

JULY 2026 ISSUE 3

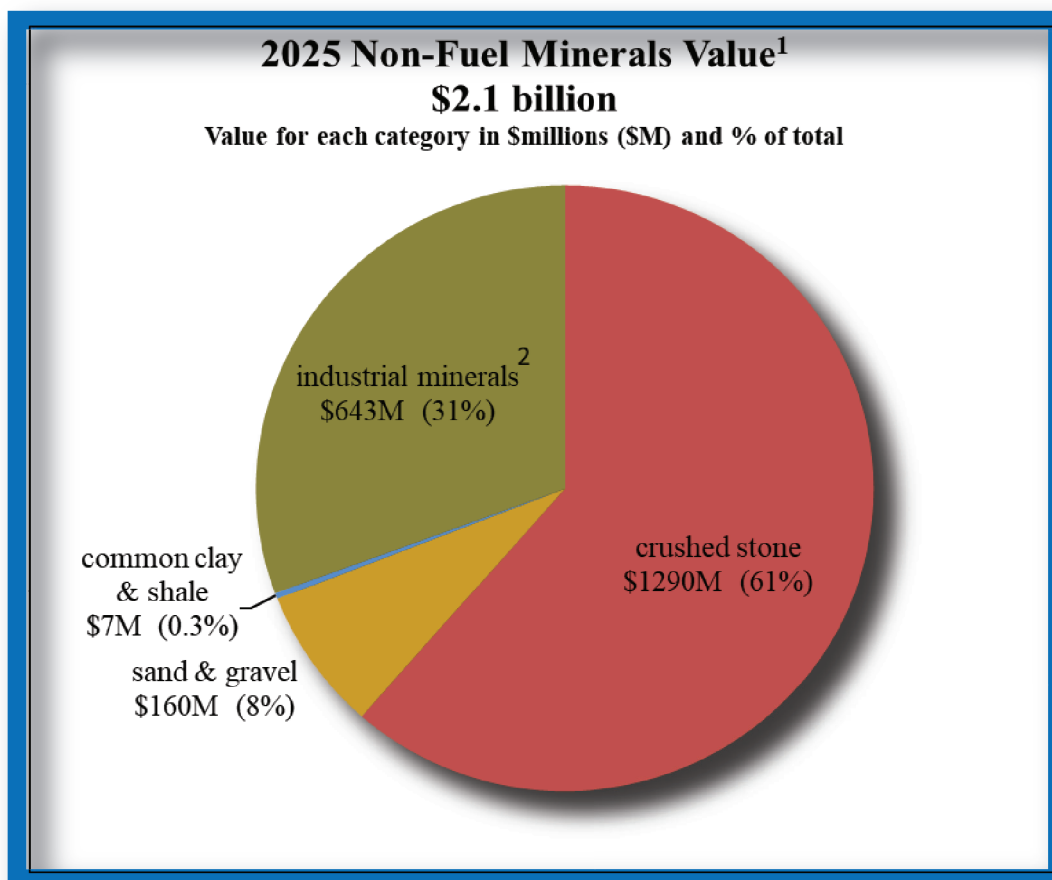
STATE OF THE MINES

NEWSLETTER OF VIRGINIA ENERGY'S
DIVISION OF MINERAL MINING



MINERAL MINE STATISTICS.....	2	OUTREACH	23
WHAT'S NEW.....	5	ABANDONED MINERAL MINES.....	26
SAFETY AWARDS.....	8	TECHNICAL HIGHLIGHT.....	29
RECLAMATION AWARDS.....	10	HIGHLIGHT ON OUR STAFF.....	32
IMCC AWARD.....	13	WILDLIFE AT THE MINES.....	33
HISTORY: RICHMOND COAL BASIN.....	15	FUN FINDS.....	36
TRAINING.....	21		

The value of non-fuel minerals in 2025 was **\$2.1 billion**. Crushed stone, used extensively in building and road construction, accounted for 79% of the total reported tonnage and 61% of the total estimated value of non-fuel minerals.



¹ Estimated.

² Combined value of cement, lime, fuller's earth, dimension stone, feldspar, gemstones, industrial sands, iron-oxide pigments, kyanite, mineral sands (titanium and zirconium concentrates), salt, and vermiculite.

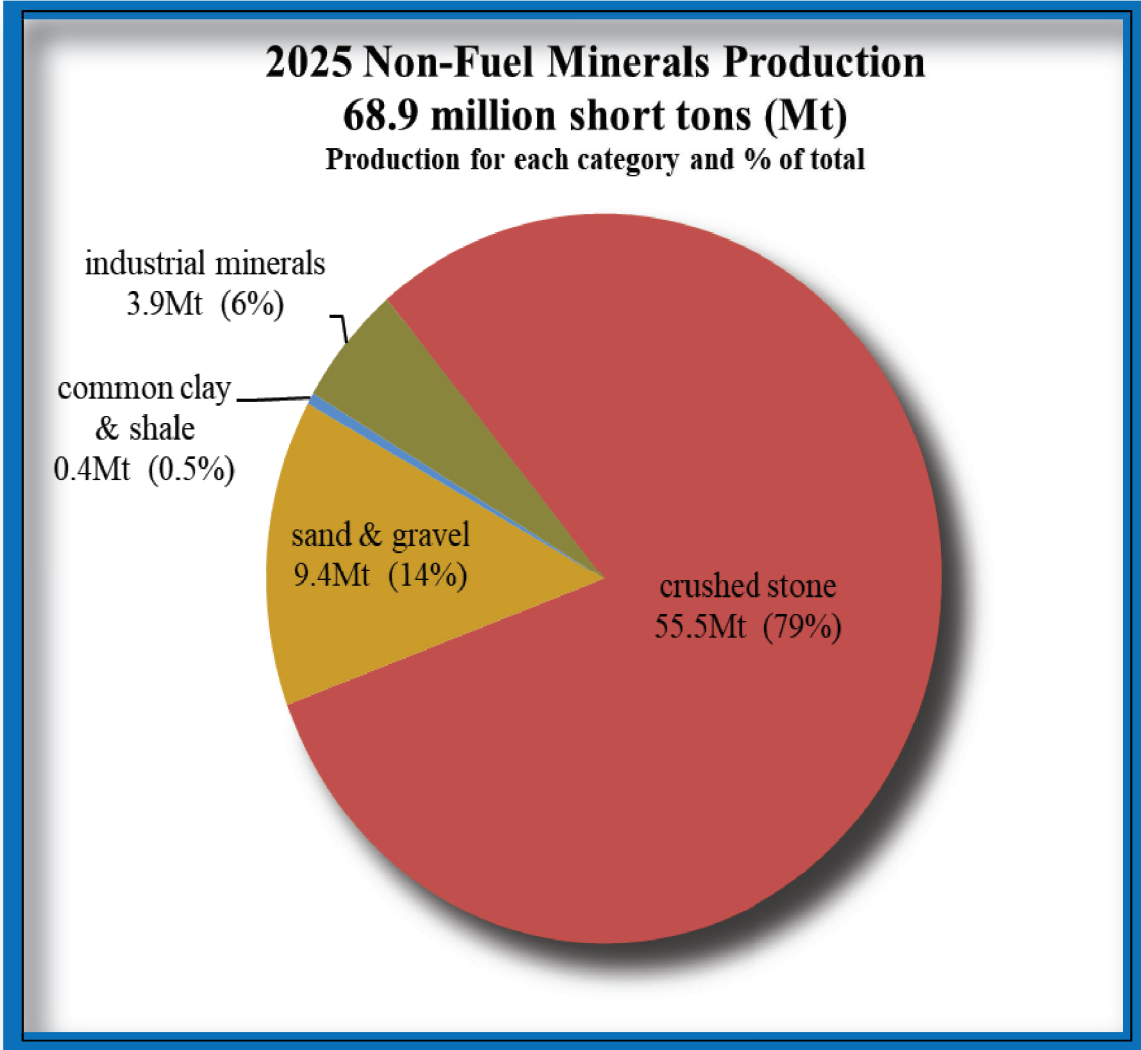
Sand and gravel, also used primarily for construction, comprised 14% of the total tonnage and 8% of the total value.

Clay and shale serve as construction materials as well as raw materials for manufacturing bricks, cement, roofing products, etc., and accounted for less than 1% of the total tonnage and estimated value.

Industrial minerals encompass a wide variety of mineral commodities used in construction, refractory and ceramic products, chemical and filtration processes, among other specialized applications and accounted for 6% of the total tonnage and 3% of the total value.

At the end of 2025, there were **420** active mineral mining permits in Virginia. These mines produced 69,927,119 tons of sand, gravel, crushed stone and other aggregates and industrial minerals. Our **6,699** miners worked **7,539,857** hours!

