

Science Camp #150606.6

05-11 June 2015 @ Salt Lake, Escalante, the Condo, the Nelson Cabin, and surrounding area

Advisors

H. Roice Nelson, Jr., Andrea S. Nelson, & Paul F. Nelson

Attendees

Ethan E. Nelson, Grant M. Nelson, Colby C. Wright,
Taylor R. Wright, Ella D. Nelson, Halle N. Wright,
Bobbie Sophia Waldron, & Dallin Spencer Nelson

Part of Grandpa's Indian Collection

Some of these books belonged to my Grandpa Hafen, who was one of the last of the real cowboys. He did not want to be a fruit farmer like his father Adolph Hafen, and so he went down on the Arizona Strip and caught and branded wild cattle and became nationally known in the Purebred Herford Business.



Indian Tribes & Archaeology

“Fore behold, I shall speak unto the Jews and they shall write it; and I shall also speak unto the Nephites and they shall write it; and I shall also speak unto the other tribes of the house of Israel, which I have led away, and they shall write it; and I shall also speak unto all nations of the earth and they shall write it.”

II Nephi 29:12

Safety

- **Never go anyplace alone.**
- Exception is if one of you is hurt, then:
 - One of you stay and help the person hurt.
 - The other one run and get help.
- If you get lost stay put, we will find you.
- If you hear a rattlesnake do not move quickly, just slowly move away from the sound.
- Do not run with a knife open. Use knife safety.
- If you cut yourself, apply pressure to the wound to stop bleeding, and send for help.
- Never point an arrow in a cocked bow or a gun at any person.
- Drink lots and lots and lots of water.
- Do not go swimming unless an adult is with you.
- Do not start branches on fire and swing them around where others can be hurt.
- Have fun, use common sense, and **think before you act.**

Schedule Friday - Thursday

- **Friday:**
 - Colby, Taylor, & Halle fly to Salt Lake, Paul picks up and takes to Family Discovery Center
 - Grandpa, Grandma, and Ethan drive to Salt Lake from Ft. Collins.
- **Saturday:**
 - Sophie and Dallin's baptism, SiliencerCo and shooting, reports.
- **Sunday:**
 - Music & Spoken Word, University of Utah Science Museum, Freemont Indian Museum.
- **Monday:**
 - Escalante, Anasazi Ruins, ridge road, Petrified Forest, Bryce Canyon hike, back to Condo.
- **Tuesday:**
 - Parowan Gap, Solar Astronomy, Cabin, bottle rockets, marshmallow guns, Astronomy.
- **Wednesday:**
 - Cabin, Swimming, Aunt Sara's & Uncle Des' for dinner.
- **Thursday:**
 - Up early and to SLC, Wright's plane 10:45, Ethan's plane 2:00 PM.

Job Chart

	Saturday	Sunday	Monday	Tuesday	Wednesday
Ethan	Presentation	Cleanup lunch	Lunch Setup	Dinner Setup	Clean Cabin Dinner Cleanup
Grant	Presentation	Breakfast Cleanup	Dinner Cleanup	Dinner Setup	Clean Cabin/Thur Breakfast Setup
Colby	Presentation	Setup Lunch	Breakfast Cleanup	Dinner Cleanup	Lunch Setup Clean Cabin
Taylor	Presentation	Dinner Cleanup	Breakfast Setup	Lunch Cleanup	Breakfast Cleanup Clean Cabin
Ella	Presentation	Dinner Setup	Breakfast Cleanup	Dinner Cleanup	Clean Cabin/Thur Breakfast Dishes
Halle	Presentation	Lunch Cleanup	Lunch Cleanup	Breakfast Setup	Lunch Cleanup Clean Cabin
Sophie	Baptism / Presentation	Setup Breakfast	Dinner Setup	Lunch Setup	Clean Cabin Dinner Cleanup
Dallin	Baptism / Presentation	Breakfast Cleanup	Lunch Setup	Breakfast Cleanup	Breakfast Setup Clean Cabin

Why is Archaeology important?

Archaeology is the study of human activity in the past, primarily through the recovery and analysis of the material culture and environmental data that has been left behind by past human populations which includes artifacts, architecture, biofacts (also known as eco-facts) and cultural landscapes (the archaeological record).

[<http://en.wikipedia.org/wiki/Archaeology>]



- To know where we are and where we are going, we must first know where we came from.
- The purpose of archaeology is to learn about the human race and past societies: what worked and what did not work.
- This allows us to make better decisions for us and our lives, for our families, and for our society.

