimie McGirt

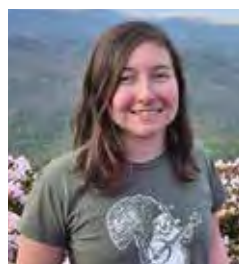


Kimber Ray



Eliza Laubach

Farewells and Thank You!



Maeve Gould

We would also like to express our humblest gratitude to our three AmeriCorps Project Conserve members for their dedicated service during the 2014-15 term. Kimber Ray, who served as the phenomenal Associate Editor for *The Voice* for two AmeriCorps terms and penned some of our top features during that time, heads off to a work-stay farm in Costa Rica to obtain a certificate in permaculture. Ebullient Energy Savings team member and communications specialist, Eliza Laubach, will stay close by, continuing with Appalachian Voices through spring helping to expand our Energy Savings campaign into new electric co-op territories. And passionate Jaimie McGirt, who cheerfully divided her time between our Energy Savings and Cleaning Up Coal Ash campaigns, will be getting married this fall and will continue to help AV engage with the High Country community as a volunteer. We wish everyone all the best!



Member Spotlight: A Farming Heritage at Sycamore Spring

By Laura Marion

Carol Rollman, admirably referred to by customers as "Farmer Carol," is the cheerful and amicable owner and operator of Sycamore Spring Farm in Frederick, Md., where she also distributes *The Appalachian Voice* to her customers. Sycamore Spring is a sustainable farm that doesn't rely on the use of pesticides and fertilizers to grow crops. Carol suggests that this method of farming produces safer, higher quality crops.

"The farm is all about repurpose, recycle, sustainability," Carol said. "I thought your paper fit right in with my customer base."

Sycamore Spring Farm is a vibrant 63-acre diversified homestead farm on which Carol raises heritage breed animals including Scottish cattle, Silver Appleyard ducks, and American Blue rabbits. Carol believes that raising heritage breeds is important because they have been a staple in the farming community until recently, when modern food production cornered the market with specialized breeds.

Carol's cattle are marketed as "Better than Organic Beef," and she raises several species that, if it weren't for farmers like Carol, would likely be extinct. Due to popular demand, Carol started delivering her farm goods such as meat and produce this year.

"It's an educational process for folks to know what they're going to eat and where they get it from," Carol said.

Throughout her life, Carol has said that a love of farming must be in her blood. Perhaps it is due to her great-grandfather, Archibald Sparks, who owned Arch Sparks farm and mercantile store in Canebreak W.Va. and ran a home delivery service. Or maybe her love of farming was instilled when she was 13 and visited her grandfather's farm, a Scots-Irish Clan land grant in southwest Virginia that was given to her family in 1855.

"I fell in love with that property and hearing how they lived," Carol said. "I remember asking my grandfather at age 13, 'Can I please have your part of the farm?' He said, 'You don't want that, that land will kill you. It killed my family.' If only my grandfather and his family knew what we know now, it wouldn't have been as difficult for them."

Carol has farmed her whole life, but before she made her living off of farming, she was in the medical field. She had a vascular ultra steno-grapher's certification, and looked inside people's arteries so she could suggest ways in which they could live healthier lives. Carol was discouraged, however, because she found that most people she treated didn't want to hear that they were

unhealthy, and they weren't willing to make changes. But when she left the medical field and started farming, she began attracting people who really did want to take care of their health.

"It's almost as if my health care profession came full-circle with the farm," Carol says.

Although Carol knows many new farming techniques that have made her job easier than it was for her grandfather, she has by no means cast aside what she knows to work. In addition to her heritage breeds, Carol also raises English Shepherds, or as she calls them, "the original, multi-purpose farm dogs," which are the same type of farm collies that farmers used during the 1800s and early 1900s.

Carol did inherit her grandfather's farm, and she hopes to someday retire there and raise honeybees.

"There is no honey better than honey you can get on the mountain," she says.

For more information, visit sycamorespringfarm.org



Carol Rollman also breeds English shepherds and heritage breed collies.

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Appalachian Voices is committed to protecting the land, air and water of the central and southern Appalachian region. Our mission is to empower people to defend our region's rich natural and cultural heritage by providing them with tools and strategies for successful grassroots campaigns.

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For waterfall enthusiasts, a series of picturesque drops reside within the Daniel Boone National Forest in southeastern Kentucky, bearing names like Bark Camp Cascades and Van Hook. Photographer Bill Harris captured the ethereal beauty of Princess Falls (above), a gentle curtain of water nearly 20 feet high with a long, overhanging ledge on the side that lets you get close to the underside of the falls.

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