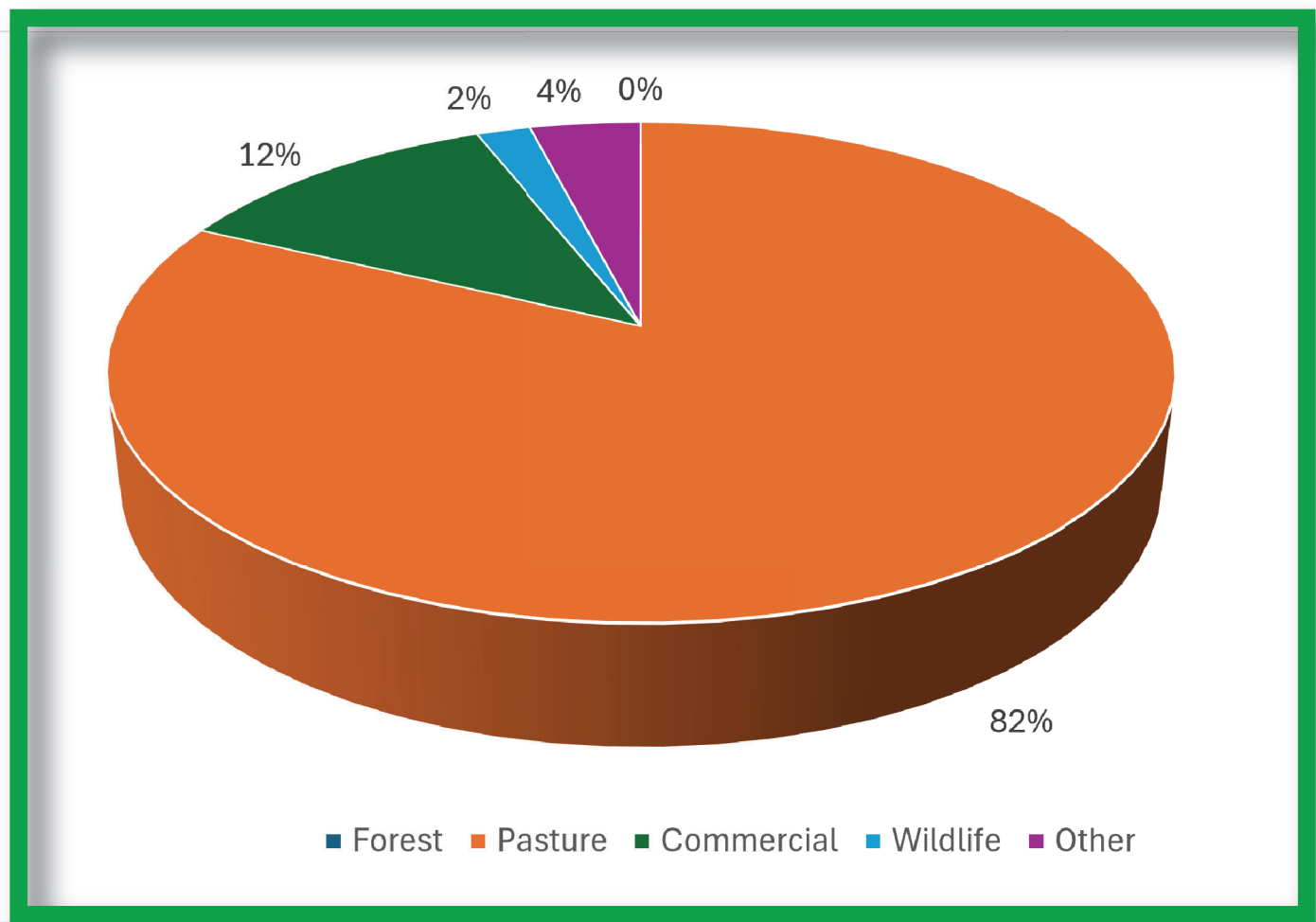
2025 tonnage was down 3.5% from 2024 figures. There was a 3% increase in the operator hours reported and a 14% increase in contractor hours netting an overall increase of 4%. Contractors continue to represent a significant portion of the mineral mining workforce in the Commonwealth at 43%.



The Division of Mineral Mining uses annual production and hours data to tailor our resources to best serve our mining operators in Virginia, ensuring we have the safest workers in the industry.

Annually, the Division of Mineral Mining reports statistics to the IMCC. Their interests include the number of permits issued and acres of land disturbed, as well as the Post Mined Land Use for the prior calendar.

In 2025, the majority of reclaimed land was returned to pasture with the second largest category being commercial. There were a total of 540 acres released from bond in 2025.



USGS MINE WASTE SAMPLING TRAINING AT KYANITE MINING

by Elle Lindgren, Orphaned Land Specialist

DMM participated in a training field trip to Kyanite Mining's Willis Mountain site in Buckingham County. This provided an engaging and informative look into the active mineral extraction and sampling best management practices. The visit, hosted by Kyanite Mining, was a collaboration between the U.S. Geological Survey (USGS) and Virginia Energy's geologists to better understand and characterize mine waste materials.

This work is a part of the Earth MRI Mine Waste Grant, led by Division of Geology and Mineral Resources' (DGMR) Dr. Roy Bassoo, which will characterize the mineralogy and geochemistry of critical materials within mine tailings from four sites including Kyanite's Willis Mountain site. A previous Earth MRI study identified approximately 104 potential critical mineral mine tailings extents that were then narrowed down to four sites for further investigation.

The main component of this trip involved a USGS-led mine waste sampling training. Through collecting and analyzing samples from various locations across the site, we can then evaluate and identify critical mineral potential. The training consisted of completing two transects of tailings samples that are then sifted, sorted and sent to USGS for further analysis.

Our participants in the training included DGMR's Roy Bassoo, Catharine DeGoyler, Jenny Meng, and David Hawkins, and DMM's Chrissi Wood-Smith and Elle Lindgren. We gained practical insight into the sampling protocols, methodology, and data collection from the USGS staff. It was a fabulous day with spectacular views!

We extend our thanks to Kyanite Mining Corporation, specifically John Snoddy and Mike Morris, for welcoming us and teaching us about the operations at Willis Mountain. And thank you to the USGS staff, Robert Seal and Kate Campbell-Hay, for facilitating a meaningful learning experience!



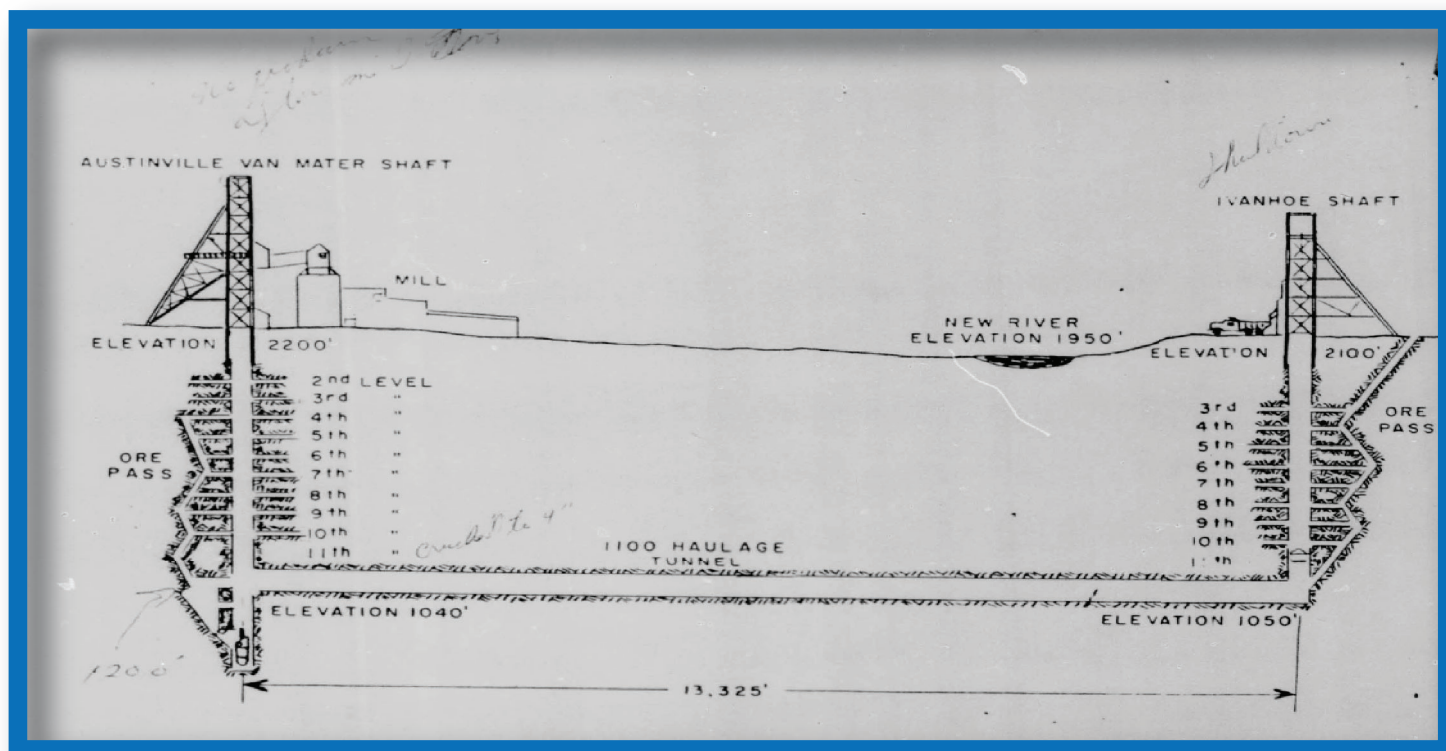
DATA PRESERVATION

Virginia Energy's Division of Mineral Mining (DMM) and Division of Geology and Mineral Resources (DGMR) began work on the National Geologic and Geophysical Data Preservation Program funded by the USGS. A portion of the funding received this grant period was used to rescue historic mineral mining records currently archived on microfilm.

