

A topographic map of the Green River region in Utah, showing the river winding through a valley. The map includes contour lines, roads, and various geographical features. A large, stylized logo is overlaid on the map. The logo is a shield-like shape with a dark red upper section and a white lower section. The text 'GREEN RIVER' is in dark red, and 'ROCKS' is in white. Below the text are the numbers '20' and '24' flanking a stylized mountain peak with radiating lines. At the bottom of the logo is a dark red mountain peak with a white 'G' inside. The map background shows labels like 'UTAH CANYON COMPLEX', 'WHITE SANDS', 'MISSILE RANGE', 'SANTA RAFAEL', and 'DESERT'.

GREEN RIVER
ROCKS

20

24

FESTIVAL FIELD GUIDE

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WELCOME

Welcome to the sixth annual Green River Rocks!

Situated in and around the rural environment of Green River, Utah, this weekend-long collection of vendors, experts, and guides is inspired by the natural history, geology, and cultures of the Colorado Plateau. Please follow the guidelines set out in this booklet and enjoy the free festival!

Share your photos by tagging @greenriverrocks and using the hashtag #greenriverrocks

Green River Rocks is a labor of love, and is not possible without the dedication of our volunteers and the support of the local community. Be respectful, spend money at local businesses, and don't hesitate to jump in and help out if you see someone who needs a hand. Green River is a small town and your presence can have a big impact!

We value inclusion and accessibility for all participants at the event and we're here to help! For accomodation requests, speak with Maria Sykes at the Festival Headquarters Booth.

ORGANIZERS

**ALISON JEAN COLE
EPICENTER**

EMERY COUNTY TRAVEL BUREAU

**BUREAU OF LAND MANAGEMENT
- (PRICE & MOAB FIELD OFFICES)**

CITY OF GREEN RIVER

GREEN RIVER ROCKS IS SUPPORTED BY:

Epicenter

City of Green River

John Wesley Powell Museum

Utah Office of Tourism

The Emery County Travel Bureau

Bureau of Land Management

SPECIAL THANKS TO:

Magnuson Lumber

Colorado River and Trail Expeditions

Holiday River Expeditions

Rocky Mountain Power Foundation

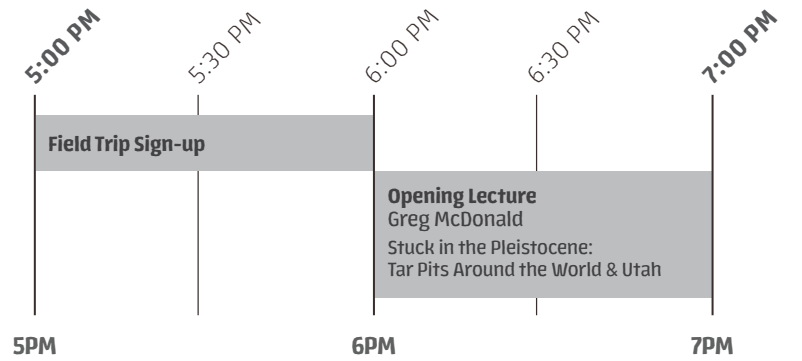
Utah Geological Survey

Museums of Western Colorado

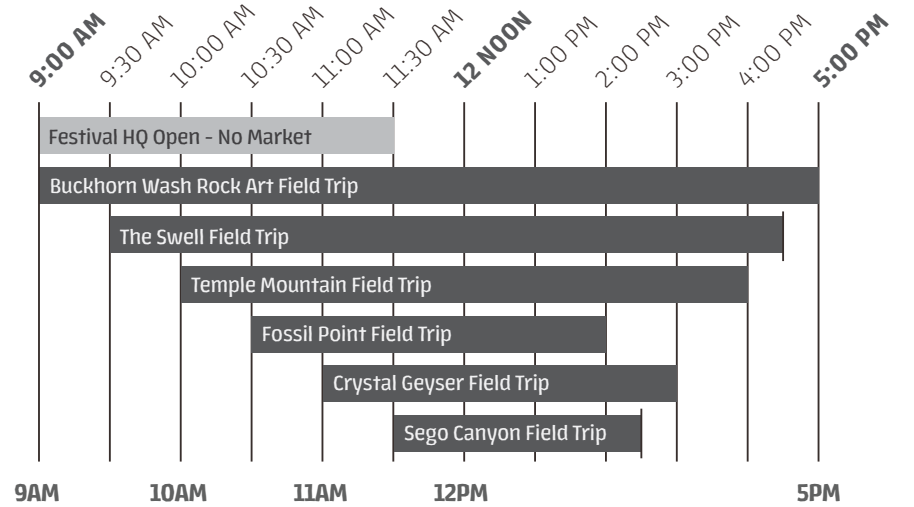
Canyonlands Field Institute

2024 SCHEDULE

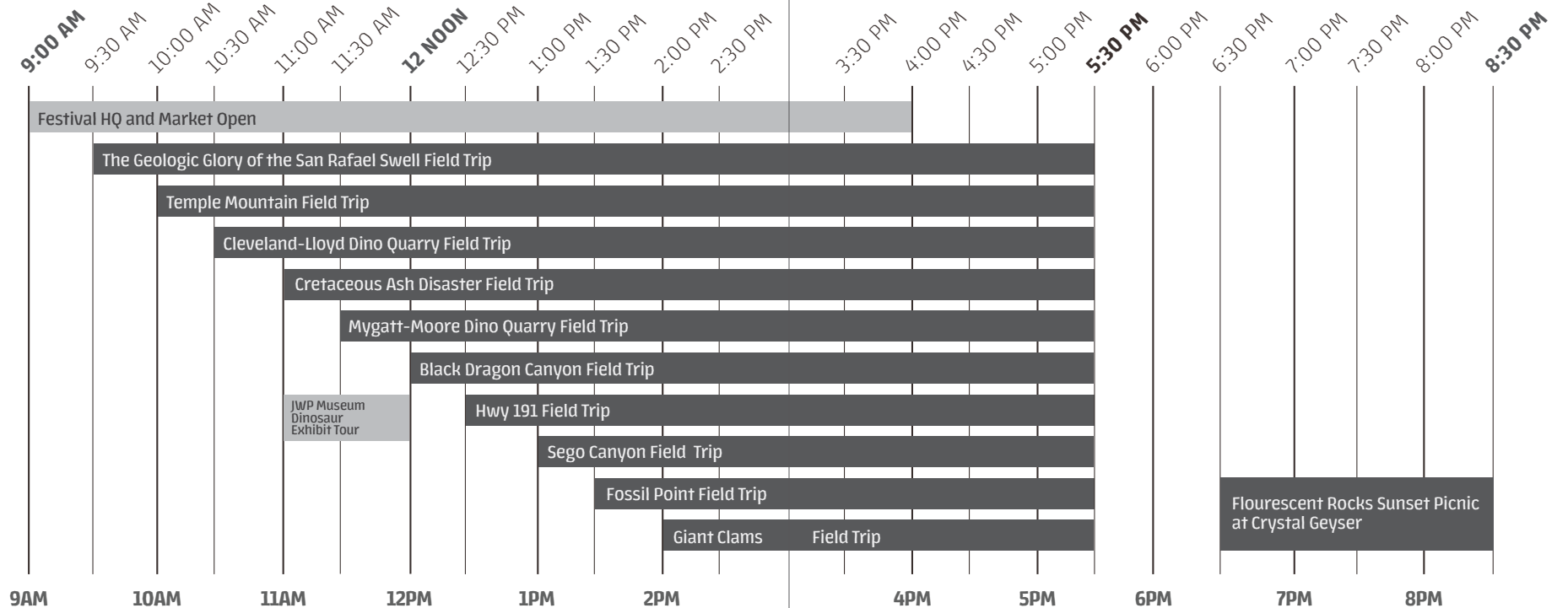
FRIDAY



SUNDAY



SATURDAY



NAVIGATING THE DESERT

Visitors participating in Green River Rocks activities are encouraged to **LEAVE NO TRACE**. Various types of land surround Green River: public land managed by BLM, the state of Utah and the National Park Service, along with private property woven within. It is your responsibility to know what land you are on when enjoying the beauty surrounding Green River.

Visitors wishing to collect rocks, minerals, and fossils must follow these rules:

- ▶ Rocks, minerals, plant fossils, and invertebrate fossils are legal to collect on BLM and Utah state-owned land.
- ▶ You are limited to 25 lbs of material per person per day, with a total yearly maximum of 250 lbs in most areas.
- ▶ Human artifacts and vertebrate fossils are protected by federal law and must be left in place. Do not remove these items from public lands. Removal may face serious penalties including fines and incarceration.
- ▶ Collecting material of any kind is limited or prohibited in Wilderness Areas and Areas of Critical Environmental Concern.
- ▶ National Parks prohibit the collection of any type of material.

Leave All Artifacts: *Artifacts hold sacred significance for Indigenous peoples and provide invaluable insights for scientists when left undisturbed. These items range from pottery shards to stone tools, rock fragments, and corn cobs. Removing any artifact, including historical debris or trash, from public lands is illegal.*

Don't Touch Rock Imagery Or Make Your Own: *Natural oils on your hands damage these delicate images. Vandalism of petroglyphs and pictographs erases stories of ancient people and destroys the experience for future visitors.*

Watch Where You Step: *Cryptobiological soil (also called "crust") is a living ground cover that forms the foundation of high desert plant life here. This knobby, black crust is dominated by cyanobacteria, but also includes lichens, mosses, green algae, microfungi, and bacteria. Since crust holds sand and dust together, walking or driving over it worsens erosion, damaging the desert we love to explore. Please walk only on trails, on rock, or in sandy washes (where water flows when it rains), and keep all vehicles and bikes on designated roads. **Don't bust the crust!***

PLAN YOUR TRIP WISELY

Dress in layers: *Daytime can be warm; morning and nighttime chilly.*

Bring lots of water, food, and a trash bag for your refuse.

Make sure your car has plenty of gas.

Do not rely on your cell phone: *Cellular service is spotty and navigation apps are not reliable. We recommend carrying a printed map, printed directions, and/or a road atlas.*

Bring your own sun protection.

Guide Children Through Archeological Sites: *Archaeological sites are not playgrounds. Teach children to respect these places. Keep a close eye on them so they don't get hurt or accidentally damage cultural resources.*

Keep Your Pup on the Path: *Dogs are welcome but must remain leashed, no exceptions. Don't forget that they need water and sun protection too!*

RESPECT THE ELEMENTS

The Sun: *While the desert can be cool in the spring, direct sun & low humidity can have severe effects. Bring plenty of water, sunscreen, sunglasses, and a shade hat.*

The Wind: *Hold on to your hat! Southern Utah can get quite gusty in spring, especially in the afternoon. If camping, be sure to tie down tents and other gear before leaving camp.*

Flash Floods: *Flash floods can occur during rainstorms any time of year. These unpredictable events can drastically change hiking conditions and can quickly become life-threatening. If a storm develops and creates a flash flood situation, get to the highest and safest point possible, and steer clear of canyons.*

Lightning: *There is no safe place outside when thunderstorms are in the area. If you hear thunder, you are likely within striking distance of the storm. Remember, **when thunder roars, go indoors.** If you are unable to get indoors, avoid open fields, ridge tops, tall and isolated trees, or other tall objects. Groups should spread out to avoid the current traveling between people.*

DRIVING TIPS

Field trips or suggested trips may require driving on dirt roads. High clearance or all-wheel drive is required for many trips in inclement weather or muddy conditions. In the event of heavy rains, conditions can become much more treacherous. Watch the weather and exercise caution!

If the road appears soft rather than hard-packed, either avoid it or keep your vehicle moving over the soft spot at a good speed. If you do get stuck in the sand or mud, do not gun your car - that will only dig you in further. Place old carpet or car floor mats under your tires and try to back out slowly. Another trick is to let some air out of your tires. If all else fails, call a tow truck.

AT THE MUSEUM

EMERY COUNTY TRAVEL BUREAU
AND THE UTAH OFFICE OF TOURISM PRESENT
**STUCK IN THE PLEISTOCENE:
TAR PITS AROUND THE WORLD & UTAH**

Lecturer: GREG MCDONALD

Friday: 6PM - 7PM

Location: THE JOHN WESLEY POWELL RIVER HISTORY MUSEUM

When you say tar pits most people immediately think of the La Brea tar pits in Los Angeles with the remains of saber tooth cats and mammoths. But tar pits have been found around the world including South America, the Middle East and even in the Caribbean and many of them also preserve the remains of other types of animals.

While we often think of these tar traps as only happening in the past, there are many places today where oil comes to the earth's surface and are trapping animals to become future fossils. One place where this is happening is in Utah, near The Great Salt Lake. Studying the conditions on how animals can become trapped today can help paleontologist understand the entrapment of extinct species in the past and better understand the fossil record.

The talk will present tar pits from around the world, the different animals they preserve and how the study of the modern tar traps in Utah are helping paleontologists to better understand the secrets of past tar pits.

Greg McDonald is a recently retired regional paleontologist for the Bureau of Land Management. Based out of the Utah State Office of the BLM, he worked with the field offices in Utah, Nevada, Oregon, Washington, and Colorado.

Prior to transferring to the BLM he worked for the National Park Service as the Senior Curator of Natural History in the Washington Museum Management Program, as Paleontology Program Coordinator in the Geologic Resources Division and as the paleontologist at Hagerman Fossil Beds National Monument.

POP-UP MARKET

Saturday

9:00 AM - 4:00 PM

Educational booths and vendors from all over will sell minerals, jewelry, polished stones, books, art, food, and more at the Pop-up Market in front of the museum.