An Old Kind of Science





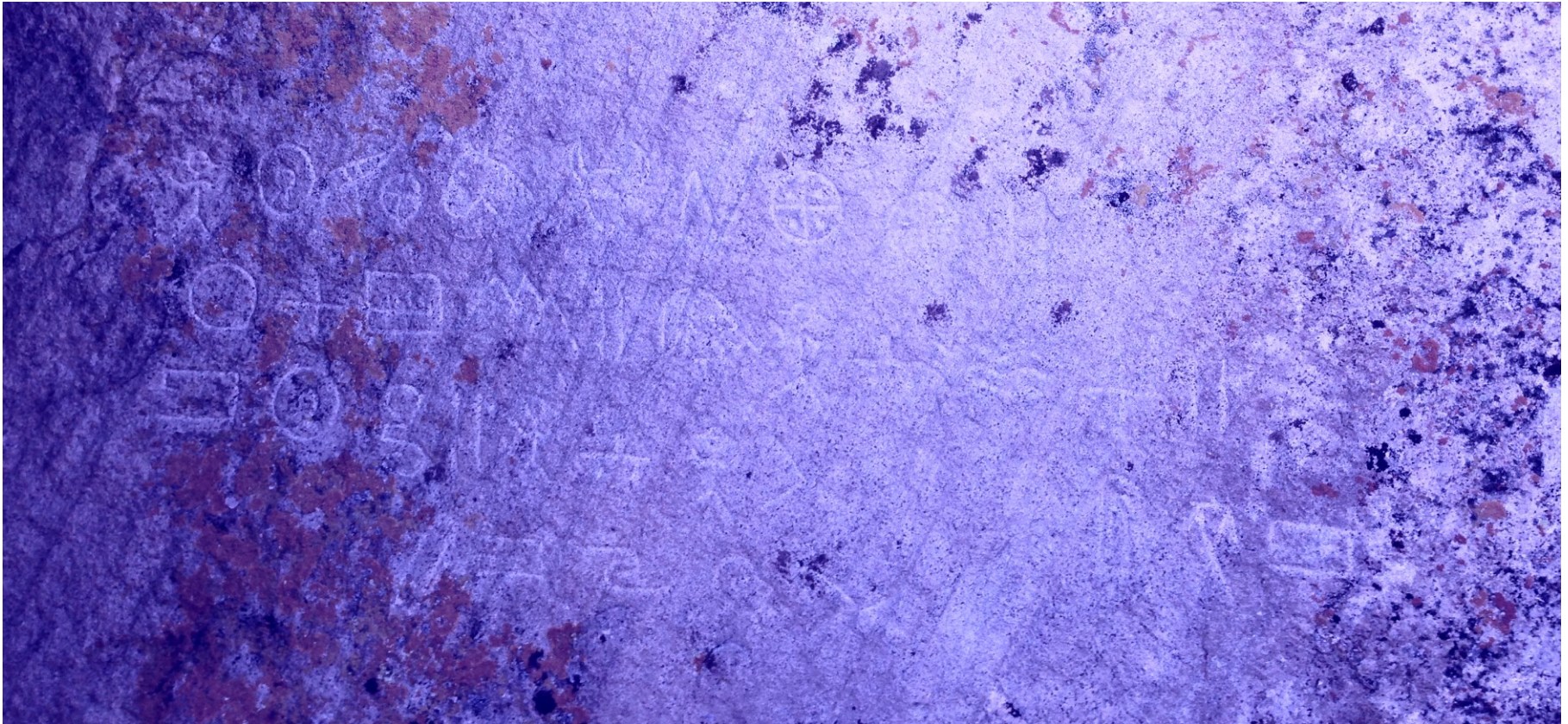
What do you think of those who deface our common history?

**There are
mysteries to
be resolved!**



Who carved these patterns near Cedar?

The place is known as Moroni's Cave.



Family Discovery Center

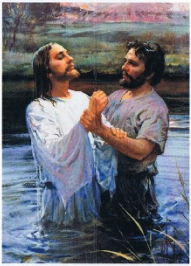


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Sophie's and Dallin's Baptism

May 8, 2010

Colby Cade Wright



"Be thou an example of the believers, in word, in conversation, in charity, in spirit, in faith, in purity."
1 Timothy 4:12

The Church of Jesus Christ of Latter-day Saints
Katy 2nd Ward, Katy, TX

Conducting: Bishop Scott Bauer
Pianist: Andriana Nelson, Grandmother

Music Leader: Marli Nelson, Grandmother

Opening Song: When I Am Baptized

Opening Prayer: Glenda Wight
Grandmother

Talk on Baptism: Roice Nelson
Grandfather

Baptismal Ordinance: Jared Alvin Wight
Father

Witnesses: Ryan Wight and Shay Wight
Uncles

Video Presentation

Talk on Holy Ghost: Jack Wight
Grandfather

Musical Number: I'm Trying to Be Like Jesus
Taylor & The Jakers!
Emilee, Savannah, Michael, Bradley,
Hannah, Abby, Benjamin, Macy,
Caden, Matthew, Carson (Cocoksu)