The microfilm contains historical mineral mine records from 1969-2000. Paul Saunders (our resident historian), Chrissi Wood-Smith, and DGMR's Dr. Michael Smith are working on cataloging the permit documents that were scanned from the microfilm. This has been a treasure trove of information such as mine maps, minerals mined, tonnage, and reclamation plans.

This data, in combination with legacy datasets that are now scanned and accessible, topped with lidar (light detection and ranging) imagery have provided incredible insight into the extent and nature of mining in the Commonwealth. Some of these mines are still in operation today (which we did not expect to find). Those sites that have been fully reclaimed and are officially closed-out will be added to our Previously Mined Lands database. This data will be accessible to the public on our webmap.

Chrissi Wood-Smith, DMM, is the Principal Investigator for this project. Feel free to reach out with questions about this exciting work!



The New Jersey Zinc site in Austinville was first permitted as PN-195 in 1970. Though at the time it was only a surface mine, this site has a long history of mining since 1756. Learn more here: <https://energy.virginia.gov/mineral-mining/NewJerseyZincCompany.shtml>

NAAML P HARDROCK AML TRAINING

by Chrissi Wood-Smith, Technical Services Manager

DMM's Orphaned Land Program participated in the first NAAML P Hardrock Abandoned Mine Lands Database Development and Field Implementation Training March 10-12, 2026, in Lake Tahoe, Nevada.

The purpose of the training was to establish an end-to-end framework for building and maintaining a sustainable hard rock inventory. The training was open to all states and tribal lands that were interested in standing up a program to inventory and remediate abandoned mines in their regions.

Our OLP has inventoried approximately 3,300 Abandoned Mineral Mine Lands (AMML) of the estimated 9,500 features in the Commonwealth. We were able to contribute our extensive knowledge and experience with inventory, data collection and database development with the participants. In addition, we learned many valuable techniques used by some of the other participants for field collection.

This was a wonderful opportunity to collaborate and network with other programs throughout the nation. Big thank you to the Nevada Division of Minerals and NAAML P for organizing and hosting this event.



Virginia Energy and the Virginia Transportation Construction Alliance (VTCA) recognized 8 mineral mine operations for notable safety achievements as part of the annual Virginia Mineral Mine Safety Awards program. The company awards were presented by Rob Lanham of the VTCA on June 20, 2026, at The Homestead Resort in Hot Springs.

In 2025, the winning operations collectively worked 416,948 production hours with no occupational injuries and produced 1,760,734 tons of material. They were selected from 422 permitted mines that together produced 68,927,297 tons and logged 7,296,665 total hours worked across operators, office staff, and contractors.

Quarry award recipients: Four quarry operations earned awards based on employee hour categories without accidents:

- 0–25,000 employee hours:
Holston River Quarry – Dublin Quarry 3 (23,273 hours; 117,333 tons)
- 25,000–50,000 employee hours:
Luck Stone – Greene Plant (49,521 hours; 996,000 tons)
- 50,000–75,000 employee hours:
Luck Stone – Leesburg Plant (71,317 hours; 2,162,000 tons)
- 75,000+ employee hours:
Kyanite Mining Corp. – Willis Mountain (182,943 hours; 89,469 tons)



John Snoddy of Kyanite Mining



Stanley Powell of Luck Stone



Joel Van Campenhout of Luck Stone

Open pit award recipients: Four open pit operations were similarly recognized for incident free production in their respective employee hour brackets:

- 0–5,000 employee hours:
South River Stone, LLC – Stuarts Draft (4,602 hours; 32,489 tons)
- 5,000–10,000 employee hours:
Triple B Stone – Mine No. 1 (9,760 hours; 42,766 tons)
- 10,000–30,000 employee hours:
Titan Mid Atlantic Aggregates LLC – Castle Sands (27,246 hours; 213,048 tons)
- 30,000+ employee hours:
Virginia Vermiculite LLC – R.E. Sansom Mine (48,286 hours; 53,229 tons)



Dianna Jablonski of Virginia Vermiculite

Of Virginia's 422 mineral mines, 373 reported zero accidents in 2025, while only 45 had incidents that placed them at risk of not qualifying for safety recognition. In total, 3,698 operator employees (2,959 mine workers and 734 office workers) and 2,782 contract workers—6,476 workers overall—contributed to more than 7.2 million hours worked at mineral mining operations across the Commonwealth.

By Rachael Winnall, Mine inspector

Reclaiming areas disturbed by mining is a critical part of the mining process. In recognition of this, the DMM Mined Land Reclamation Awards are given out to deserving mines that have exhibited exemplary work in the area of mined land reclamation. This annual awards program is co-sponsored by the Division of Mineral Mining and the Virginia Transportation Construction Alliance (VTCA).

Winners are usually announced in three categories: Overall Winner, Best Quarry, and Best Non-Quarry sites. In 2026, the Virginia Orphaned Land Advisory Committee selected two quarry and non-quarry sand and gravel operations for exemplary land restoration following mineral extraction. These companies demonstrated strong environmental planning, collaboration with local partners, and a commitment to lasting land value through thoughtful grading, seeding, erosion control, and productive reuse. These included:

Overall Winner & Non-Quarry Winner:

Amrize Mid-Atlantic, Charles City Pit

Quarry Winner:

Martin Marietta Materials, Amelia Quarry

Honorable Mentions:

Michael A Gregg, Number Two Mine

Iluka Resources, Brink Mine

Nestle Purina Petcare

Boxley Materials, Otter River Number Two Mine



[Additional information on our Reclamation Award Program is found here>](#)

[The press release can be found here>](#)

The 2026 DMM/VTCA Reclamation Award winners were presented by Rob Lanham of the VTCA at The Homestead Resort in Hot Springs June 18-21, 2026



Matt Wolverton of Amrize



Cline Dooley of Martin Marietta

Congrats!



Jim Mitchell of Superior Paving (Boxley)

AMRIZE CHARLES CITY PLANT

This is a sand and gravel pit originally permitted in 2001 was submitted by Permit Engineer Sarah Hamm. There were 347 acres permitted and 297 acres disturbed at the time of bond release. The post mine land use (PMLU) is a solar farm. This site was released under a Land Disturbance Permit for the development of the Keydet Solar Center. The reclamation was a collaborative effort between the mine operator and AES Corporation.

The process began with the operator removing mining equipment and facilities, backfilling ponds, removing berms and installing silt fencing. Compaction for the structural foundation of the solar panels was the paramount concern, which involved daily presence of quality control technicians.



HIGHLIGHTS OF EXEMPLARY PERFORMANCE

- Transformed a depleted mine into renewable energy facility.
- Innovative and forward-thinking post-mining land use.
- Completed complex large-scale reclamation and site stabilization.
- Maintained exceptional quality control to support long-term solar infrastructure.
- Showcased strong collaboration between industry partners and regulators.
- Incorporated sustainable land management practices, including rotational goat grazing.
- Created lasting environmental and community benefits through renewable energy development.
- Exemplifies outstanding stewardship, innovation, and reclamation excellence.

VIRGINIA MINE EARNS NATIONAL RECLAMATION AWARD

By Sarah Hamm, Permit Engineer

The Virginia Division of Mineral Mining is pleased to announce that **Iluka Resources' Old Hickory Mine** has received the 2026 Interstate Mining Compact Commission's (IMCC) national non-coal reclamation award. This prestigious recognition highlights exemplary reclamation efforts from across the country. Virginia continues to stand out nationally, with ten awards in the past 23 years. This marks Old Hickory's second time receiving the honor.

Located along the Dinwiddie–Sussex County line, the Old Hickory Mine was a large-scale heavy mineral sand operation that, at its peak, encompassed more than 3,500 bonded acres across over 70 land leases—one of the largest permitted mining footprints in Virginia history. Mining operations utilized slurry methods to extract and transport mineral sands through an extensive network of pipelines, with processing occurring at multiple concentrator facilities. Over the mine's lifetime, more than 300 tailings impoundments were constructed and later incorporated into reclamation.



*Mining area
1100E in 2021*

*Mining area
1100E in 2024*



Reclamation efforts focused on restoring the land to productive agricultural use, reflecting the area's historic reliance on farming. Through a 20-year research partnership with Virginia Tech, Iluka invested over \$1 million to evaluate and refine soil reconstruction techniques. This work explored alternatives to traditional topsoil replacement, including the use of regenerated soils, biosolids, and deep ripping to alleviate compaction. Findings demonstrated that when properly managed, reclaimed soils can support crop yields comparable to or exceeding regional averages and can also sustain healthy forest growth.

The scale of reclamation at Old Hickory is notable. Since 2020 alone, approximately 5.5 million cubic yards of material have been regraded, 151 sediment traps have been backfilled, and more than 50 miles of pipeline have been removed and recycled. The project also included the remediation of numerous road crossings and site access points, as well as the construction of permanent farm ponds and restoration of wetlands. In total, more than 2,500 acres have been successfully reclaimed, with final bond release anticipated by the end of 2026.

Iluka's work at Old Hickory demonstrates a strong commitment not only to meeting regulatory requirements, but to restoring land in a way that supports long-term agricultural productivity for local landowners. Their investment in research and willingness to go beyond standard reclamation practices exemplify the innovation and stewardship recognized by this national award. The DMM was proud to nominate them for this recognition.