Food/Drink:

- The Coyote's Well Mobile Coffee
- Ruben's BBQ
- Angel's Craving

Educational:

- John Wesley Powell River History Museum
- Moab Museum
- USU Eastern Prehistoric Museum
- Museum of the San Rafael Swell
- Museums of Western Colorado
- Bureau of Land Management Utah

Vendors:

- Torrey House Press
- Back of Beyond Books
- Braun Lapidary
- Vance Brown
- Made by Chalyn
- Rocks & Stardust
- Gina's Jams N Jewels
- Sarah Lefler
- Serpent's Ridge Lapidary
- Hummingbird Mine
- The Wandering Wilsons
- The Joy Rock
- Naked Bear Skincare
- Grace Whatley
- Sarah Burnett
- GRHS Booster Club

**Vendor list subject to change.*

Field trip sign-ups are first come, first serve.

You must sign up in-person during the festival—there's no way to sign up in advance. How to sign up for a field trip:

- ▶ Attendees can sign up for trips during the Friday evening lecture and on Saturday and Sunday at the festival information booth outside the John Wesley Powell River History Museum.
- ▶ Complete the field trip waiver while you sign up.
- ▶ The festival booth will open an hour before the Friday evening lecture, and again at 9am on both Saturday and Sunday.
- ▶ All field trips are half-day to full-day trips. Group size for each trip is 25 people. If there is a trip you are particularly excited about, we recommend coming to the Friday evening lecture to sign up.
- ▶ Field trip leaders will meet their group in the John Wesley Powell River History Museum parking lot. Prepare to caravan to field trip sites in your own vehicle. Many trips involve dirt road driving. Descriptions of road conditions can be found in each trip description. Pack plenty of water and a sack lunch, and fill your gas tank ahead of time. Wear comfortable clothing and bring sun protection.
- ▶ Send all field trip questions to info@greenriverrocks.com. Staff at the John Wesley Powell River History Museum will not be able to answer any questions. The Museum does not organize the festival. They are just our gracious hosts!

THE GEOLOGIC GLORY OF THE SAN RAFAEL SWELL

Leaders: PAUL ANDERSON & TOM CHIDSEY

Saturday: 9:30AM | FULL DAY

The San Rafael Swell is a showcase of Colorado Plateau geology. This large, anticlinal feature formed due to Laramide mountain-building compression during the Cretaceous through early Tertiary (65 to 45 million years ago).

Uplift and erosion have created a colorful array of sedimentary rocks about 6,900 feet thick, ranging in age from Permian (280 million years ago) through the Cretaceous, exposed in spectacular cliffs along cuestas, mesas, and deep canyons. These rocks were deposited in a wide range of environments including dune, floodplain, river, braided stream, delta, swamp, tidal flat, and shallow marine, now long gone.

Roads: This long loop will traverse some dirt roads with a few rough spots. A moderately high clearance vehicle is required, but not 4- or all-wheel drive.

Paul Anderson has been a geologic consultant for nearly 40 years. He is a past resident of Emery, Utah, where he and his wife Mary Ann are active in the local community. Paul is an expert on the Cretaceous geology of many areas of Utah, including Emery County and its coal and gas resources.

Tom Chidsey is an emeritus geologist from the Utah Geological Survey where he worked as a petroleum researcher for 31 years and 13 years prior in the oil and gas industry of Utah and Texas.

Both Paul and Tom have served as presidents of the Utah Geological Association and have been awarded the prestigious Lehi Hintze Award for Outstanding Contributions to the Geology of Utah.

The Book Cliffs near modern Green River from between 1869-1878.



TEMPLE MOUNTAIN

LEADER: BENJAMIN BURGER

SATURDAY: 10:00AM | FULL DAY

SUNDAY: 10:00am

Join us on an exciting field trip to Temple Mountain, where we'll embark on a geological adventure spanning a remarkable period in Earth's history. Our journey will take us through the end-Permian mass extinction period, as we explore the rocks and collect fossils that hold clues to Earth's ancient history.

Along the way, we'll also visit historical uranium camps, including the very mine that supplied Marie Curie with the ore she used in her groundbreaking experiments on radioactive elements, and won her two Nobel Prizes.

Our first stop will be at the early Triassic Sinbad Limestone, where we'll have the chance to collect invertebrate fossils, giving us a glimpse into marine life recovering from Earth's Worst Mass Extinction.

Next, we'll visit the late Permian Kaibab Limestone, offering us insights into what life was like before the extinction, in the late Permian.

Prepare for a full-day journey filled with geological wonders and historical significance that will leave you with a deeper understanding of our planet's rich past.

Roads: Please note that the route requires high-clearance vehicles, but we've arranged for parking at the campground for those with 2WD vehicles to join the field trip by catching a ride, as the field will loop back.

In case of inclement weather rendering roads impassable, we have an exciting alternative plan to explore the remarkable features of Goblin Valley State Park a few miles to the south and delve into the mysteries of Jurassic sedimentary rock formations. You can easily visit Goblin Valley State Park as an option after the field trip on the way back to Green River.

Benjamin Burger is an Associate Professor of Geology at Utah State University. Benjamin currently works at Utah State University's Uintah Basin campus in Vernal Utah teaching classes in paleontology and geology. He also maintains a YouTube channel on the geology of Utah. His active research centers on ancient climate change in deep time, and the geological history of the intermountain west.

Previously he has worked at the American Museum of Natural History in New York City and earned graduate degrees at Stony Brook University in New York and the University of Colorado in Boulder.

JURASSIC NATIONAL MONUMENT'S CLEVELAND-LLOYD DINO QUARRY

Leader: EMILY LESSNER

Saturday: 10:30AM | HALF DAY

The Cleveland-Lloyd Dinosaur Quarry at Jurassic National Monument is one of the world's most impressive collections of dinosaur bones and fossils from the Jurassic Morrison Formation.

Over 12,000 bones from at least 70 different prehistoric critters have been excavated here. Fossils from the quarry have been reassembled and displayed in museums throughout the world.

Roads: The quarry is a 90 minute drive from Green River, located within the San Rafael Swell. Any car can make the drive to the quarry, which is about equal parts pavement and well-graded dirt roads.

Emily Lessner is the new Bureau of Land Management paleontologist for the Green River and Canyon Country Districts of eastern Utah. Based from Moab, she works with field offices in Vernal, Price, Moab, and Monticello and has conducted fieldwork from the Triassic through Paleocene in Colorado, North Dakota, Wyoming, Utah, New Mexico, and Arizona.

She earned her PhD from the University of Missouri, where she focused on evolution of nerves in the faces of reptiles.



CRETACEOUS ASH DISASTER

Leader: JOHN FOSTER

Saturday: 11:00AM | HALF DAY

Join paleontologist John Foster for a plant fossil collecting trip in the ash beds of the Cretaceous-age Naturita (Dakota) Formation. The white ash layers of this formation preserve abundant plant fossils including the ferns *Matonidium* and *Gleichenia*.

The ash is in coal and digging is very dusty, so come prepared to get dirty! Each person must bring their own tools and keep their diggings to a small surface pit less than one square meter.

Roads: The route is mostly paved. A short gravel road drive is required, and most cars should have no trouble.

John Foster is the curator of collections at the Utah Field House of Natural History State Park Museum in Vernal. He mainly works in the Morrison Formation, but has been known to stray into the Cretaceous now and then.

