



ACCA *News*

WINTER/SPRING 2022

ACCA Needs Your Energy & Ideas!

BY DAVID FOSTER, PRESIDENT / CEO

The American Cave Conservation Association is revitalizing itself and needs your energy and ideas. The ACCA has evolved since our early creation by caver John Wilson, but I believe we have remained true to his vision. John recently returned home from the hospital after a serious illness and we want to wish him a full and speedy recovery!

John filed the articles of incorporation for ACCA back in 1981 with the following purpose:

- A. To promote the conservation of caves in North America
- B. To preserve caves as scientific, aesthetic and recreational resources
- C. To acquire the management and access rights to significant caves in North America
- D. To assist other cave conservation organizations and responsible individuals to conserve, manage and own caves.
- E. To encourage communication and cooperation among local, state, regional and national cave conservation organizations

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If it is good for caves, we support it!

—Tom Aley

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F. To promote the science and technology of cave management

G. To promote cave conservation and management educational opportunities

I. To assist in data gathering and dissemination regarding caves available for purchase and/or management

J. To encourage the enforcement of cave protection acts and other laws that may help to protect caves.

John Wilson's ideas and funding mechanisms got us started back in Richmond, Virginia. The next big step came in 1986 when we decided to move the ACCA to Horse Cave to create the American Cave Museum and work to restore the polluted Hidden River Cave. That move was facilitated by our Executive Director at the time, Jer Thornton. (Sadly, we recently received word that Jer passed away last year ... one of many of our visionary original leaders who we have lost over the past few years.)

From 1987 to the early 1990s, we built cave gates, developed a National Cave Management Training Seminar program, cleaned up sinkhole dumps, and hosted teacher workshops. The goal of restoring Hidden River Cave seemed a nearly impossible task but we were fortunate to find federal and private funding that helped us

develop and open the American Cave Museum at the cave entrance. As the cave pollution abated with new sewage treatment systems. The next herculean task was to reopen the cave.

Today, the newly expanded Hidden River Cave tour has substantially increased visitation and for the first time ever, revenue from the cave helps support the ACCA instead of the other way around. So where does ACCA go from here? Tom Aley, another of our visionary leaders, always kept me focused with one simple phrase regarding ACCA's mission "if it is good for caves, we support it!"

With that in mind, we are looking forward to doing more good things for caves. We have several major volunteer projects on the horizon (some of which were postponed last year because of the COVID threats) so there will be opportunities coming up for you to get your hands dirty and participate in direct conservation work. In the meantime, please tell us where ACCA can be of help! We need you to be our eyes and ears across the nation and let us know whenever and wherever caves are threatened. Thanks!

David G. Foster, President/CEO

Do You Need A Groundwater Protection Plan?

BY PATRICIA (PAT) KEEFE
FORMER COORDINATOR GPP PROGRAM



If this was your answer, then you are among the majority of people who responded as such when the Groundwater Protection Plan (GPP) Program representatives visited facilities from the mid-1990s until 2015. They likely get the same reaction today! So, what is a GPP and why did it come about?

Groundwater supplies water to streams, rivers, ponds, wetlands, and lakes. Groundwater under our homes can travel many miles and eventually surface as springs or wells being used as someone's water source. Even if your community does not utilize groundwater for its drinking water, activities conducted by your community may pollute drinking water for those who do. Therefore, it is every Kentuckian's responsibility to protect groundwater.

The Kentucky Division of Water recognized the importance of protecting groundwater by promulgating the Groundwater Protection Plan Regulation, 401 KAR 5:037 in 1994. This regulation "establishes the requirement to prepare and to implement groundwater protection plans to ensure protection for all current and future uses of groundwater and to prevent groundwater pollution." Section 1 lists the activities that have the potential to pollute groundwater. Section 2 states the information that must be included in a GPP, and Section 3 deals with implementing the GPP. Basically, a GPP lists the activities being conducted at a site that have the potential to pollute groundwater and provides the procedures that are used to keep the pollutant(s) out of the ground. These procedures are Best Management Practices (BMPs).