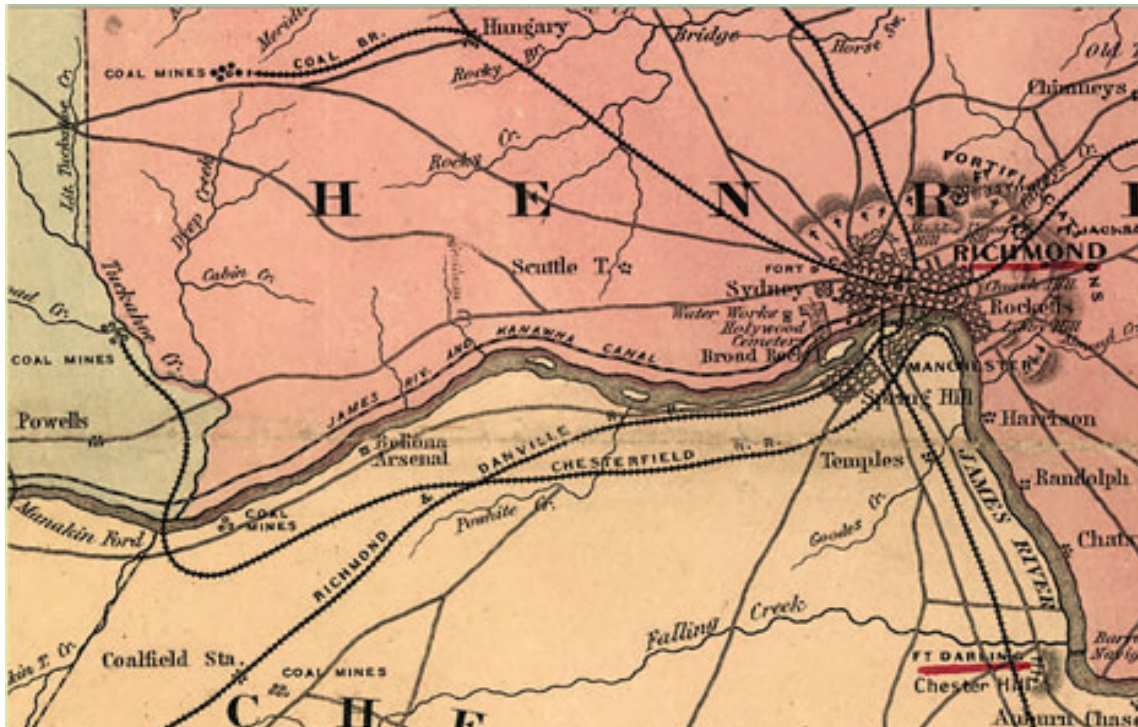
CONGRATUATIONS TO IMCC AWARD WINNER ILUKA OLD HICKORY!

“THIS NATIONAL RECOGNITION SHOWCASES THE VERY BEST OF VIRGINIA’S MINING INDUSTRY. ILUKA RESOURCES HAS SHOWN THAT CAREFUL PLANNING, SOUND ENGINEERING, AND SUSTAINED INVESTMENT IN RECLAMATION CAN LEAVE THE LAND BETTER PREPARED FOR FUTURE USES. THEIR WORK AT OLD HICKORY MINE SETS A HIGH BAR FOR MINE OPERATORS ACROSS THE COMMONWEALTH AND THE NATION.”

- MICHAEL SKIFFINGTON, ACTING DIRECTOR OF THE VIRGINIA DEPARTMENT OF ENERGY.

History

The Commonwealth of Virginia has a rich history of coal mining. This mining continues today in Southwest Virginia where in 2023 the industry produced over 10 million short tons of coal. But what many people do not know is where coal mining got its start in Virginia. The answer to that question is the Richmond Coal Basin. Coal was first discovered in Virginia in the late 1600's by the French Huguenots who had settled in present-day Goochland County. Colonel William Byrd noted the presence of coal and its use by the local inhabitants when he visited Manakin Town in 1700. Chesterfield County boasts of having the first commercially mined coal in America with commercial mines in the Midlothian area dating back to 1709. To this day, a coal miner and his pick are prominent on the Chesterfield County Seal. By 1748, coal was a substantial commercial business around the area and Richmond coal was shipped to the major coastal cities of Colonial America. Richmond coal was used to manufacture shot and shell for the Revolutionary War and later supplied the Tredegar Iron Works in Richmond during the Civil War. Turnpikes, canals, and railroads were built to carry coal from mines in Chesterfield, Powhatan, Goochland, and Henrico Counties to the markets in Richmond, Petersburg, and beyond. These transportation improvements included several firsts for the state. In 1807, Midlothian Turnpike became the first paved road in Virginia due to the large volume of coal being transported to the Richmond coal markets. Virginia's first railroad was the Chesterfield Railroad, a 13-mile mule and gravity railroad, which was completed in 1831 to more efficiently move Midlothian coal to market. The James River Canal, the Tuckahoe Canal, and several coal specific railways were constructed in the area to facilitate moving the commodity to market.



*Excerpt from Hare's map of the vicinity of Richmond and Peninsular Campaign in Virginia
(J. Knowles Hare, 1862)*

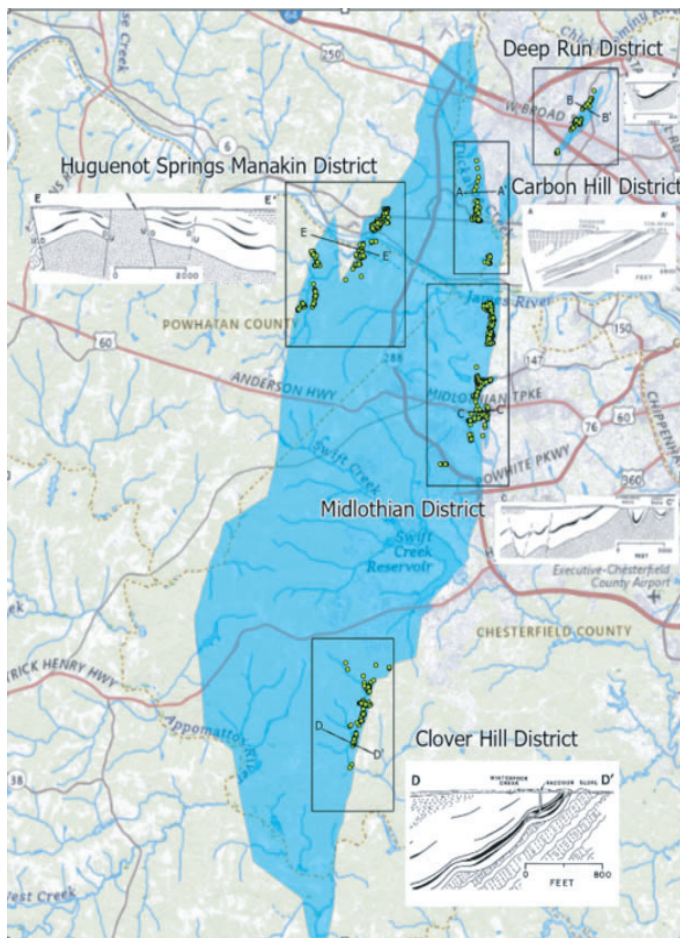
The Richmond coal basin hit its high in production in 1835 with over 200,000 tons produced that year. Coal production in the region never fully recovered from the destruction of the mines and the railroads that occurred during the Civil War. A combination of the availability of higher quality coal from southwest Virginia combined with the gaseous conditions of the mines and the problematic high water table of the region spelled the end of the Richmond Basin as a major supplier of coal. There were several attempts after 1930 to re-establish coal mining in the Richmond Coal Basin with strip mining occurring briefly north of Midlothian (Circa 1938) and the reopening of the Coalbrook Mine in Henrico County in 1944. These attempts failed quickly and marked the true end of coal mining in the Richmond Basin. Overall, from 1748 to 1930, the Richmond coal basin is credited with over 8 million tons of coal production.