MYGATT-MOORE DINOSAUR QUARRY

Leader: JULIA MCHUGH

Saturday: 11:30AM | HALF DAY

Journey 152 million years into the past, with this tour of the Mygatt-Moore Quarry, a gigantic dinosaur bonebed that has produced thousands of fossils over more than 30 years. This tour will highlight the history of the site, new discoveries, and even take you on a short walk along the Trail Through Time to discover the fossils of a *Camarasaurus* still embedded in the hard sandstones of an ancient river channel.

Roads: The quarry is an hour and 15 minute drive from the museum, mostly on I-70 between Green River, UT, and Fruita, CO. Any car can make the trip.

Dr. Julia McHugh is the Paleontology Curator at Museums of Western Colorado & Instructor at Colorado Mesa University. An expert in Morrison Formation paleontology, taphonomy, and amphibian evolution, her recent research includes sauropod tooth replacement, theropod cannibalism, and decay ecologies. She has excavated across Montana, Colorado, Wyoming, Utah, and Oklahoma.

BLACK DRAGON CANYON ROCK ART

Leader: LAYNE MILLER

Saturday: 12:00PM | HALF DAY

A mysterious red pictograph (painted) panel accompanied by petroglyphs (pecked images) lies within Black Dragon Wash in the San Rafael Swell. Within a fenced area visitors may view several elongated human and animal like pictograph images attributed to the ancient Barrier Canyon culture. Stylistically different Fremont petroglyphs are located adjacent to the Barrier Canyon pictographs.

In the past someone chalked the outlines of the pictograph images, a practice now known to irreparably damage fragile rock art resources. The person chalking the images combined several figures into what appears as a Dragon-like image. This “dragon” gives the canyon its name.

Visitors to the site enjoy a short hike to the panel up through the wash and into the San Rafael reef. Nearby canyons and the wash provide more hiking and photo opportunities.

Roads: Mostly paved road driving, with a short distance on dirt roads. The road to the panel is sandy in spots and a vehicle with some clearance is recommended. In wet weather all- or 4-wheel drive is recommended.

Layne Miller has conducted rock art tours in Nine Mile Canyon, Range Creek, and the San Rafael Swell for over 20 years. He is a founding member of the Utah Rock Art Research Association and the Nine Mile Canyon Coalition.



HIGHWAY 191 PALEONTOLOGY

Leader: JIM KIRKLAND

Saturday: 1:00PM | HALF DAY

Paleozoic marine fossils. Cretaceous dinosaur tracks. The discovery of Utahraptor. A fossil swamp. Join State Paleontologist Jim Kirkland on a tour of Hwy 191 between Crescent Junction and Moab.

Travel through three hundred million years of Earth's history with stops at a Paradox Formation outcrop, the Mill Canyon Dinosaur Tracksite, the future site of Utahraptor State Park, and the Copper Ridge Dinosaur Tracksite, with rockhounding opportunities along the way.

Roads: A 90-mile round trip, mostly pavement, with a few short stretches on dirt roads. Any car can make the trip.

Dr. Jim Kirkland has been the Utah State Paleontologist with the Utah Geological Survey over 20 years. He issues permits for paleontological research on Utah state lands, keeps tabs on paleontological research and issues across the state, and promotes Utah's paleontological resources for the public good. An expert on the Mesozoic, he has spent more than forty-five years excavating fossils across the southwestern US and Mexico.

SEGO CANYON ROCK ART

Leader: GEOFF SMITH

Saturday: 1:30PM (WITH GEOFF)

SUNDAY: 11:30AM (WITH LAYNE MILLER)

The rock art at Sego Canyon is among the most interesting and unique in all of the south west. The panels include art from Fremont, Ute and Barrier Canyon cultures and span thousands of years.

Roads: About 30 miles from Green River. Mostly paved highway and a short segment of dirt road. Any car can make the journey. In wet weather all- or 4-wheel drive is recommended.

Geoff Smith is a past president and current active member of Castle Valley Archaeological Society. He is a 5th generation Emery County resident and serves there as an advanced EMT.

FOSSIL POINT DINOSAUR BONES

Leader: GREG MCDONALD

Saturday: 2:00PM

SUNDAY: 10:30AM

Fossil Point is an extraordinary fossil locality where boulders yield large dinosaur bones from the Jurassic Era, dating as far back as 145 million years. A short drive from Green River, the site is home to large vertebrae, leg bones, and fantastic views of the La Sals and Henry Mountains.

Roads: Less than 30 minutes on well graded dirt roads from Green River. The last mile has a rocky stretch. Passenger cars can make it successfully if driven with care. In wet weather, all- or 4-wheel drive is recommended.

Greg McDonald is a recently retired regional paleontologist for the BLM based out of the Utah State Office and working with field offices in Utah, Nevada, Oregon, Washington, and Colorado.

Previously, he worked for the National Park Service as the Senior Curator of Natural History in the Washington Museum Management Program, as Paleontology Program Coordinator in the Geologic Resources Division, and as the paleontologist at Hagerman Fossil Beds National Monument.

OCEAN-FRONT PROPERTY IN GREEN RIVER: GIANT CLAMS OF MANCOS SHALE

Leader: JOSH LIVELY

Saturday: 2:30PM | HALF DAY

If you took a time machine 85 million years in the past, Green River would be at the seafloor, hundreds of feet below the surface. While dinosaurs were walking on land near what is now the Wasatch Plateau, marine life was teeming in the shallow seas of eastern Utah.

Tour the Cretaceous Mancos Shale and take a look at the life inhabiting this ancient sea, including ammonites and giant clams! We will take a short trip outside of town to see these fossils in the field and learn what they tell us about Cretaceous seas.

Roads: Vehicles with moderate clearance recommended (at least a Subaru Outback).

Joshua Lively, PhD is the Curator of Paleontology at the Prehistoric Museum in Price, Utah. He earned his master's from the University of Utah where he studied Cretaceous turtles, and a PhD from The University of Texas at Austin, where he focused on mosasaurs and other Cretaceous marine life.

FLUORESCENT ROCKS SUNSET PICNIC AT CRYSTAL GEYSER

Leader: ALISON JEAN COLE

Saturday: 6:30PM | UNTIL SUNSET

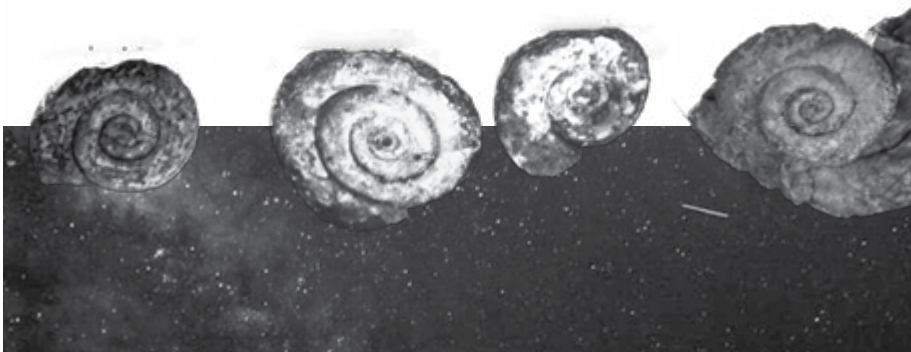
Grab some dinner to-go and join festival coordinator (and devoted rockhound) Alison Jean Cole at the Crystal Geyser along the shores of the beautiful Green River. As the sun sets, we'll search among the extraordinary geyser deposits for minerals that fluoresce under short-wave and long-wave ultraviolet light. We'll discuss the physics of fluorescence under electromagnetic radiation, and how the resulting disturbance is experienced by the human eye. Basically, we'll look at pretty rocks that glow.