Confirmation: Jared Alvin Wight

Remarks: Jeanne Johnson, Primary President

Bishopric Welcome: Bishop Scott Bauer

Closing Song: I Feel My Savior's Love

Closing Prayer: Mabel Wight
Great-Grandmother

Please join us for refreshments to celebrate Colby's baptism after the service.



We all know that Colby is brilliant[®] but he is so much more than that for our family. He is an optimist and he is excited about life. He wants to try anything and be a part of everything. His energy is contagious. He is an avid reader, loves soccer, piano, swimming, fishing, chess, and playing with his cousins. He is very much looking forward to starting Cub Scouts. He is a helpful and thoughtful older brother, always willing to share what he knows with his sisters. We are so proud of Colby's decision to get baptized and we look forward to many fun years of watching him discover, develop, and serve. We know he is going to do great things for the world and for his Father in Heaven.



Grant Matthew Nelson



Taylor Robbyn Wright



Ella Dawn Nelson



Halle Nalisse Wright

When I Am Baptized

1. I like to look for rainbows
Whenever there is rain,
And ponder on the beauty
Of earth made clean again.

2. I know when I am baptized
My wrongs are washed away,
And I can be forgiven,
And improve myself each day.

Chorus:
I want my life to be as clean
As earth right after rain,
I want to be the best I can
And live with God again.

I Feel My Savior's Love

1. I feel my Savior's love
In all the world around me,
His Spirit warms my soul
Through everything I see.

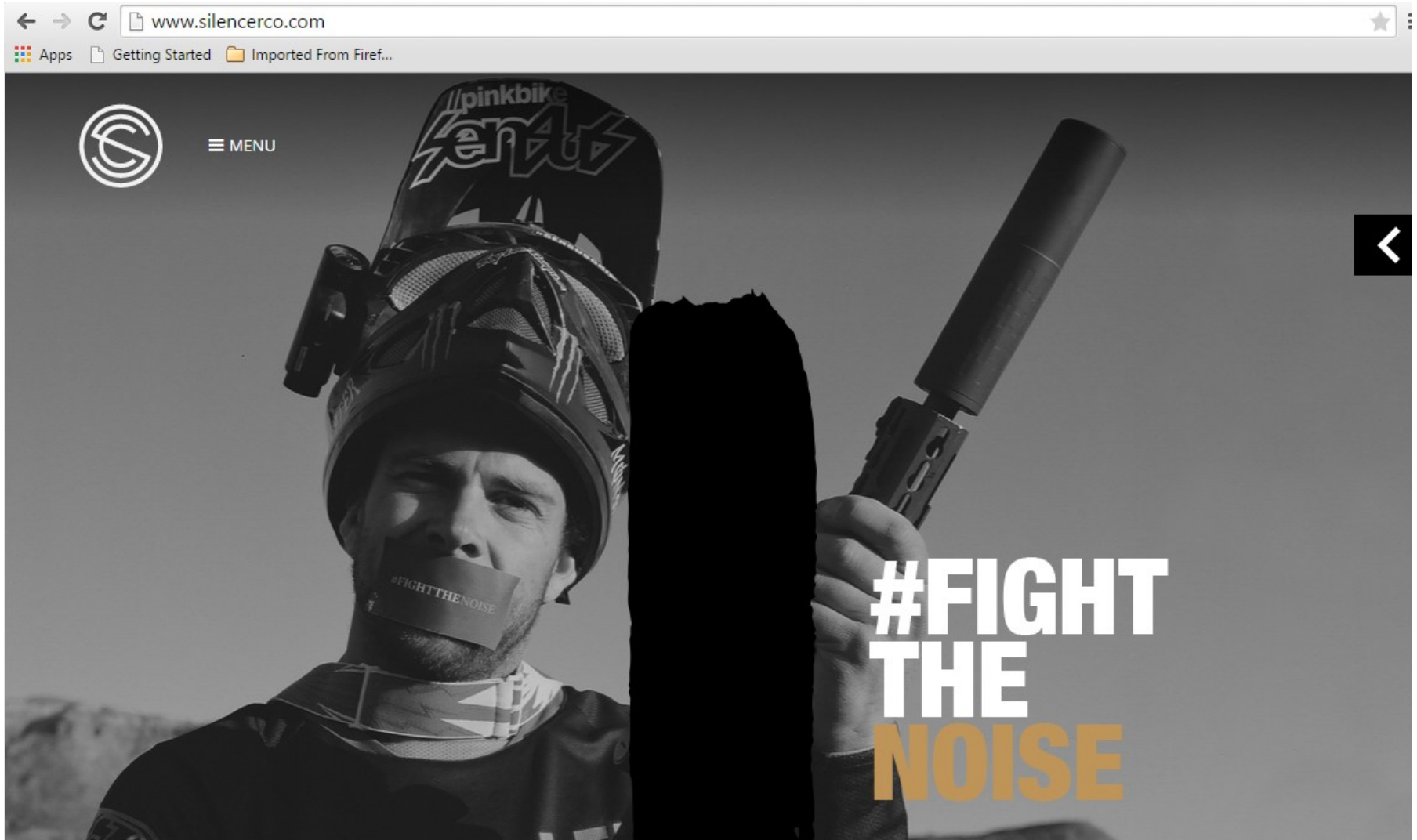
2. I feel my Savior's love:
His gentleness, His kindness,
And when I kneel to pray,
My heart is filled with peace.