Basin Facts

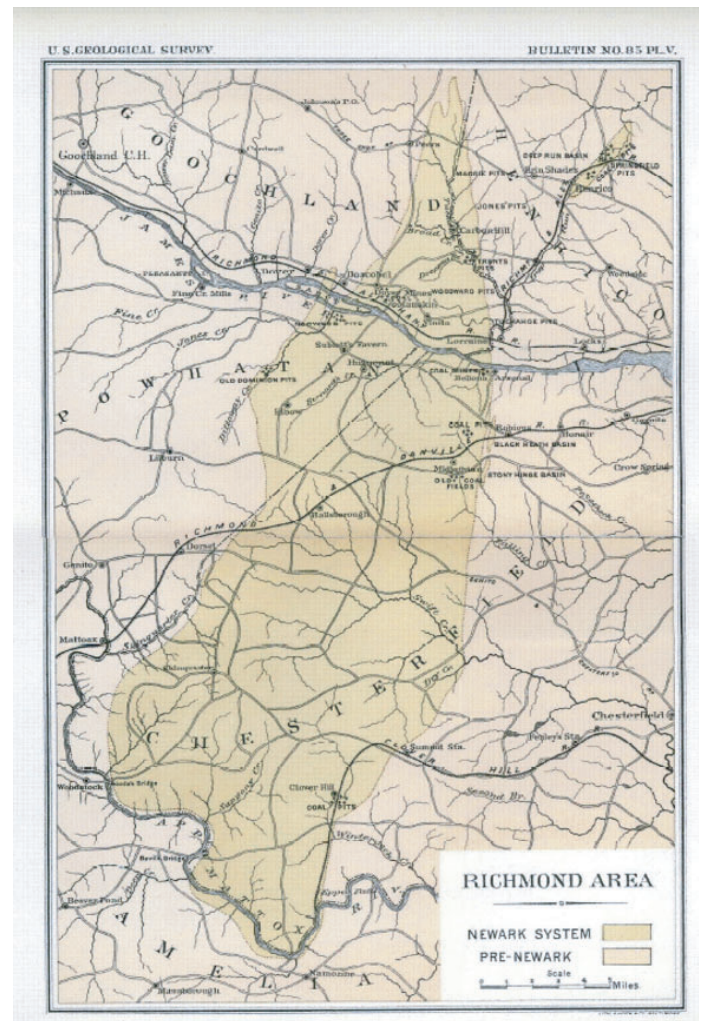
- The basin was created when peat swamps formed in low areas during the Triassic Period. Eventually the swamps were covered by sand, silt, and clay then the conversion of peat to coal began. Later tectonic activity distorted the less competent beds and formed the structure of the geology that was mined millions of years later.
- The basin is about 33 miles long and 10 miles wide at its maximum width.
- The basin is divided into 5 districts where coal mining occurred (see map on next page).
- There are four small outlier basins along the eastern perimeter – the Deep Run mining area is within its own outlier basin.
- Mining occurred mainly along the eastern perimeter – this is where the coal came to the surface making it easier to locate.
- Geologic faulting and folding as well as intersecting dikes of trap rock increased the difficulty of mining the coal deposits efficiently.
- The gaseous nature of the coal beds combined with early primitive methods of mining led to multiple mine explosions over the years resulting in much loss of life. Over 300 miners lost their lives in mine disasters in the basin. In 1980, Virginia Tech estimated that as much of 750 billion cubic feet of recoverable methane resides in the basin.
- Prior to the Civil War, enslaved men provided much of the labor in the mines.



Maps of the Richmond Coal Basin



Map Showing Five Mining Districts with Geologic Profiles & AML Inventory Points



Map from the U.S. Geological Survey - 1892

Today

The legacy of coal mining in the Richmond Coal Basin lives on through the remnants of the numerous mine features (shafts, slope entries, gob piles, etc.) that continue to dot the landscape. Since mining concluded in 1944, all of the Richmond Basin coal mining activity occurred prior to there being any regulations concerning the reclamation of areas disturbed by mining. For coal mining, the reclamation regulations that are followed today were initiated in 1977 with the Surface Mining Control and Reclamation Act (SMCRA). Fortunately, when Congress passed SMCRA, they foresaw the need to reclaim these pre-regulation mine sites. As a result, part of the act (Title IV) created a funding mechanism to do so. Funds are generated through reclamation fees collected from current mine operators on a per ton basis. The funds and the reclamation work are managed by the Federal Office of Surface Mining (OSM). Virginia Energy's Abandoned Mine Land (AML) program works with OSM to reclaim these pre-regulation mines. AML identifies, inventories, and prioritizes abandoned mine land features. With the Title IV funding that is available, AML designs a reclamation project, procures a contractor to do the work, and oversees the reclamation project to the finish. In 2022, Congress passed the Bipartisan Infrastructure Law, which provides additional funding for reclaiming America's abandoned mines. This additional resource will assist with the continuing reclamation of the abandoned coal mines remaining in the Richmond Coal Basin.

The AML program has been working since 1985 to reclaim abandoned mine features in the Richmond area. Some projects have been on an emergency basis when sudden subsidence from the underground mining creates dangerous conditions on people's property and around their homes.



AML features on personal property

Since 1985, AML has completed over 135 projects in the Richmond Coal Basin area with some of these projects reclaiming multiple mine features. Predominantly, these reclamations have consisted of closing open shafts that present a hazard to both people and the wildlife that reside in the area. The techniques for closing these shafts have evolved over time. In earlier projects, the shaft openings were backfilled with rock and covered with reinforced concrete slabs. The current design utilizes a combination of large riprap and grout to cap the shaft and form a cyclopean mass that effectively closes the opening, much like sticking a cork in a wine bottle. Structural ring netting is utilized when needed to support the initial layers of riprap and grout to prevent them from falling into the shaft opening.

*Ring netting and riprap**Top layer of riprap & grout**Before**After*

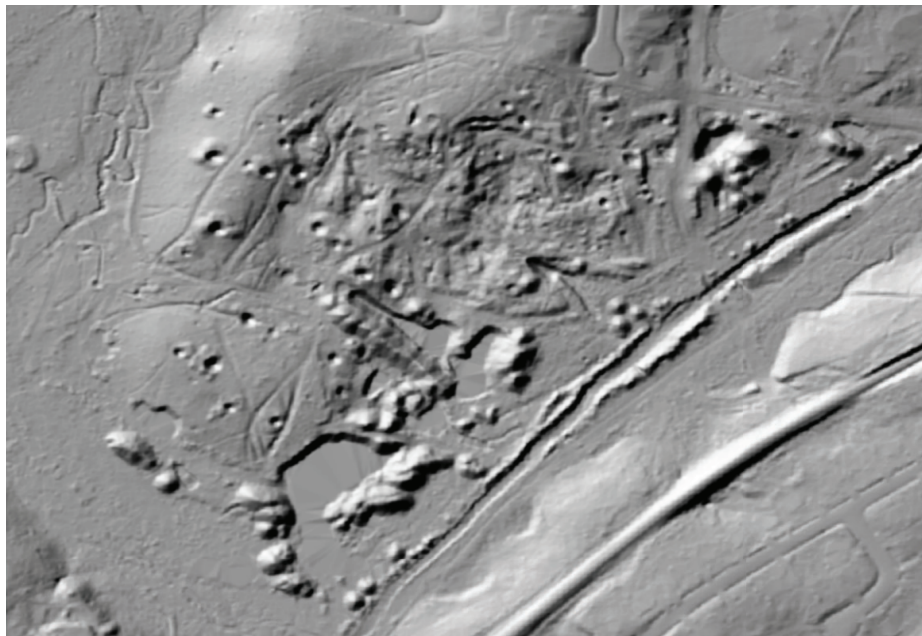
Once the grout in the plug has had adequate time to cure, the shaft opening was covered with soil, graded for runoff, and seeded with native grasses to provide permanent vegetative cover. Shafts are then marked with permanent posts and mine shaft markers.

Other potential hazards include coal waste fires. The Winterpock area of Chesterfield was the recent scene of a recurring gob fire. Gob is typically a large pile of waste coal, rock and soil that was removed from the mine. The gob pile was a remnant of the Beaver Coal Mine, which operated in the mid 1800's. Three separate emergency projects were needed to adequately suppress the fire, and a final project is being planned to eliminate the possibility of re-ignition. Gob fires are difficult to suppress since temperatures can exceed 1,000 degrees Fahrenheit and an abundant fuel source is at hand. The actively burning areas of the gob pile were first quenched with water to reduce the temperature and then mixed with inert stone dust and then spread out to reduce the potential for reignition. Gob piles are common around old mine works where extensive mining took place. Fortunately, gob fires are not common in the Richmond Coal Basin, but these piles can represent additional risk to people and the environment.

Moving Forward

The inventorying of the abandoned coal mine features in the Richmond Basin continues today. Modern technology, such as lidar, has greatly improved the ability to find these features and update an older inventory, which in some cases was derived from historic hand drawn maps. Field investigations of these features are ongoing, as well as investigations into inquiries from homeowners and landowners in the Richmond Coal Basin. Additional reclamation projects are being planned and the efforts of the Abandoned Mine Land Program to eliminate hazards associated with legacy coal mining operations around Richmond continues.

More information about Virginia Energy's Abandoned Mine Land Program can be found [here](#)>



Lidar view of old coal mine workings North of Route 60 in Midlothian

Sources

Pub 53: Richmond Basin: Stanley S. Johnson, Gerald Wilkes, and Marvin R. Gwin

Pub 85: Mining History of the Richmond Coalfields of Virginia: Gerald Wilkes

Virginia Coal – An Abridged History: Walter R. Hibbard Jr.

The American Canal Society: <https://americancanalsociety.org>

The Historical Marker Database: <https://www.hmdb.org/m.asp?m=238290>

Virginia Places.org:
<http://www.virginiaplaces.org/rail/cloverhill.html#:~:text=The%20Clover%20Hill%20Railroad%20was,at%20Chester%20opened%20in%201846. s://energy.virginia.gov/webmaps/abandonedmineland/>

MINE RECLAMATION BEST PRACTICES TRAINING

By Bentley Smith, Permit Engineer

In June 2026, the Virginia Energy Division of Mineral Mining hosted its inaugural Mine Reclamation Best Practices training in Charlottesville, Virginia. More than 30 attendees from the mineral mining industry participated in the one-day seminar, which was developed to provide practical guidance on reclamation planning, environmental compliance, and the implementation of best management practices throughout the life of a mining operation.

The course was led by Sarah Hamm, Paul Saunders, and Bentley Smith and focused on the environmental aspects of mineral mining, beginning with Virginia's permitting process and continuing through final reclamation. Participants received instruction on permitting requirements, mining plans, permit amendments, bonding, and performance standards, along with the importance of maintaining accurate permit maps and ensuring compliance throughout mining operations.