A limited number of portable fluorescent lights will be available for use, so come prepared to share. The group will meet at the John Wesley Powell River History Museum and caravan down to the geyser together.

Roads: Any car can make the trip, but good tires are recommended. The geyser is a short distance from town and requires about 6 miles of travel over dirt roads. Be prepared to drive back in the dark.

Alison Jean Cole is one of the festival's coordinators and works professionally with rocks and minerals as an artist, author, and outfitter guide. Her artistic specialty is lapidary intarsia, a type of detailed stonework, and she holds two mining claims in the Virgin Valley Caldera in northwestern Nevada.

She leads rock collecting expeditions in Oregon, Nevada, and Utah each year. Look for her book, "Beautiful Rocks & How To Find Them", published by Princeton Architectural Press, at a bookstore near you.



ROCK ART OF BUCKHORN WASH & THE SAN RAFAEL SWELL

Leader: GEOFF SMITH

Sunday: 9:00 AM | FULL DAY

Spend the day in the extraordinary canyons and ravines of the San Rafael Swell. We'll drive a 122 mile loop, stopping at numerous rock art panels including the Silent Sentinel, the Daisy Chain, and the world famous Buckhorn Panel.

Roads: High clearance recommended for patches of rough road along the way. In wet weather all- or 4-wheel drive is recommended.

Geoff Smith is a past president and current active member of Castle Valley Archaeological Society. Geoff is a 5th generation Emery County resident and currently serves as an advanced EMT for Emery County.

GEOLOGY AND PALEONTOLOGY OF THE SAN RAFAEL SWELL

Leader: JOSH LIVELY

Sunday: 9:30AM | FULL DAY

People come from near and far to visit "The Swell" for outdoor recreation, but did you know it preserves a deep geologic history? Join Dr. Joshua Lively for a geologic tour of the San Rafael Swell, traversing over 170 million years of geologic time across I-70 and through Buckhorn Draw.

We'll start our day in Green River and end in Castle Dale, making stops to cover the Permian, Triassic, Jurassic, and Cretaceous time periods. Learn the geologic stories behind The Swell's iconic scenery, and see a few fossils along the way!

Roads: Low-riding vehicles (such as Priuses/small sedans) are not recommended.

Joshua Lively, PhD is the Curator of Paleontology at the Prehistoric Museum in Price, Utah. He earned his master's from the University of Utah where he studied Cretaceous turtles, and a PhD from The University of Texas at Austin, where he focused on mosasaurs and other Cretaceous marine life.

TEMPLE MOUNTAIN

Leader: BENJAMIN BURGER

Sunday: 10:00 AM | FULL DAY

*See page 10 for trip description, road conditions, and leader bio.

FOSSIL POINT DINOSAUR BONES

Leader: GREG MCDONALD

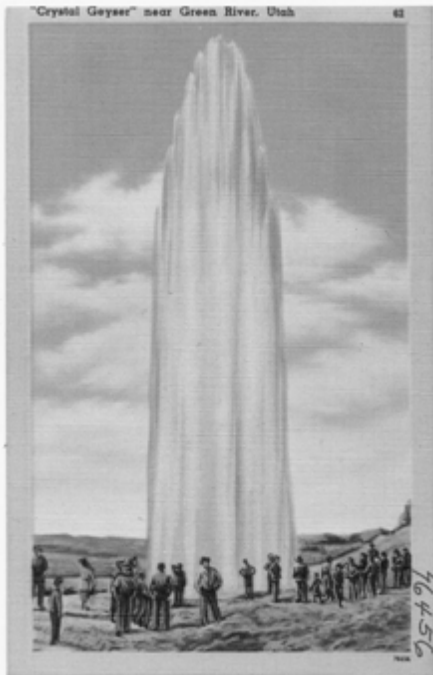
Sunday: 10:30AM

*See page 15 for trip description, road conditions, and leader bio.

CRYSTAL GEYSER: A GEOLOGICAL ODDITY

Leaders: PAUL ANDERSON & TOM CHIDSEY

Sunday: 11:00AM



Postcard from between 1930-1945

Crystal Geyser is located along the Green River about 3 miles south of town. Unlike the more familiar geysers in Yellowstone, Crystal Geyser is human-made and flows cold water, which explodes with carbon dioxide (CO₂) like a shaken bottle of soda pop. It was created in 1936 when an oil exploration well encountered a high-pressure system containing trapped CO₂ instead of oil.

This same system was responsible for ancient Ice Age (Pleistocene – 2.6 million to 12,000 years ago) deposits of tufa in the area first identified by Major John Wesley Powell during his 1869 journey along this stretch of the river on the way to the Grand Canyon. Modern terraces of tufa ----->

...are forming today from calcium carbonate-bearing water flowing from the geyser. Major eruptions of Crystal Geyser attain heights of 40 to 80 feet, which last from 3 to 49 minutes, and occur anywhere from 17 to 27 hours apart. A few brief stops will describe the geology along the route.

Roads: The route traverses mostly well graded dirt roads. In wet weather all-or 4-wheel drive is recommended.

Paul Anderson has been a geologic consultant for nearly 40 years. He is a past resident of Emery, Utah, where he and his wife Mary Ann are active in the local community. Paul is an expert on the Cretaceous geology of many areas of Utah, including Emery County and its coal and gas resources.

Tom Chidsey is an emeritus geologist from the Utah Geological Survey where he worked as a petroleum researcher for 31 years and 13 years prior in the oil and gas industry of Utah and Texas.

Both Paul and Tom have served as presidents of the Utah Geological Association and have been awarded the prestigious Lehi Hintze Award for Outstanding Contributions to the Geology of Utah.

SEGO CANYON ROCK ART

Leader: LAYNE MILLER

Sunday: 11:30AM

The rock art at Sego Canyon is among the most interesting and unique in all of the south west. The panels include art from Fremont, Ute and Barrier Canyon cultures and span thousands of years.

Roads: About 30 miles from Green River. Mostly paved highway and a short segment of dirt road. Any car can make the journey. In wet weather all- or 4-wheel drive is recommended.

Layne Miller has conducted rock art tours in Nine Mile Canyon, Range Creek, and the San Rafael Swell for over 20 years. He is a founding member of the Utah Rock Art Research Association and the Nine Mile Canyon Coalition.

SELF-GUIDED DAY TRIPS

ROCKHOUNDING IN THE AREA

For rockhounding opportunities near town, check out the Utah Geological Survey's interactive Utah Rockhounder Map!

Make sure to choose a site and write down directions before you go. You will be happy to have written directions when you lose cell service. The website provides directions, descriptions, and coordinates of some great local sites.