Anyone can develop a GPP. There are no professional certifications required. For your convenience and that of the folks in the Groundwater Protection Plan Program that review submitted GPPs, please follow the guidance document entitled "Preparing a Groundwater Plan." If you provide everything requested in the outline, with

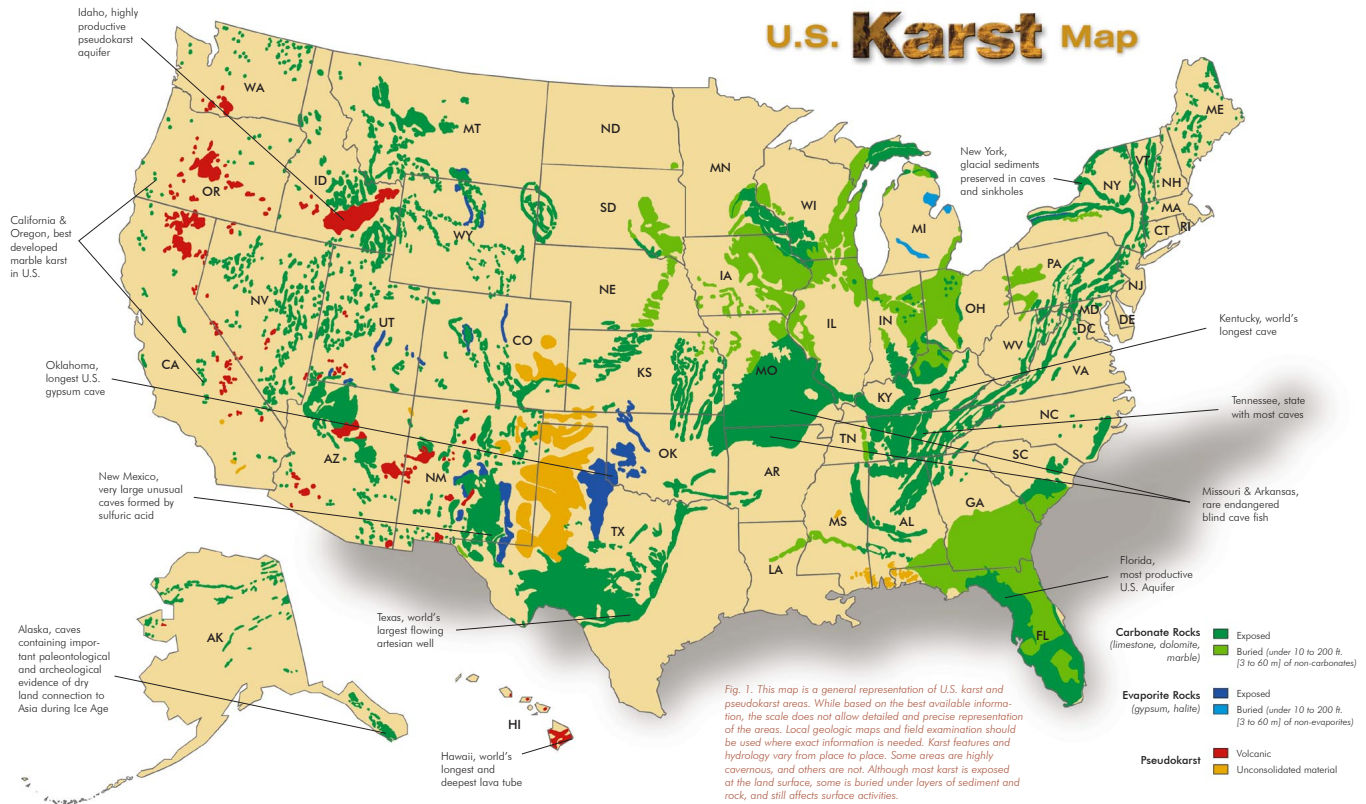
details, your GPP should be in compliance with 401 KAR 5:037. Once developed, the GPP must be retained at your site and implemented immediately. You do not have to send it to the GPP Program unless you want their review and approval. However, your GPP must be submitted if a Department for Environmental Protection inspector, the GPP Program, or Agreed Order requires it. More information regarding GPP review and submittal is found under "Review of Groundwater Protection Plans" that accompanies the guidance document.

The Division of Water has developed generic GPPs for several regulated activities. If you conduct an activity for which a generic GPP exists, you may use it instead of having to develop your own GPP. Some of the generics are "The Groundwater Protection Plan: Residential Septic Systems"; "Protecting Your Well and Water Supply, Groundwater Protection Plan for Private Water Well Owners"; "Generic Groundwater Protection Plan for Oil & Gas Producers."