A portion of the training was devoted to drainage and sediment control principles, including the design, construction, and long-term management of temporary and permanent drainage structures and sediment control measures. Instructors emphasized practical approaches that help protect water quality, improve site stability, and support successful reclamation while meeting regulatory requirements.

The seminar concluded with discussions on final reclamation best practices, including proper post-mining land use selection, habitat development, grading, soil and planting medium development, and vegetation establishment. Throughout the course, instructors combined regulatory guidance with practical field experience to provide attendees with solutions that can be applied to a wide variety of mining operations across Virginia.

Professional Engineers who attended the seminar received four Continuing Education (PDH) credits that may be applied toward their professional engineering license renewal requirements. The training was well received, with several attendees describing it as a "good general overview of environmental guidelines and regulations." The positive response extended beyond the classroom, as several mining companies expressed interest in future offerings and in sending additional employees to subsequent reclamation training sessions.

The success of this inaugural program demonstrated a strong demand for reclamation-focused training within Virginia's mineral mining industry. The Division of Mineral Mining looks forward to expanding these educational opportunities in the future to help operators, engineers, and field personnel continue improving environmental stewardship and reclamation practices throughout the Commonwealth.

Virginia Quarries Host DEQ Staff Tours

Virginia quarry operators including **Luck Stone's Bull Run Quarry**, **Rockydale's Staunton and Roanoke Quarries**, and **Martin Marietta's Doswell and Abingdon Quarries** participated in a VTCA-led outreach initiative that welcomed DEQ staff and elected officials to tour active operations. These tours showcased environmental stewardship, operational best practices, and the importance of aggregate production to Virginia's economy and infrastructure, fostering greater understanding and collaboration between industry, regulators, and policymakers.



Elementary School Children Learn About Mining!

Vulcan Materials' Jack Quarry in Petersburg, Virginia, has hosted local elementary school students for educational quarry tours, helping young people learn about mining operations, aggregates production, and environmental stewardship. By providing meaningful educational experiences, Jack Quarry has strengthened its connection with the local community.

In April, Vulcan Jack Quarry hosted two school tours for nearly 200 fifth-grade students from Hopewell City Public Schools, Harry E. James Elementary and Patrick Copeland Elementary. Their program included a short presentation, site tour and lunch.



Vulcan Jack Quarry

Carmeuse Lime and Stone in Middletown maintains a small on-site bird sanctuary adjacent to their quarry. The bird sanctuary is located on the border of Frederick and Shenandoah counties, right along the edge of the historic Cedar Creek Battlefield.

The designated area is roughly an acre of mowed grass featuring a handful of small evergreen trees, wooden birdhouses on posts, and bird feeders. The site features signage marking it as a "Bird Sanctuary Open to the Public."

Several species of finches, swallows, and corvids have been observed there including ground nesting species of swallows.

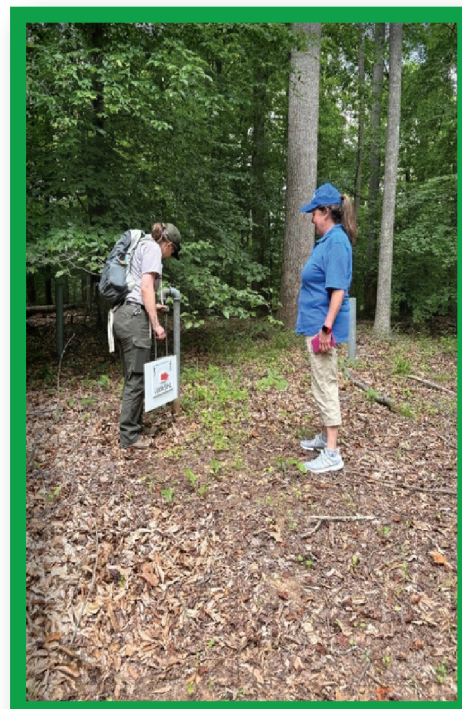
Visitors typically stop by to view the birdhouses or to pair the visit with historical touring at the adjacent Cedar Creek battlefield.



DMM's Orphaned Land Program is funded through a combination of grant money and interest earned on the Mineral Reclamation Fund. Through a generous grant from DEQ's Non-Point Source program we are able to continue to inventory abandoned mineral mine lands (AMML) in Virginia in areas with high priority watersheds. In addition, we have recently received funding for the reclamation of several sites in Virginia through the competitive national Abandoned Hardrock Mine Reclamation (AHMR) Grant Program. And your dollars count too! For those operators that are part of the MRF bonding program, all the interest earned on that fund is earmarked in the Code of Virginia specifically to reclaim AMML!

Our Orphaned Land Advisory Committee (OLAC) met June 15-16, 2026 in Dumfries. The OLAC is group of representatives from industry, DEQ, USDA, VTCA, Virginia Tech, Virginia Energy, as well as private citizen members. Their role is to assist DMM in prioritizing abandoned mineral mine lands to be reclaimed with available funding, to provide advice to the DMM on methods used in reclamation on prioritized sites and to select the winners of the annual DMM/VTCA Reclamation Program. You might recognize a few members: Chuck Stilton from Luck Stone is our industry representative, and Walter Beck from Vulcan Materials is our VTCA representative!

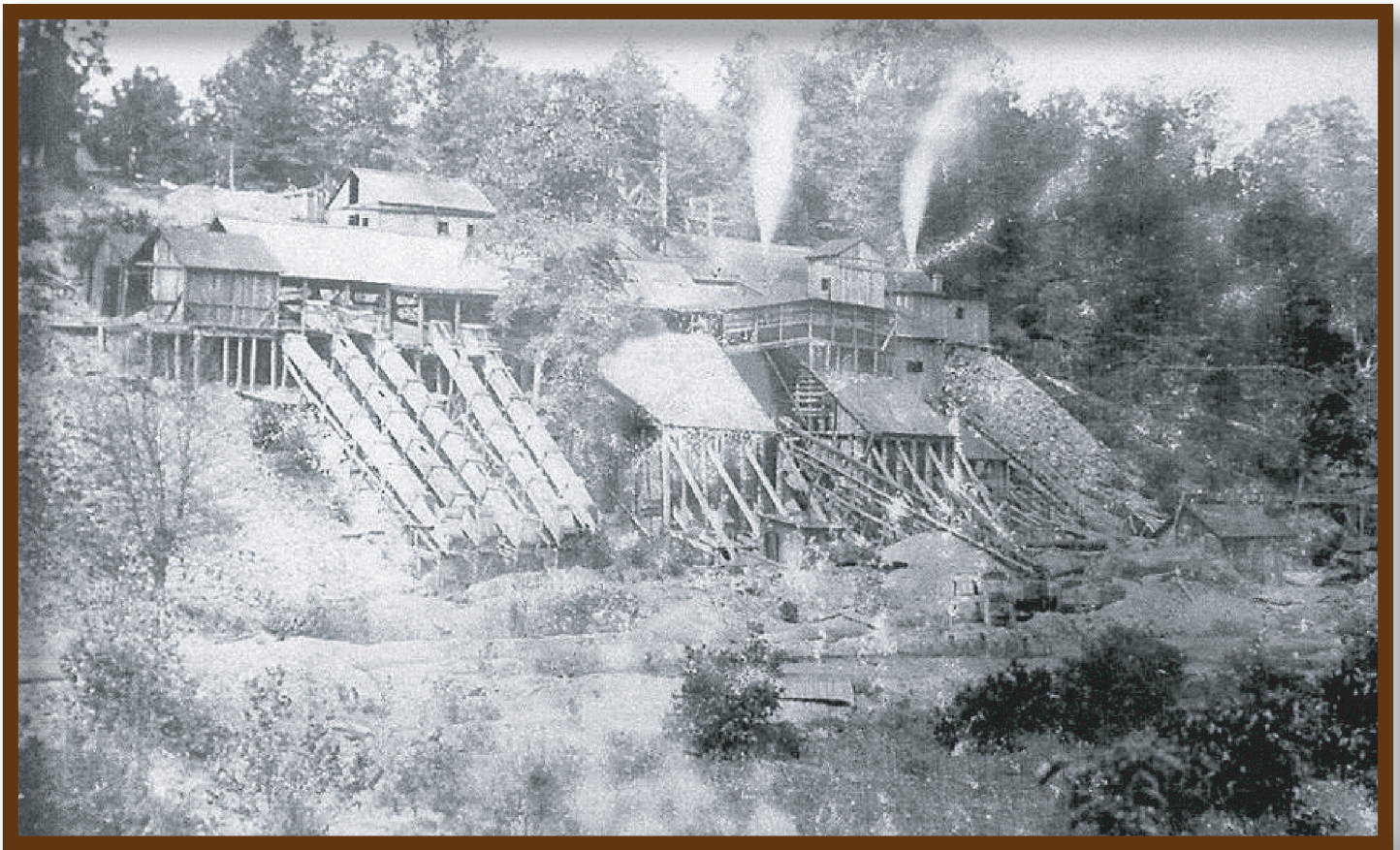
This year the OLAC toured the Cabin Branch Pyrite Mine in the Prince William Forest Park just outside Washington D.C. This was one of the more extensive reclamation projects we have completed and seeing how this mine has blended seamlessly into the natural environment was very rewarding. Cabin Branch Pyrite Mine was a massive site that turned into a major success story and is an invaluable educational opportunity for visitors to the park. Gregg Kneipp and his staff at the park provided a very insightful tour of the mine and we are grateful for their time and experience.