3. I feel my Savior's love
And know that he will bless me,
I offer him my heart,
My shepherd he will be.

Chorus:
He knows I will follow him,
Give all my life to him,
I feel my Savior's love,
The love he kindly gives me.

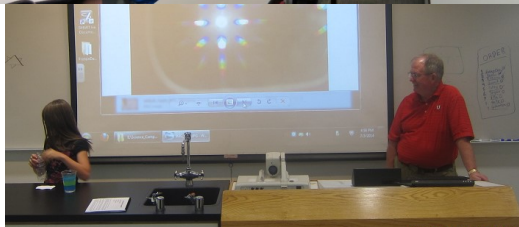
Join the Baptismal Teaching class, detail, & copyright © 2007, Intellectual Reserve, used by permission.

SilencerCo

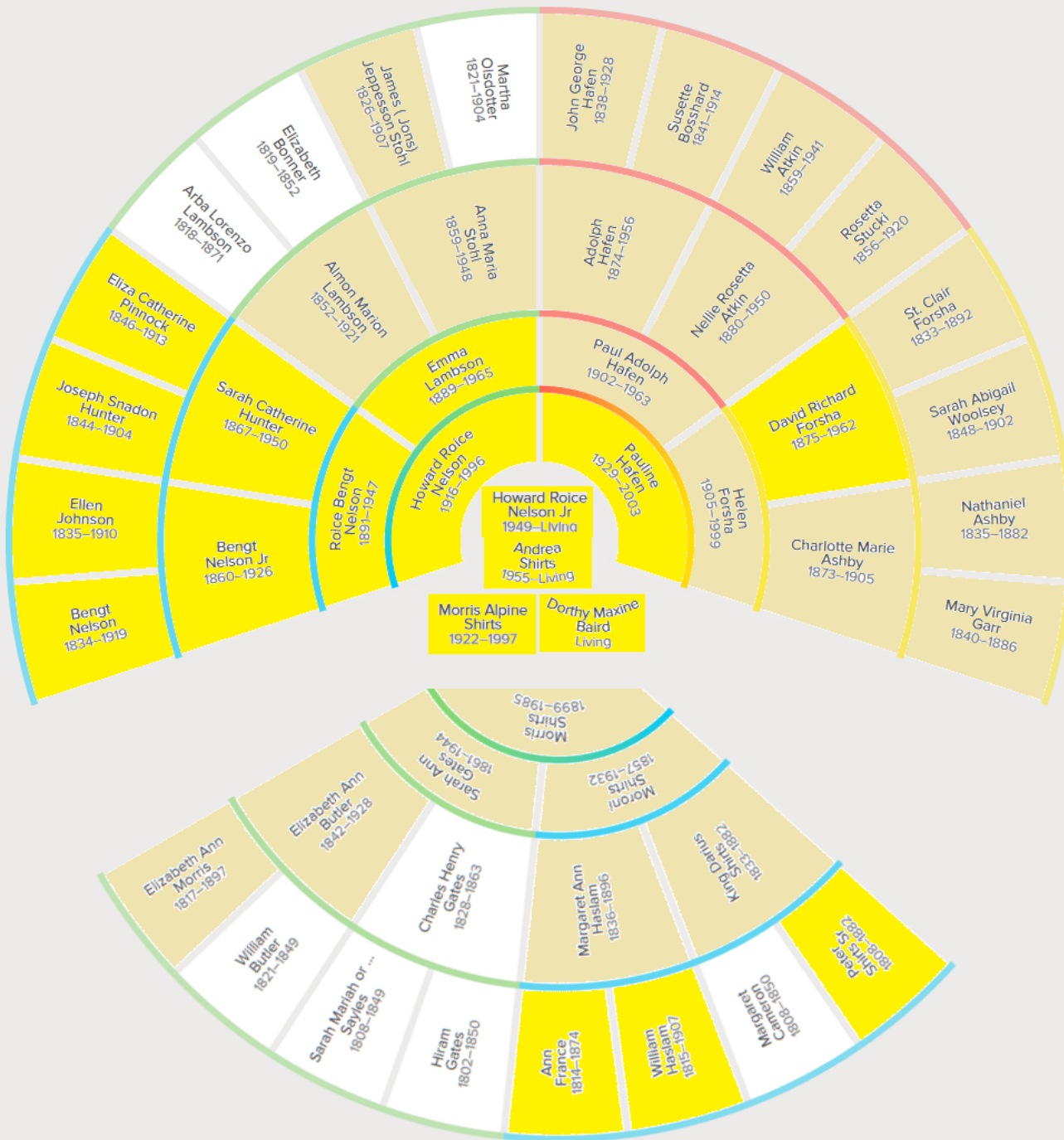


Never, never, never point a gun or a bow at another person.

Reports



Ancestor Stories & Histories



MUSIC & THE SPOKEN WORD

ATTEND A LIVE BROADCAST

Visitors to Salt Lake City are invited to attend the live weekly broadcast of Music & the Spoken Word, featuring the Mormon Tabernacle Choir, Sundays at 9:30 a.m.

Admission is free and limited to those eight years of age and older.

Doors open at 8:25 a.m. Guests should be seated by 9:15 a.m., when the doors are closed.

The broadcast is 30 minutes in length and ends at 10:00 a.m.

The broadcasts are held in the Salt Lake Tabernacle every month except June, July, August and December. During these months, Music & the Spoken Word moves across the street to the Conference Center to accommodate larger audiences.

Free parking is available year-round in the Conference Center underground parking garage. Enter northbound at the intersection of West Temple and North Temple streets.

The Mormon Tabernacle rehearses every Thursday evening in the Tabernacle. Most rehearsals are open to the public. Doors are opened at 7:30 p.m. and rehearsals typically run 90-120 minutes. During the months when broadcasts are held in the Conference Center (see above), rehearsals take place there.





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at the Natural History Museum of Utah



NATURAL HISTORY MUSEUM OF UTAH

Rio Tinto Center | University of Utah

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Coiled story basket
Mary Holiday Black
Navajo
UMNH ET454