Activities that concern every person living in Kentucky, or other karst areas, is disposal of our wastewater, and the source of our drinking water. If disposal of household wastewater is through use of a residential septic system, or if water is obtained from a water well on the property, a GPP is required. Generic GPPs are available for these activities. They will provide information on how the septic system or the water well equipment works and how to properly care for either system. Implementing those GPPs is critical to protecting groundwater. If you have been a city dweller used to municipal sewers, it is important to know the BMPs to use that are key to the proper functioning of the onsite system and the well. Failure to use those BMPs can result in failure of the system and potential pollution of groundwater.

The disposal of household wastewater is not considered a major topic of discussion when buying a house. Buyers are more interested in the house, how the property looks, and just assume the house is on city sewer. The realtor, or seller should bring up the subject when providing a tour of the home. The buyer should not assume that since the house is in the city, it is on municipal sewer. Houses on one side of a street in the city limits of my town are on septic systems. If

U.S. Karst Map



From "Living With Karst A Fragile Foundation"
Used by permission © 2001 American Geosciences Institute

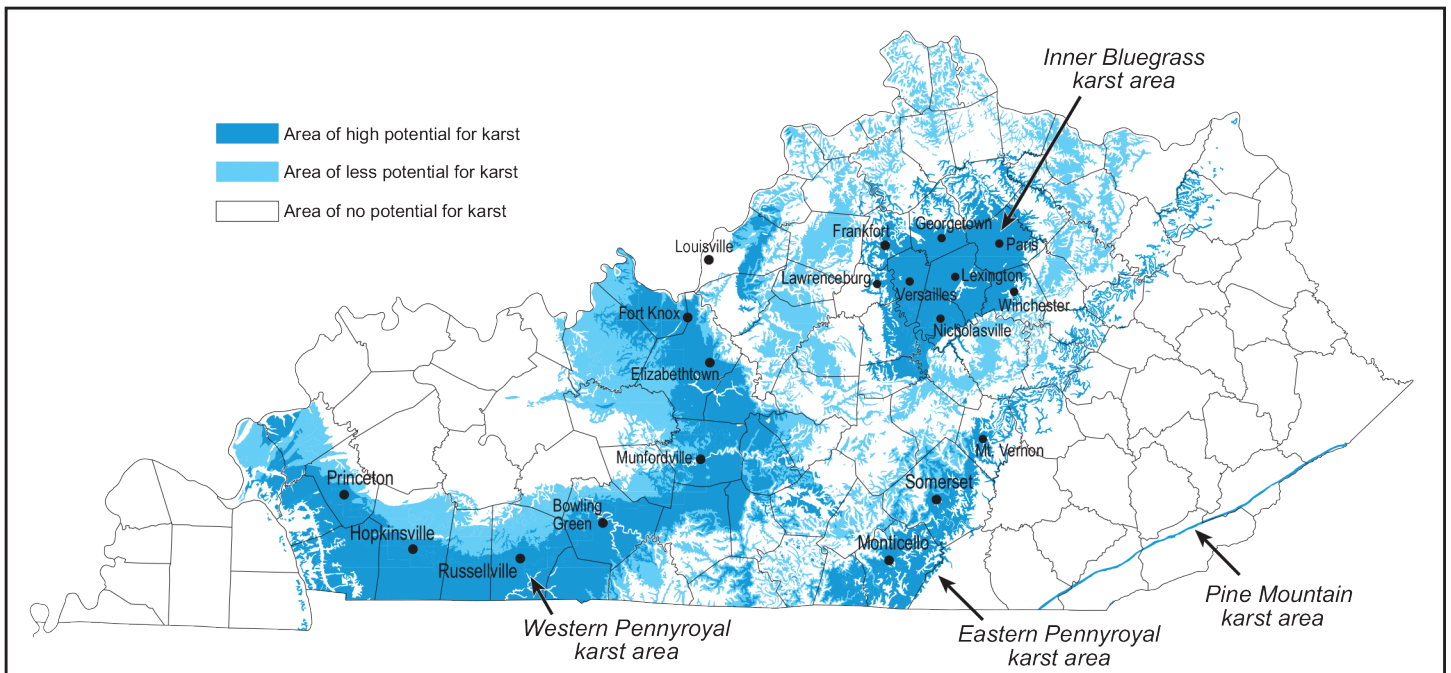
the realtor or seller mentions the house is "on septic," don't let it intimidate you. A properly designed and installed, and adequately maintained system can be a very efficient means of treating household wastewater. However, the prospective buyer needs to ask what type of onsite system is in use and request information on how the system works, records of maintenance, and how to properly care for it. Ask if they have a GPP for the system. If so, it must be included with the information requested. Whether buying or selling, an inspection of the wastewater treatment system is a very wise move, either prior to posting the house for sale or as an important part a professional house inspection. The real estate agent should be able to recommend a qualified septic system inspector. The local health department should be able to provide this information if no agent is involved in the sale.