Scan the code with your phone's camera or visit:

<https://geology.utah.gov/apps/rockhounder/?page=Interactive-Map>

Utah's lands are managed by the federal government (Bureau of Land Management, U.S. Forest Service, National Park Service, Bureau of Reclamation, U.S. Department of Defense, U.S. Fish and Wildlife Service, American Indians), state government (Utah School and Institutional Trust Lands Administration), and private owners (including local governments). Rockhounding permits may be required to collect on some government lands, and permission is required to collect on private lands.

Visitors wishing to collect rocks, minerals and fossils must follow these rules:

- ▶ Rocks, minerals, plant fossils, and invertebrate fossils are legal to collect on BLM and Utah state-owned land.
- ▶ You are limited to 25 lbs of material per person per day, with a total yearly maximum of 250 lbs in most areas.
- ▶ Human artifacts and vertebrate fossils are protected by federal law and must be left in place. Do not remove these items from public lands. Removal may face serious penalties including fines and incarceration.
- ▶ Collecting material of any kind is prohibited in Wilderness Areas and Areas of Critical Environmental Concern.
- ▶ National Parks prohibit the collection of any type of material.

CRYSTAL GEYSER

About 20 minutes from Green River

A rare cold water geyser, the Crystal Geyser gets its power from carbon dioxide. The geyser erupts sporadically (every 12-16 hours) and can last for over an hour. It's said that the geyser can shoot up to 60 feet high, but typically is seen to erupt around 30 feet high. Bright orange travertine deposits have precipitated out of the geyser waters creating spectacular and colorful terraces along the banks of the Green River.

Though the mineral rich waters that come up through the geyser are natural, the geyser itself is incidental - prospectors drilled a hole searching for natural gasses in the last century and interrupted a sedimentary layer with a significant reservoir of CO₂. The geyser started erupting through their drilled hole and has continued to ever since.

Roads: The route traverses mostly well graded dirt roads. In wet weather all-or 4-wheel drive is recommended.

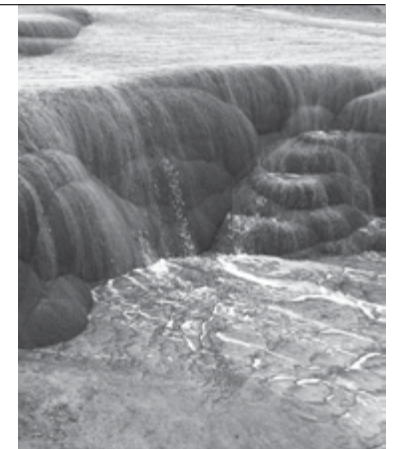
Directions from Green River:

- ▶ Begin at the intersection of Main Street and Hastings Road driving east. Cross over Interstate 70 (do not get on the interstate) and turn left onto the frontage road.
- ▶ At mile 3.7, turn right onto the graded dirt road. Over the next several miles, you will pass through varied landscapes. Pass under the power lines and veer right at mile 7.2 to head west towards the Green River.
- ▶ After another half mile, you've arrived at the Crystal Geyser.

The mineralized water will not hurt you, but it is not potable.

Even if you miss an eruption, the stunning mineral-formed terraces along the river are worth exploring.

With its wrinkled surface and ever-lingering pools of water, visiting the unique landscape of Crystal Geyser is a rewarding experience. After exploring, just head back to Green River the same way you came.



Mineral deposits at Crystal Geyser.

SWASEY'S BEACH

Location: About 20 minutes from Green River

Enjoy spectacular canyon views at Swasey's Beach just north of Green River. The white sand beach spans a long bend in the river and is shaded by cottonwood trees. Shallow water gives children plenty of opportunity to frolic in the river, and bighorn sheep frequent the water's edge. Rapids upstream from the campground provide a kayaking playground.

Directions from Green River:

- ▶ Access to Swasey's Beach and campground begins from the Green River Visitor Center in downtown Green River.
- ▶ Drive east along Main Street to the intersection with Hastings Rd.
- ▶ Turn left (north) and follow the relatively flat road for 6.3 miles to the intersection with a dirt road just before a ranch entrance.
- ▶ Turn right onto this road and follow it for 3.8 miles to Swasey Beach and the river of the same name just upstream.

Swasey's Beach, located on BLM land, is designated for recreational use and provides barrier-free access for people with disabilities. Day access to all facilities is free, and there are no permits or fees required for using the boat ramp. Overnight camping at designated sites costs \$15 per site per night.

ROCK ART: BLACK DRAGON CANYON

Location: About 25 minutes from Green River

This route takes you west of Green River to the San Rafael Reef, the spectacular eastern cliff line of the San Rafael Swell. Within deep, sinuous canyons, adorned with ancient rock art panels, lies the Black Dragon Canyon—named for the flying dragon pictograph located on its wall.

Directions from Green River:

- ▶ Drive west on Interstate 70. Carefully turn right on to the dirt road at milepost 147.
- ▶ One mile after the gate, turn west towards the canyon. Once in the mouth of the canyon park your car. An old jeep track provides a level walking surface for most of the hike.
- ▶ Walk 0.2 miles into the canyon to view several ancient pictographs and petroglyphs at the base of the high wall on your right behind a wooden fence.

Many believe the illustrations on the first panel are of an early calendar. Up the canyon wall are more pictographs, one of which is the flying dragon. At your own risk, hike along the rockfall to find a secret cave rumored to be the dragon's lair. Beyond the panel, (<2 mi) the canyon forks. The south fork heads back towards I-70. The north fork offers more fascinating canyon walls.

ROCK ART: SEGO CANYON

Location: About 45 minutes from Green River

Sego Canyon is a great adventure the entire family will enjoy. The canyon contains rock art from three different indigenous cultures as well as structures from an old mining town, now long gone.

Roads: Navigation for this route is easy and all sites can be accessed in good weather conditions.

Directions from Green River:

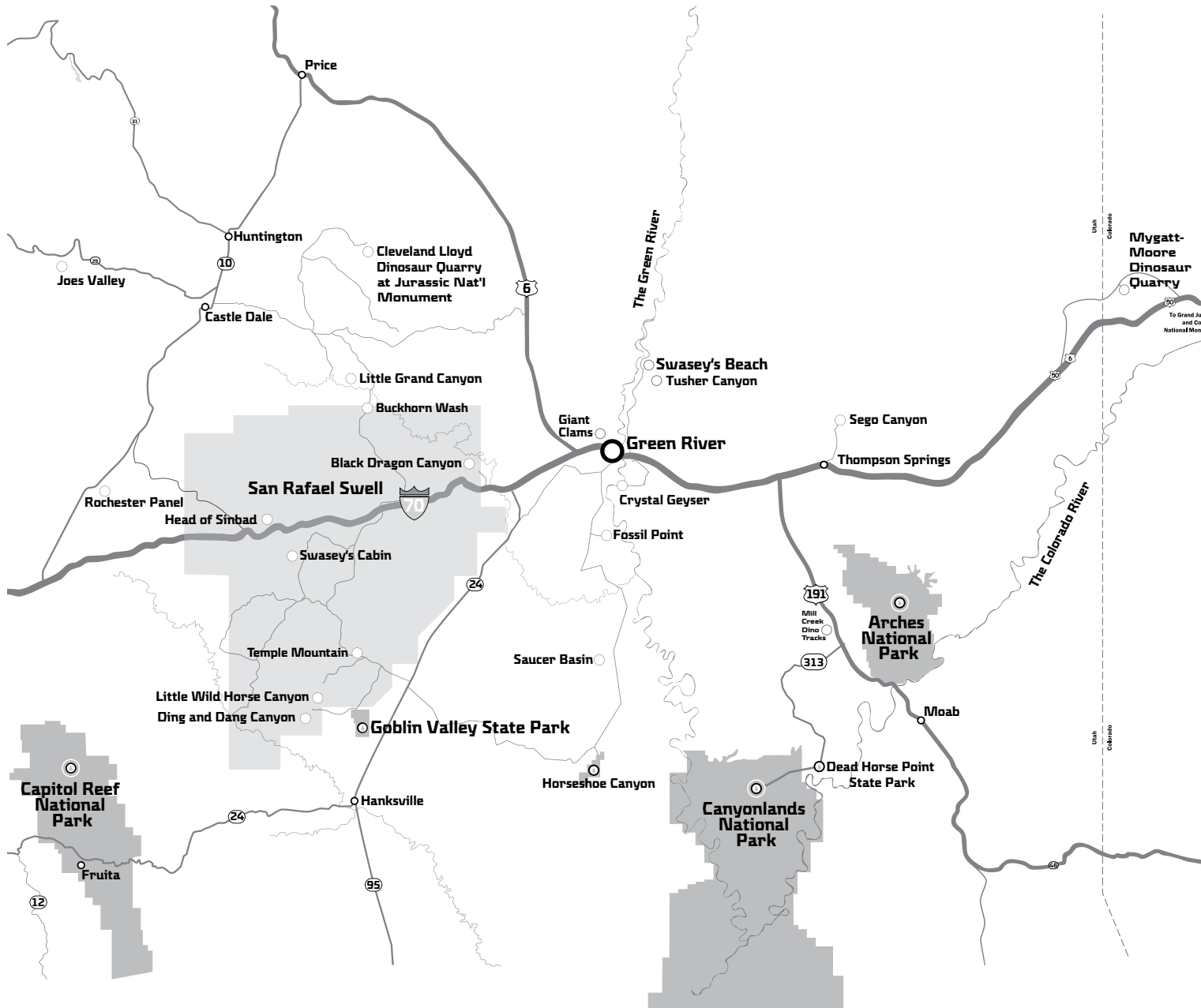
- ▶ Head east on Interstate 70. After 22.4 miles, take exit 187.
- ▶ Head north through the town of Thompson Springs. Ancient rock art is found on both sides of the canyon (about 3.5 mi north of town).
- ▶ After viewing the historic rock art, head north on Segoe Canyon Road. After half a mile, take the right fork into Segoe Canyon, which quickly leads to the old cemetery.
 - ◊ *Make sure to stop here and find the intriguing grave markers in the southwest corner.*
- ▶ The ghost town of Segoe is one mile further into the canyon. The company store still partially stands in the center of town. House ruins and coal mine remnants are scattered throughout the area.

*The best way to explore the relics is by foot. Hike around, but beware of mineshafts and other hazards. **The Segoe ruins and rock art sit on private land, so please be respectful.***



View from Swasey's Beach campground.

MAP OF REGION



Stick around for awhile, there's plenty to do in and around Green River!

-  **Paved Roads**
-  **Dirt Roads**
-  **Rivers & Lakes**
-  **Points of Interest**
-  **Cities & Towns**
-  **National & State Parks**



Scan to view the INTERACTIVE MAP

Courtesy of:

The Emery County Travel Bureau
visitemerycounty.com

PLACES TO EAT

MAP OF GREEN RIVER

Blimpie's · 780 E MAIN STREET

This locally-owned Blimpie's is located inside the Shady Acres convenience store. Great spot to grab a quick sandwich, wrap, or salad! Shady Acres is a great place for snacks, quick coffee, and drinks.

ChowHound · 30 E MAIN STREET

Established in 1973, this classic sit-down fast food restaurant is a local treasure. The menu includes burgers, sandwiches, pizza, donuts, tater tots, soft serve ice cream, milkshakes, and more.

Green River Coffee Co. · 25 E MAIN STREET

A long-time hang out for locals where you can grab an espresso drink.

La Pasadita · 215 E MAIN STREET

This taco truck boasts some great Mexican dishes. For burritos, quesadillas, tortas, or horchata, this is the place.

La Veracruzana · 115 W MAIN STREET

A sit down Mexican food experience. For enchiladas, chile rellenos, tostadas, or Mexican beers, this is the place.

Melon Vine · 76 S BROADWAY

Green River's local grocery store includes a deli with daily lunch specials, ready-to-go sandwiches, and fresh baked goods. (Closed on Sundays)

Ray's Tavern · 25 S BROADWAY

Ray's Tavern is the place for river rats, cyclists, dirt bikers, and motorcycle enthusiasts looking for charbroiled burgers and juicy steaks. It's the only spot in town to belly-up to the bar for a draft beer.

Swell Coffee · 1710 E MAIN STREET *(Inside Tamarisk)*

A modern coffee shop from the owners of Tamarisk with unique espresso drinks, regional sodas and kombuchas, and fresh baked goods.

Tamarisk · 1710 E MAIN STREET

Located on the banks of the Green River, the Tamarisk Restaurant has been up and running since 1979. The menu features burgers, big salads, and regional beers, ciders, and wine. Also not to be missed: the Tamarisk breakfast - especially the enormous cinnamon T-roll!



***If you stop by any of these great locations,
be sure to mention we sent you!***

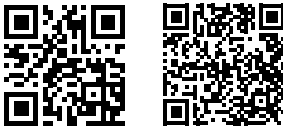


Located here in Green River, Epicenter stewards creative initiatives that combine art, architecture, and rural investment (like Green River Rocks!) in order to build a more resilient, equitable, and vibrant local community.

Find us at:

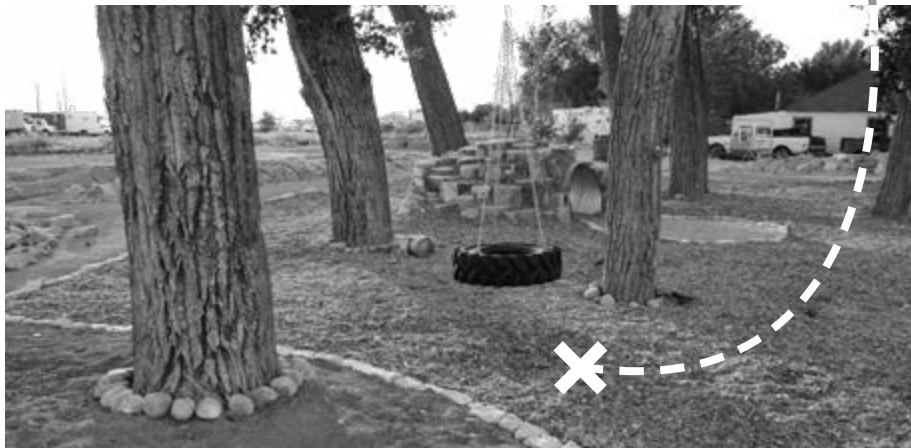
180 S Broadway
(435) 564-3330
@ruralandproud

Support us at:



Visit our newest work:

Pearl Baker Park is a new public park at the corner of Green River Avenue and Long Street!