PARKS

ACTIVITIES

RESOURCES

SEARCH

RESERVE



Fremont Indian State Park And Museum

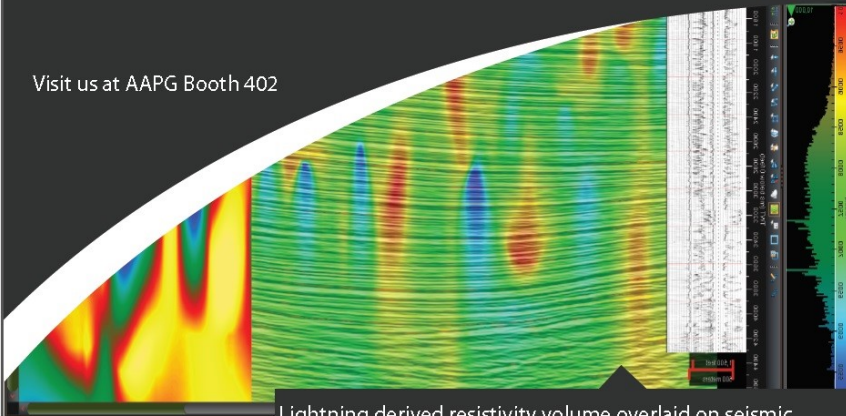


Status Report on Grandpa's work with Lightning Data

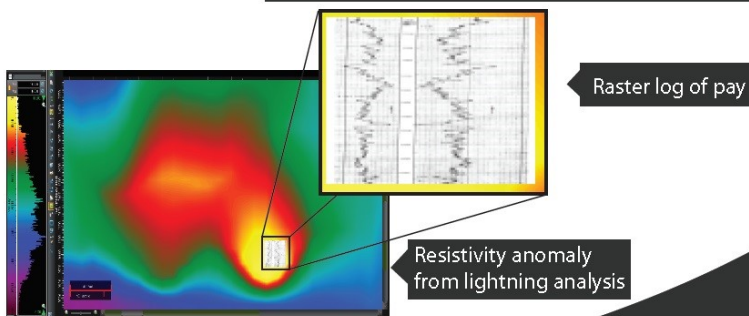


Use Lightning Analysis for Resource Exploration

Visit us at AAPG Booth 402



Lightning derived resistivity volume overlaid on seismic



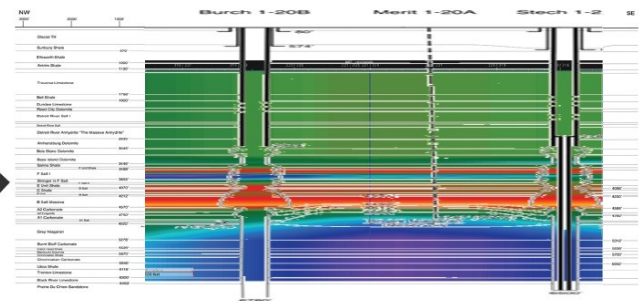
Learn More

See DML's Paper
Tuesday, 4:25 PM
Room 702/704/706



Lightning Resistivity Volume: Michigan

MIT Test Site & Resistivity



Anasazi Ruins Escalante



Ridge Road





Petrified Forrest

What People are Talking About



Escalante State Park

State Park Entrance



© Utah.com

Escalante Petrified Forest State Park

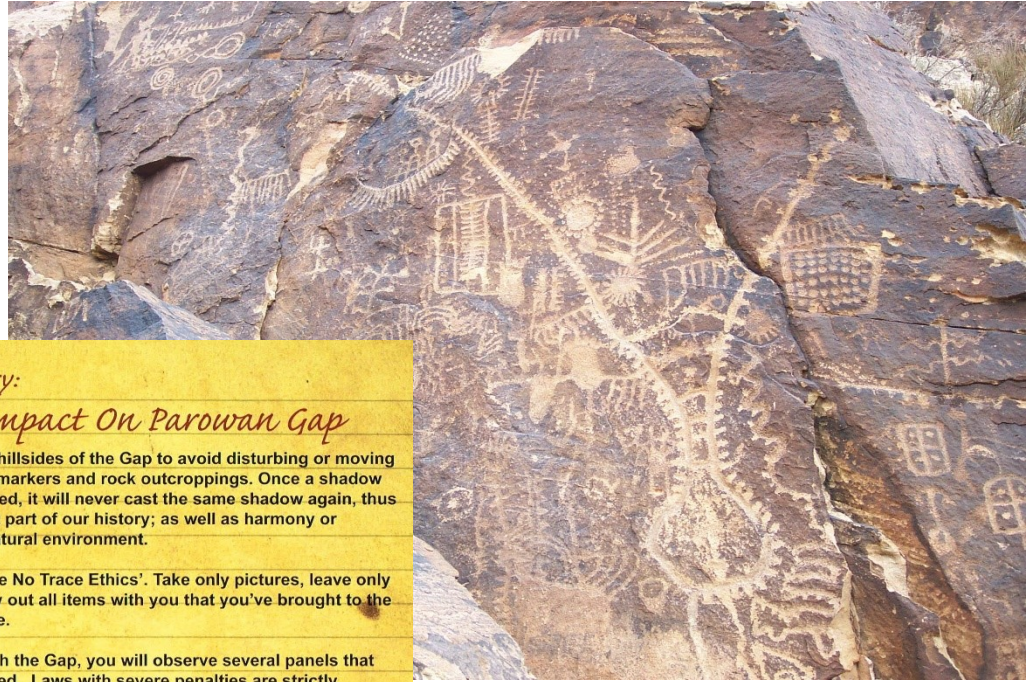


© Utah.com

Bryce Canyon



Parowan Gap



Journal Entry:

Wild Medicine:

Traditional Paiute Uses Of Natural Resources



Even today, the Paiute Indian Tribe of Utah continues several of their traditional activities at the Gap, much like their ancestors did. One tradition is collecting and using native plants for time honored medicines. Along the sides of the Gap, you can see several of the wild plants that are still being used.

SPEARMINT or *Mentha spicata*. The leaves are boiled for tea and drunk for stomach ache.



INDIAN OR BRIGHAM TEA or *Ephedra Nevadensis* is used to clean out the system and speed up heart rate. The leaves are simmered for tea. Also known in Paiute as Ootoop.

SAGEBRUSH or *Artemisia tridentata*, the leaves of the sagebrush are used on bruised areas, it takes out the swelling. It can be used as a tea to help with bad colds. Richards says "it's really bitter." Sagebrush is also used for ceremonial purposes.