Many homes with onsite wastewater systems also get their drinking water from a well on their property, especially if they reside in a rural area. The well owner is responsible for maintaining the well and having it tested regularly. Ask if the house is on city water, or use a private well for drinking water. If on well water, ask for records of tests as well as details on construction of the well. The owner should be able to provide a copy of the Water Well Construction form required by Kentucky

Division of Water. The driller of the well must provide a copy to the well owner. Also ask if they have a GPP for the well. Include it with all other information. If there is a drinking water well on the same property as the septic system, it's very important to know proximity of one to the other. There are state regulations on this and for good reason! The county health department may have this information, unless the well was drilled prior to development of regulations.

There is a story about a groundwater professional visiting a home out in the country whose occupants were concerned if their household wastewater was polluting their well. A harmless dye used for tracing groundwater was placed into the toilet and flushed away. Meanwhile, the lady of the house was making biscuits for lunch. Those biscuits turned out the color of the dye flushed down the toilet!





Areas in Kentucky underlain by limestone and other carbonate rocks. The darker areas are more subject to the development of sinkholes, caves and springs.

Groundwater Protection Plans are important in protecting groundwater in all areas of Kentucky. However, groundwater flow is not the same in all areas. Differences in geology from one area to another results in varying groundwater flow patterns. These differences can affect the amount of groundwater available and its vulnerability to pollution. Other than bourbon and horses, Kentucky is known for its CAVES! Mammoth Cave and Hidden River Cave may be familiar, but there are many other caves across a landscape known as Karst.

The term Karst is derived from a Slavic word meaning “barren, stony ground.” Geologists have adopted the term to apply to karst landscapes worldwide. Karst is a landscape with sinkholes, sinking streams, caves, springs, and few surface streams. Approximately 55 percent of Kentucky’s landscape is underlain by rocks capable of developing karst. According to James Currens (“Kentucky is Karst Country, What You Should Know About Sinkholes and Springs,” Kentucky Geological Survey Information Circular 4, Series XII, 2002) 38 percent has some recognizable karst development, and 25 percent of the state has well-developed karst. Karst landscape in Kentucky has developed mostly on limestone over hundreds of thousands of years, and is still developing.

Karst landscape starts to form when rainwater falls on the ground surface, seeps into the subsurface

through the soil, then into tiny fractures in the limestone bedrock. Rain is slightly acidic and dissolves away the rock. With time, the tiny fractures can be enlarged into conduits for groundwater flow (Mother Nature’s pipeline!), some developing eventually into caves. Surface streams become sinking streams when they disappear through a fracture to flow into an underground conduit. Sinkholes are depressions in the ground surface. When an outlet forms in the sinkhole, all rain water and any other matter that will fit will flow into the subsurface conduit.

Groundwater in Karst terrains is highly vulnerable to pollution. Rainwater flows into sinkholes and into underground conduits without the opportunity to undergo cleansing by the soil. For many years, and hopefully less so now, people thought sinkholes were bottomless pits into which waste could be placed. Garbage, paint, chemicals, dead animals, and even cars were dumped into sinkholes. Rainwater washes pollution from these items into the underground conduit system to potentially pollute someone’s drinking water well or spring. Sinkhole waste is still being cleaned up today. Also, prior to promulgation of 401 KAR 5:037, sewage treatment plants could discharge

Map Citation: Currens, James C., “Kentucky is Karst Country! What You Should Know About Sinkholes and Springs” (2002). Kentucky Geological Survey Information Circular. 4. © 2002 University of Kentucky • https://uknowledge.uky.edu/kgs_ic/4

their effluent into a sinkhole. Now, sewage treatment plants must develop a GPP to prevent pollution.

Water in conduits often flows as rapidly as water in surface streams. Pollution from chemicals sprayed to kill vegetation, or melt ice along interstates and roadways can be washed into a nearby swallet (open sinkhole). Wrecks on interstates and roadways release gasoline, oil, and antifreeze, runoff that can easily access a fracture or sinkhole in the bedrock. It is critical in these situations to know locations of fractures and sinkholes near roadways and interstates so that emergency personnel can act quickly to block the flow of these contaminants from entering the sinkholes. Considerable mapping of these karst features was conducted during the 1990s and 2000s by the Kentucky Division of Water's Groundwater Branch. That information is now available to emergency responders in Karst areas of Kentucky.