Virginia Energy's Elle Lindgren, Roy Bassoo, Phil Skorupa and Chrissi Wood-Smith at Cabin Branch Mine

Mined from 1890 to 1920 the Cabin Branch Pyrite Mine was large by Virginia standards with 200 to 300 men working at the mine above and below ground at any given time. The deepest shaft was reported to be 2400 feet deep with levels every 110 feet. Over 70 buildings supported the mine as well as a narrow gauge railroad which connected the mine to the wharves on the Potomac River.

Pyrite is a sulfide mineral that at the time was a commercially viable source of sulphur. Sulphuric Acid played a major role in the Industrial Revolution. Sulphur was used for glass, soap, bleach, paper, medicine, rubber & fertilizer as well as gunpowder. Higher grade ore mined more cheaply in Spain combined with a miner's strike led to the shutdown of the mine in 1920.



Original Mill Structures circa 1889

Our Orphaned Land Program was established in 1978 and has reclaimed over 135 abandoned mineral mine lands in the Commonwealth. There are approximately 9,500 abandoned features in Virginia; 3,300 have been inventoried.

[Learn More about our Orphaned Land Program here.](#)

Located in Prince William Forest Park, the mine was reclaimed in 1995 in cooperation with the National Park Service and EPA. Funding came from a \$75,000 319 Grant, \$40,000 grant from the NPS and DMM's Orphaned Land Program. The mine had been the source of numerous safety and environmental problems, including acid mine drainage, heavy metal leachate, stream sedimentation, caved in shafts, and severely eroded hillslopes. Work included capping mine shafts, diverting drainage around the mine tailings, moving acid producing material from the creek banks and covering and vegetating mine spoils.



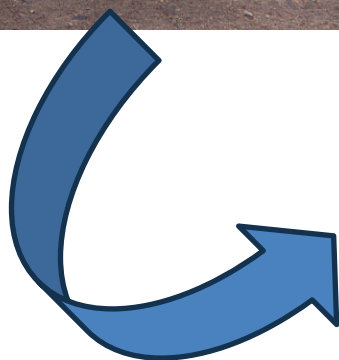
Pre-reclamation



Post-reclamation



Post-reclamation



IMPOUNDED WATER IN ABANDONED UNDERGROUND MINES AS A GEOTHERMAL HEAT-SINK FOR DATA CENTERS

by Mike Smith, Hydrogeologist

Artificial intelligence, cloud computing, and high-performance computing are driving the largest expansion of data center infrastructure in U.S. history. However, electrical power and cooling requirements can be critical problems in siting a data center. As server power densities rise, cooling has become a major engineering challenge for data center operators, utilities, and municipalities. Industry projections suggest that the United States may require thousands of additional facilities or major expansions over the next decade. The U.S. already has approximately 5,000 operational data centers.

The U.S. Department of Energy and industry studies project that data centers could consume between 6.7% and 12% of total U.S. electricity generation by the end of this decade and more than 100 gigawatts (GW) of additional grid connected electrical load by 2035. Northern Virginia has the world's largest concentration of data centers and is encountering challenges involving electricity transmission, water availability, and local environmental constraints.

Nearly all electrical energy consumed by a data center eventually becomes heat. If that heat is not removed continuously, semiconductor temperatures may exceed safe operating limits, reducing reliability, computing speed, and equipment life. Cooling can account for up to 90% of a data center's energy usage, and the cooling method determines both electricity consumption and water usage. For a 100-megawatt (MW) data center, this thermal load is equivalent to the cooling demand of a medium-sized city.

Data centers have relied on chilled air systems in the past; however, operators are shifting toward liquid cooling systems because by volume, water can transfer heat more than 3,000 times more effectively than air. Cooling water consumption depends on the cooling technology employed. Evaporative cooling tower systems consume the most water because heat dissipation occurs through evaporation and that water is lost to the atmosphere. Closed-loop liquid cooling systems consume far less water but often require more electrical energy due to pumpage requirements. Large data centers may use several million gallons of water per day during peak summer operation. Total U.S. data center could require approximately 1 billion gallons per day of additional water capacity by 2030 if current water-use intensity trends continue.

A promising source of cooling involves **abandoned underground mine water** as a geothermal heat sink. Abandoned mines often contain billions of gallons of naturally cool groundwater stored at stable temperatures. These underground reservoirs can function as large thermal sinks capable of absorbing heat loads from data center cooling systems. Water is pumped from the impounded water to the data center cooling system, absorbing heat and carrying that heat back underground to be dissipated in the mine pool and surrounding rock formations.

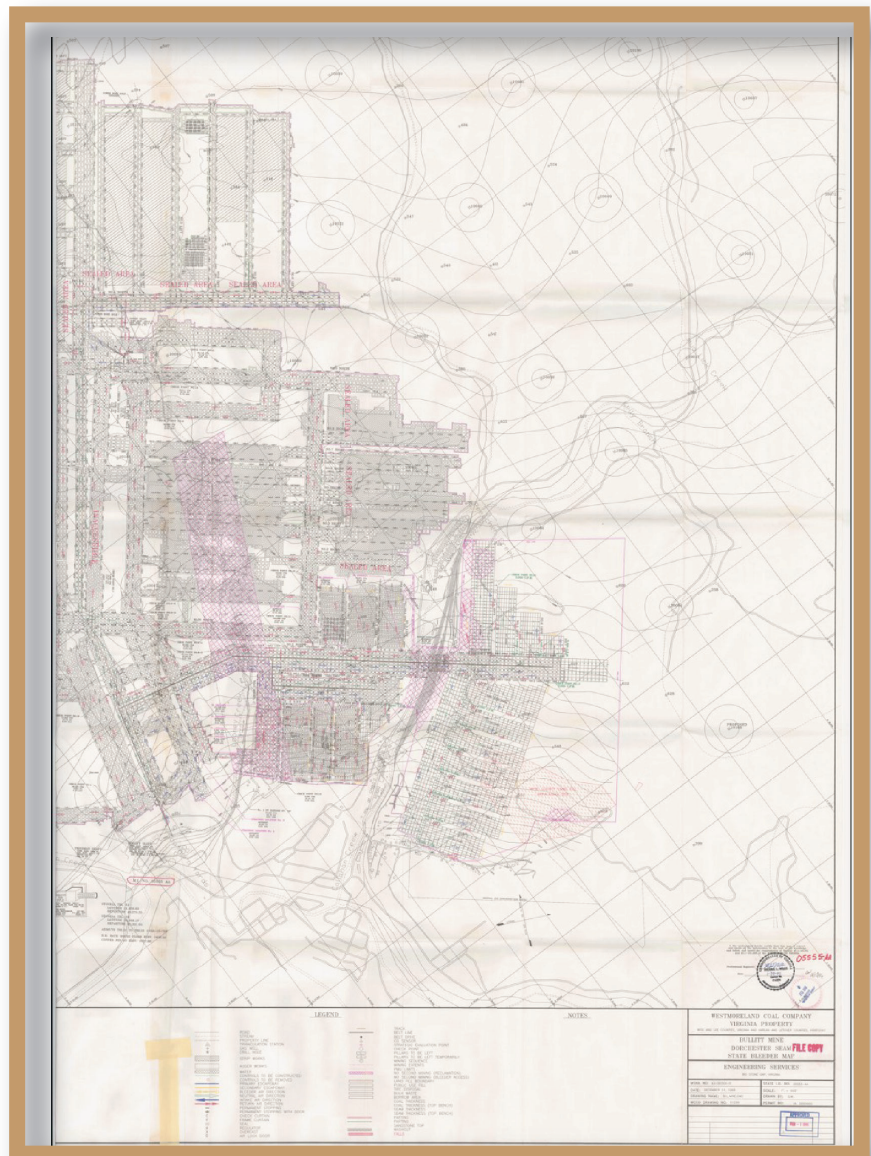
The U.S. Department of Energy is actively supporting research into this concept, including projects in southwest Virginia that utilize abandoned coal mine infrastructure for data center cooling.

One project is located near the town of Appalachia in Wise County Virginia.

The **Data Center Ridge project** seeks to utilize an approximately 400–450 acre, partially reclaimed former strip mine and the underlying Bullitt underground coal mine workings for a large-scale technology and energy campus with long-term plans for more than 1 gigawatt of data center capacity.

Engineering studies determined the mine pool at this site contains nearly 10 billion gallons of water at temperatures below 55°F.

Project developers estimate the underground cooling system could reduce cooling energy requirements by as much as 90% compared with conventional mechanical chiller systems.