THANK YOU TO THE JOHN WESLEY POWELL RIVER HISTORY MUSEUM
for welcoming the festival to their grounds!

UPCOMING EVENT:

MAY
10-11

JOHN WESLEY POWELL
RIVER HISTORY MUSEUM
GREEN RIVER, UTAH



HOWLING
for Glen Canyon


Dive in to the art, music, journalism, storytelling, film, and photography that has flowed from the loss and reemergence of Glen Canyon.

FRI
6PM



Blood River
Craig Childs & Greg Istock
An eccentric evening of improv, with noted naturalist author Craig Childs & musician Greg Istock, riffing on ideas of flow and change.

SAT
6PM



Glen Canyon Rises
Zak Podmore, Dawn Kish, Jackson Emmer
An intimate production full of stories, music, and film with inspiring views of the remarkable ecological recovery of Glen Canyon.

2 NIGHTS OF MERRIMENT | **\$15** Per Night



SCAN TO PURCHASE YOUR TICKETS!
Or visit: johnwesleypowell.com

Join us as we celebrate *Glen Canyon: A River Guide Remembers*—
an exhibit highlighting the experiences of River Runner Ken Sleight.

www.johnwesleypowell.com



THE JOHN WESLEY POWELL
RIVER HISTORY MUSEUM
GREEN RIVER, UTAH

JohnWesleyPowell.com
(435) 564-3427
1765 East Main Street



Thank you to the Emery County Travel Bureau for consistently supporting Green River Rocks!



HAVE AN IDEA FOR AN EVENT YOU'D LIKE TO SEE COME TO EMERY COUNTY?

Email events@emery.utah.gov to see what support is available for you to do so!

Swag. Prizes. Marketing. Permits. & more!

Thank you to the Bureau of Land Management for partnering with us on making the field trips happen!



The Little Grand Canyon Overlook of the San Rafael Swell

The Bureau of Land Management

is responsible for managing public lands in such a way as to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.

On March 12, 2019, the John D. Dingell, Jr. Conservation, Management, and Recreation Act, designated the San Rafael Swell Recreation Area, 17 Wilderness Areas, 63 Miles of the Green River as Wild and Scenic, and established the Jurassic National Monument, which includes the world-renowned Cleveland-Lloyd Dinosaur Quarry.

The Dingell Act is a keystone environmental legislation for the conservation of public lands in Utah, and the Bureau of Land Management's Utah Price Field Office plays a key role in implementing its provisions.

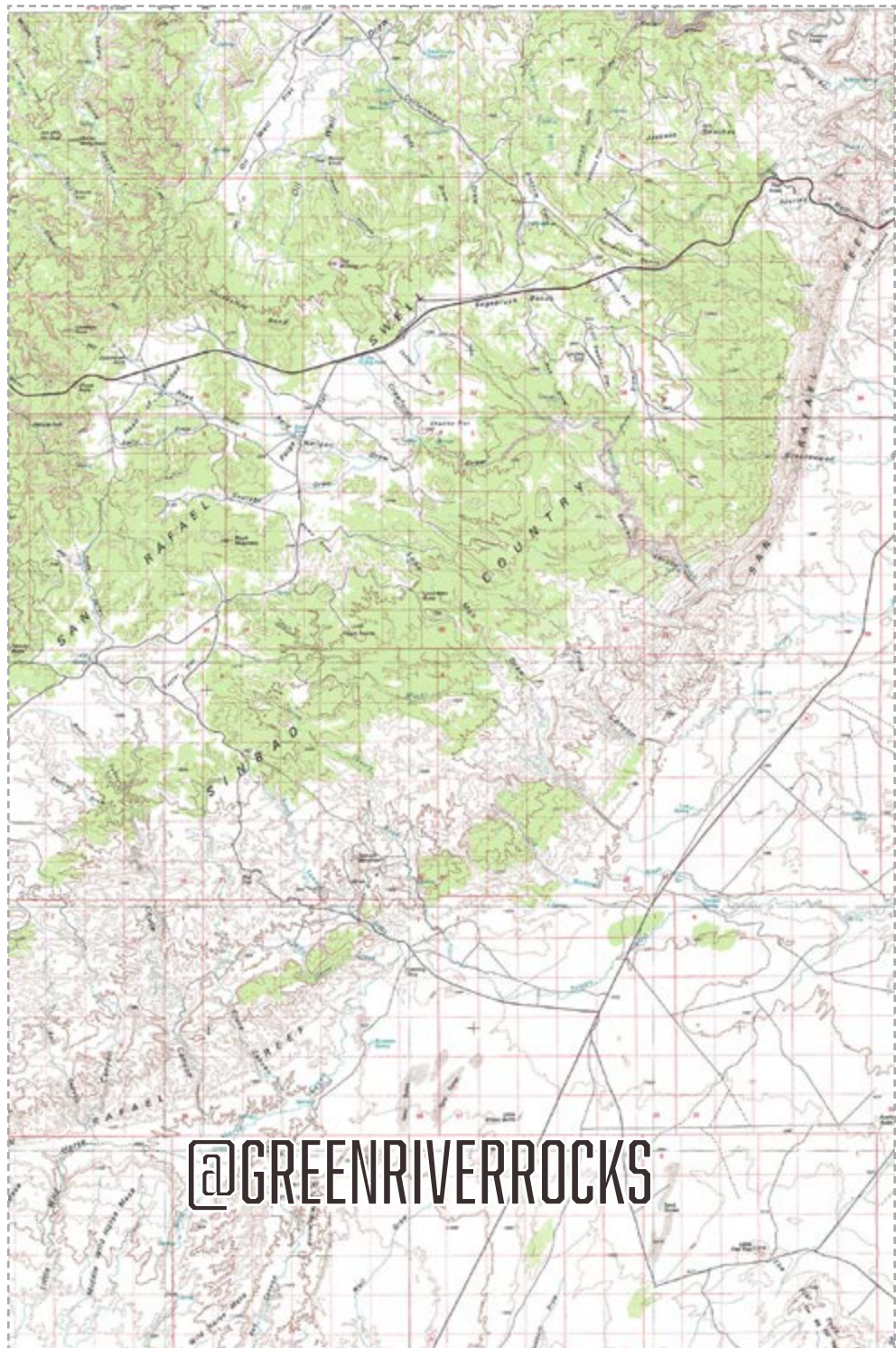
To learn more about the Price Field Office and the Dingell Act, call: 435-636-3600 or visit <https://www.blm.gov/office/price-field-office>

FIELD NOTES



FIELD NOTES





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