Caves are vulnerable to pollution by contaminants entering their conduit systems, causing death of cave life and preventing the public from enjoying cave tours where given. When facilities producing the contamination are required to develop a GPP, they must focus on modifying procedures or eliminating the activities that are creating the pollution, thus protecting groundwater and the caves.

Hidden River Cave is an excellent example of recovery from multiple sources of pollution. Their story is available on YouTube, or you can read about Hidden

River Cave in an article entitled "Hidden River Cave, Back from the Brink" in "Living With Karst, a Fragile Foundation," published by the American Geological Institute in 2001.

The list of activities that require a GPP; all the generic GPPs; guidance to follow in developing your own GPP; Supplement Guides (provide Best Management Practices (BMPs) for auto repair shops, auto salvage yards, convenience stores, etc.); information about groundwater flow in different geographical areas of Kentucky, especially in karst terrain can be downloaded from: <https://eec.ky.gov/Environmental-Protection/Water/GW/Pages/GWGPP.aspx>.

If you have questions, or wish to submit your GPP, call the Division of Water at 502 564-3410 and ask for the GPP Program Coordinator, or mail a hard copy to Groundwater Protection Plan Program, Watershed Management Branch, Division of Water, 300 Sower Boulevard, 3rd Floor, Frankfort, KY 40601.

NOTE: Although this article provides specific information for Groundwater Protection Plans in the State of Kentucky, this information is applicable for anyone living in a karst area. For those outside Kentucky, please contact your State Division of Water, State Geological Survey or visit the EPA page below for a listing of Health and Environmental Agencies of U.S. States and Territories. <https://bit.ly/35GRLUV>



It has been a common practice to throw trash into sinkholes in karst areas. We now know that sinkholes are direct conduits into the groundwater. Anything thrown into these holes will eventually reach wells and even surface streams.

This photo from ACCA's cleanup of Saltpetre Pit in Kentucky shows a caver standing on top of an 80 foot mound of garbage that had nearly sealed off an important bat cave. ACCA volunteers and staff removed more than 200 tons of garbage from this one pit alone



Creature Feature:

Cave Salamander (*Eurycea lucifuga*)

BY LISA POWERS/FROGHAVEN FARM

Lisa Powers

Salamanders may superficially resemble a lizard but are a type of amphibian and more closely related to frogs. Most have 4 legs and a tail but unlike lizards lack scales and claws. Because of the lack of scales to prevent them from drying out, they must live in a moist environment or face desiccation. The cave salamander (*Eurycea lucifuga*) is one of several species of salamander you may come across in one of our many caves.

These slender, long bodied amphibians may vary in color from a light orange to a vibrant red and are spattered with brown to black spots. Typically they range from 4 to 8 inches long (100 – 200 mm TL).

They belong to the Family Plethodontidae or Lungless salamanders. Lacking lungs, they breathe in large part through their porous skin. This makes them susceptible to environmental toxins. Because of this, it is best not to handle them as you can transfer harmful chemicals and even pull essential moisture from their delicate skin..

As its name suggests, this species of salamander is intricately linked to the cave and karst systems of the Eastern - Midwestern United States. They are quite common in the karst regions of eastern and middle Kentucky but absent from western Kentucky where limestone karst does not occur.

Common among the limestone rocks around caves and in the twilight zones of caves, they may also be found

on the forest floor where they hunt for invertebrate prey. They have large, bulging eyes with good eyesight and can move quite quickly when they need to escape a predator. They are most active at night and seek refuge during the day under rocks or in crevices.

They may be confused with the long-tailed salamander which may live in similar habitat, have a similar body shape and coloration. The easiest distinction between them is that the cave salamander has random spots on the tail while the long-tailed salamander has a herringbone pattern along the tail.



Lisa Powers

Meet ACCA's New Board Members



Louis Straub

Louis is the Louisville, Kentucky Market President of Independence Bank. He has been an active leader in numerous non-profit organizations including Brightside, Norton Healthcare Foundation, Methodist Conference of Louisville and Vision Louisville. In 2018 he served as the Metro United Way Campaign Chair. He holds a B.A. from the University of Kentucky and was an Adjunct Faculty Teacher for

Jefferson Community College and the University of Louisville.

Louis has a passion for helping to promote Kentucky's cave country, home to Mammoth Cave, one of the greatest natural wonders of the world. His goal is to promote and build tourism to help support and preserve these special places for generations to come.