RABBITBRUSH or *Chrysothamnus nauseosus* The root of the brush could be chewed like chewing gum, while the branches were made into dolls. When the rabbitbrush flowers, the Paiute know to go pinenut hunting.



PINYON *Pinus edulis* and *monophylla*. The nuts are eaten raw or roasted. The "pitch" or sap of the tree was used as chewing gum. It was also used in the manufacture of water jugs. The pitch also has medicinal uses as disinfectant and salve.



Journal Entry:

Your Impact On Parowan Gap

Please stay off the hillsides of the Gap to avoid disturbing or moving any of the shadow markers and rock outcroppings. Once a shadow marker rock is moved, it will never cast the same shadow again, thus losing an important part of our history; as well as harmony or balance with our natural environment.

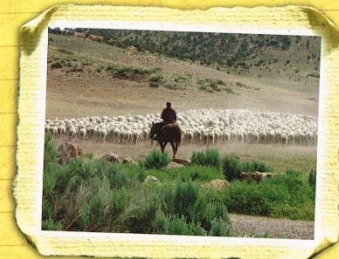
Please follow 'Leave No Trace Ethics'. Take only pictures, leave only footprints and carry out all items with you that you've brought to the Gap when you leave.

As you walk through the Gap, you will observe several panels that have been vandalized. Laws with severe penalties are strictly enforced to protect our past and preserve these resources for future generations. Each of us has a responsibility to help preserve this and other archaeological and historically significant sites. Please report any vandalism to the local BLM Office at 435-586-2401 or the Iron County Sheriff at 435-865-7500.

Journal Entry:

Other Current Uses Around The Gap

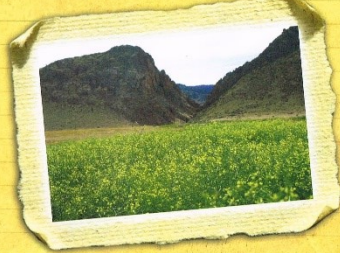
While the BLM oversees the archeological and historical activities of Parowan Gap, they also issue limited permits for recreational use and livestock grazing in the area. You are free to carefully observe the abundant wildlife and hike the area. Please observe the "Leave No Trace Ethics." Please be aware the Utah Prairie Dog is protected by the Endangered Species Act and golden and bald eagles are protected by the Eagle Protection Act. Many birds are also protected under the Migratory Bird Treaty Act as well.



Emma Lambson Nelson's
Piute basket

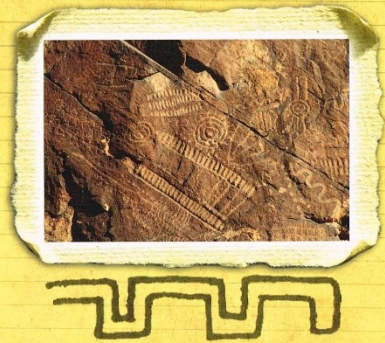
Welcome to the Parowan Gap

This is a place of stark beauty, everyday activities and cosmic phenomena. Come travel through time, examine what ancient people have left behind. Learn of native people, Spanish explorers, 19th Century pioneers and read the words of those who have lived here and studied this remarkable place. Like a journal, the natural state of Parowan Gap records the connection between the past, present and future.



Diverse groups of people derive vast and varied meanings from the Gap through the study of location, geographic features, or the symbolism of the petroglyphs. Discussions of the Gap's meanings and values continue today as people from all walks of life seek to discover its origin and purpose by considering a host of various theories based in culture, science, oral history and opinion.

Visitors today may virtually travel through time by studying historic records and writings and learning from the experiences of past generations who teach the importance and relevance of this place. Stories of the Gap have been conveyed through diverse perspectives from the Native American people to Spanish Explorers and 19th Century Pioneers. Throughout time, the one consistent thread which ties bygone eras with the people of today is a shared value and appreciation of this site as one of great significance.

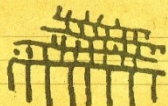


that closely resemble those from other Utah and Southwestern areas. These figures carry similar intent and meaning, area-to-area.

There is little question that the earlier Archaic peoples made use of the easy passage provided by the Gap and probably produced some of the petroglyphs. Most researchers however, maintain that the great majority of the Parowan Gap figures were created by the Fremont.

By approximately A.D. 1300 the Fremont had migrated from the valleys of Central and Southern Utah, as did many other agricultural groups from seemingly favorable areas of Arizona, Colorado, New Mexico, and Nevada. The Fremont were replaced by groups of people who followed the hunter-gatherer lifestyle. Locally the Paiute filled this niche and were in residence when the Mormon Pioneers began to colonize the area in the mid-1800's.