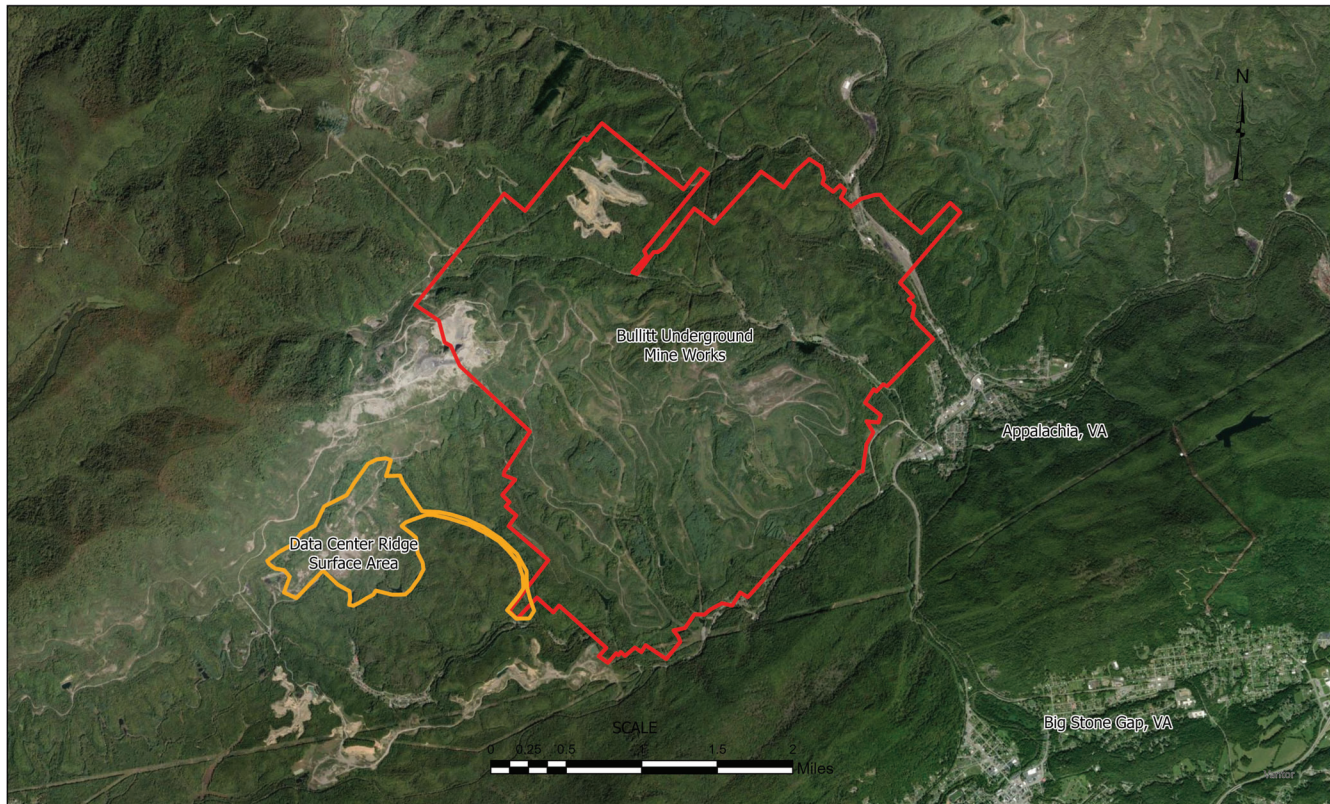


Underground Workings at Bullitt Mine, Wise, Virginia

Large-scale implementation will require extensive environmental engineering and hydrological modeling along with technical and regulatory questions which include:

- long-term thermal behavior of the underground mine reservoir and surface discharges,
- pumping and circulation energy requirements,
- environmental permitting,
- groundwater monitoring,
- corrosion and water chemistry management, unknown pollutants from mining activities,
- scalability to gigawatt-level loads, and,
- integration with utility transmission systems.

If these challenges can be overcome, utilization of impounded water in underground mines for data center cooling could significantly reduce electricity and cooling water requirements as compared to more conventional methods.



Proposed site location for 450 acre Data Center Ridge Project and outline of associated Bullitt underground mine works impounding approximately 3 billion gallons of potential cooling water at 55 degrees Fahrenheit.

Sources:

Kate Steele, January 11, 2026, Liquid cooling vs air cooling: the five key differences for data centers | TechRadar

Ellen Jennings, December 2, 2025, New data centers will need almost triple the current energy demand by 2035 | TechRadar

US Department of Energy, Geothermal and Data Centers | Department of Energy

Alyssa Bersine, January 17, 2025, National Laboratory of the Rockies, Reducing Data Center Peak Cooling Demand and Energy Costs With Underground Thermal Energy Storage | NLR

Benedict Collins, May 16, 2026, US data centers use enough electricity to power upwards of 16 million homes annually – the statistics on why opposition groups are pushing for People Over Profit | TechRadar

Ian Goldsmith and Zach Byrum, September, 17, 2025, Powering the US Data Center Boom: The Challenge of Forecasting Electricity Needs | World Resources Institute

Peter Judge, January 30, 2024, Data Center Dynamics, Virginia project gets \$3m to cool data centers with mine water - DCD

Julia Borgini and Jacob Roundy, April 25, 2024, How to calculate data center cooling requirements | TechTarget

JAMES SCHAEFER



James at the 2026 Mid-Atlantic Bicycle Racing Regional Championship



*Susan Schaefer and Tucker
cheering on James*

James traveled to Hagerstown, Maryland for the Mid-Atlantic Bicycle Racing Regional Championships, held on June 23, 2026.

The 20 mile race took place on closed city streets and featured a combined age group field of 55+ and 65+ year old competitors. James is happy to report that he won the 65+ age group, taking the victory in a fast and competitive field sprint.

It was a great weekend all around. His wife, Susan, and their dog, Tucker, joined him as a cheering squad.

James' next race was the Virginia State Championship in Hampton, Virginia on July 12, 2026.

These events award points toward the season long "Best All Round Rider" competition where James is currently in 3rd place with five races left on the calendar.

ELLE LINDGREN

Elle has worked for DMM's Orphaned Land Program as a summer intern over the past few years and recently took over as the full-time Orphaned Land Specialist. Elle graduated in December 2025 from the University of North Carolina Wilmington with a Bachelor of Science in Environmental Science and a double minor in Marine Biology and Oceanography. During college, she worked for UNC Wilmington's Shellfish Research Hatchery, where she assisted with scallop, clam, and oyster spawning and care. That experience deepened her interest in environmental research and hands-on field work, which she continues to build on in her work today.



The beach has always been her happy place and is where she discovered her favorite hobby: beachcombing for shark teeth and shells. She says although she loves Wilmington and its beautiful coastline, she felt called back to the Blue Ridge Mountains, that is home. So, after graduation she moved back to Charlottesville, where she was born and raised, and she is excited to begin my next chapter closer to family.

Outside of work, Elle enjoys spending as much time outdoors as possible, whether that's reading in the sun, going for a run, spending time with friends, or hanging out with her animals. She always love going on adventures and finding new places to explore.

Elle can be reached at michelle.lindgren@energy.virginia.gov.

ADAM CUMPSTON

Virginia Energy's Mineral Mining Program is pleased to welcome Adam Cumpston as the Area 1 Compliance Assistance Specialist, covering the southwest counties of Virginia. Originally from Parkersburg, West Virginia, Adam has called Russell County, Virginia home for nearly 19 years. He earned a B.S. in Forestry from West Virginia University and later completed an MBA at West Texas A&M University.



Over the course of his career with the Commonwealth of Virginia, Adam has spent his time working for Virginia Energy and the Virginia Department of Forestry. While with the Department of Forestry, he served as a Water Quality Specialist, Area Forester, and District Forester. During his time with Virginia Energy, he worked as a Reclamation Inspector with the Mined Land Repurposing Program. In this role he oversaw the reclamation of mining permits for both surface and underground coal operations across much of Virginia's coalfield region.

Outside of work, Adam enjoys staying active and spending time with his family. They spend a lot of that time outdoors, whether traveling, hiking the Virginia Creeper Trail, or playing tennis together. He's a fan of just about any racquet or paddle sport, including tennis, pickleball, and ping-pong. One of his more memorable moments was winning a gold medal in a cruise ship ping-pong tournament - though he'll admit there were only two competitors.



Adam lives in Russell County with his wife, Shawna. They have two daughters, Jenna and Ellie, and one grandson, Camden.

Adam can be reached at
adam.cumpston@energy.virginia.gov.



*Branscome Hoffmeyer Pit,
Charles City County*



*B.P. Short & Sons Paving,
Southampton County*



*Vulcan Cashion Quarry,
Chesterfield County*



*G.L. Howard Rocky Mills Pit,
Hanover County*



*Paxton Chuckatuck,
Suffolk County*



*Resource Development Assoc.,
Henrico County*

Luck Stone:

This railcar is a commemorative nod to the original C.S. Luck and Sons unit that was operated in the early-mid 1900s in the Richmond area. The company acquired a similar car and restored it to original configuration, transporting it to the corporate office in November 2025.

Luck Companies started in 1923 when Charles Luck, Jr. purchased the Sunnyside Granite Company in Richmond, VA. The railcar celebrates the 100th anniversary of Luck Companies, achieved in 2023. The #9312 car is positioned next to the walking trail at the corporate office in Goochland County. The northern section of the permit, adjacent to the parking area, also features an overlook that frames the Boscobel Quarry, which was acquired by Luck in 1930.





Elementary School children visit Vulcan Materials' Jack Quarry in Dinwiddie County.

Newsletter Staff:

Chrissi Wood-Smith, *Publisher*
Jeff Stewart, *Editor*

Contributors:

Elle Lindgren
Sarah Hamm
Paul Saunders
Mike Smith
Bentley Smith
Adam Cumpston
Jason Franklin

*If you have topics you would like featured in our newsletter,
please contact chrissi.wood-smith@energy.virginia.gov*

Cover photo of Rappahannock Farm in King George County taken by Damien Fehr



July 2026