Dianne Joop

Dianne's love for caves began when she saw an ant crawling through the inside of a geode- she wanted to be that ant moving within the crystals. She started caving in Southeast Kentucky, where her love of caves turned to a passion for educating people about them when she slipped on a beer can, submerged in an underground river, miles deep into the cave. After earning her Masters in Education, she began volunteering with the ACCA's

education program, served as the NSS Education Division Chief, and then worked as the Education Director for the National Cave and Karst Research institute for 12 years. Dianne is very excited to serve on the ACCA's Board.

Happy Spring!



Membership:

It's hard to believe that a year has already passed since I began working again with ACCA. One of our main priorities this past year has been to improve our membership services and communication. Over the years we have had a few different membership systems and ways to keep track of folks. We have come a very long way from originally working on a Commodore 64 computer (now very extinct) to a system that did not even have a field for e-mail! Last Fall we began transitioning to a new online membership system which allows us to easily keep track of everyone and

gives members the opportunity to join, renew or donate online. If you provide your email address, we can also send email notices for more immediate events or issues concerning cave protection.

Since we have been working to integrate a few different databases, we do ask for your patience if you receive duplicate mailings. If this is the case, or if you have updates for your membership, please contact me. My email is: debbie@caveconservation.com. Please also feel free to call me directly: (615) 681-4062

Thank you again for being so supportive!

Debbie

Debra L. Silverman, Director of Member Services

American Cave Conservation Association
P.O. Box 409
Horse Cave, KY 42749

Board of Directors' Meeting Summary October 24, 2021

The December 22, 2020 Minutes were approved. **Board Chair:** A vacancy was left for the Chair position with the resignation of Patricia Daugherty. A motion was approved for Mike Lawson to fill this seat. **Officers & Directors Elections:** A motion was approved to renominate the current slate of directors. The Board also discussed putting together a slate of directors for new nominees, in addition to existing Board members who were up for re-election to be ratified by the membership. David Foster presented the 2022 Budget which was approved as submitted. **PPP Loan Forgiveness:** David Foster reported that the two PPP loans in the total amount of \$84,000 have been forgiven. **SBA Loan:** This loan is for \$150,000 @ 2.75% and has been used to invest in billboards and for operating cash. The board approved a motion to authorize David Foster to execute the Loan Authorization & Agreement on behalf of the American Cave Conservation Association. It was further resolved that the indebtedness of the American Cave Conservation Association to the U.S. Small Business Administration pursuant to the Loan Authorization & Agreement is hereby ratified and confirmed by the undersigned Board of Directors. **Employee Compensation:** The Board went into executive session to discuss employee compensation. The Board then moved to accept recommendations for the bonus structure for the employees, agreed to terms and conditions as discussed in the executive session.

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MEMBERS: Please send change of address and correspondence to: P.O. Box 409, Horse Cave, KY 42749; (270)786-1466
Email: debbie@caveconservation.com

Board of Directors: **Chair:** Mike Lawson; **Treasurer:** John L.G. Richards; **Vice President for Education & Services:** Jim Richards; **Secretary:** Dave Derrick; **President/CEO:** David G. Foster; **Directors:** Judy Austin; Dianne Joop; Dr. Pat Kambesis; Patricia Keefe; Dr. James W. Middleton; Tony Moore; Gary O'Dell; Phil O'dell; Miller Slaughter; Louis Straub

ACCA Staff: **President/CEO:** David G. Foster; **Operations Manager:** Annie Holt; **Education Coordinator:** Peggy A. Nims; **Administrative Assistant:** Shannon L. Johnson; **Director of Member Services:** Debra L. Silverman

Hidden River Cave Staff: Linda Cook, Katelyn Crain, Greg Cutcliff, Greg Hogan, Josh Matteson, Aaron Robertson, Christian Rodrigues, Brooklynn Sallee, Logan Wilder, Justin Wilson

The American Cave Conservation Association was incorporated in 1981 in the Commonwealth of Virginia for scientific and educational purposes. The Association is a nonprofit, tax-exempt corporation under Section 501(c)(3) of the Internal Revenue Code and is a publicly supported organization as defined in Sections 170(b)(1)(IV) and 509(a). Contributions are tax deductible. Membership Levels: Regular \$25; Supporter: \$50; Sustainer: \$100; Guarantor: \$250; Benefactor: \$500; Patron: \$1,000.

Visit our web site: www.caveconservation.com