The Paiute people today still reside in the area. They share their views in subsequent journal entries.



Listed on the National Register of Historic Places, Parowan Gap is administered by the Bureau of Land Management. Many groups with special ties to the Gap have partnered with the BLM in a spirit of positive, proactive stewardship and developed interpretative materials for this site including: The Paiute Indian Tribe of Utah, the Hopi Tribe, Cedar City-Brian Head Tourism Bureau and the Parowan Heritage Foundation.

The purpose of this brochure is to touch on just a few of many schools of thought that exist regarding the site's significance. While this material only scratches the surface it is our hope that the information presented here may serve as a catalyst to open further discussion. We encourage visitors to further expand their own educational experience by studying additional resources on the site. Visitors are welcome at Parowan Gap, but all visitors are asked to treat the area with respect while learning the sites significance and intrinsic value. When sites are damaged in any way, much of the history is lost forever, denying future generations of the site's significance and value.



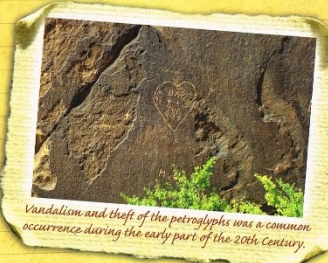
As you explore this site, please treat these features with the utmost respect.

Journal Entry: Explorers And Settlers: Logging Historic Visitors To The Gap

In 1776, the Spanish Dominguez-Escalante expedition traveled past the Gap in an unsuccessful attempt to find a travel route from New Mexico to Monterey, California. Their decision to turn around, known as the "Casting of the Lots", took place just a few miles from the Gap. A quarter of a century later, Spanish traders began using a New Mexico to California route that became known as the "Old Spanish Trail".

A century later, the 1849 Parley P. Pratt expedition, explored the area for new settlements, and recorded the Gap in their journals. Several members of the party believed the Gap to be the place the Ute leader, Chief Wakara deemed as "God's Own House," indicating to Mormon settlers that Parowan Gap was considered an American Indian sacred site.

In 1974 Parowan Gap was placed on the National Register of Historic Places. Upon the restoration of the Paiute Indian Tribe in 1980, the Gap was included in their territorial lands.

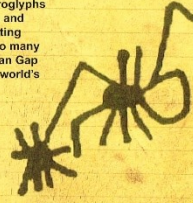


Vandalism and theft of the petroglyphs was a common occurrence during the early part of the 20th Century.

Journal Entry: Nature's Showcase: The Gap's Natural Features

Parowan Gap has two distinct connotations, one natural, one man-made. The three mile long pass near Parowan, Utah, which connects the Parowan and Cedar Valleys, is a classic example of a wind gap—an unusual geological landform marking where an ancient river has cut a 600-foot deep notch through the Red Hills. In addition to holding a geologic record, remarkably the strata near the east end of the pass also preserves dinosaur tracks of the Cretaceous period.

The Gap is nationally recognized due to the number and quality of its petroglyphs. The site is heralded as a kind of "gallery" of exquisite and well-preserved American Indian rock carvings. Geometric designs, images of lizards, snakes, mountain sheep, bear claws and human figures (or anthropomorphs) adorn the smooth Jurassic period, Navajo Sandstone walls. The Gap is believed to house one of the most concentrated collections of petroglyphs in the West, with over 90 panels and 1,500 figures, some possibly dating back almost 5,000 years. With so many petroglyphs present, the Parowan Gap could be considered one of the world's largest journals.



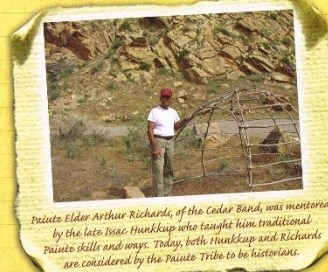
Journal Entry: Pages Of Time: The Gap's Formation

According to geologists, the Gap was formed millions of years ago. The steeply dipping rock forming the Gap is the Navajo Sandstone, evidencing a period 200 million years ago when most of Utah was blanketed by a wind-deposited sand, which probably resembled a Saharan Desert-like environment. Since the Navajo's deposition and

The American Indian Perspective

American Indian history isn't recorded in books; rather it's passed down through stories, demonstrations, dance, and song. Groups with ways of life akin to the Hopi and the Ute once inhabited these regions; today, bands of the Paiute Tribe remain in the area.

Journal Entry: Those That Remain: From The Paiute Indian Tribe Of Utah



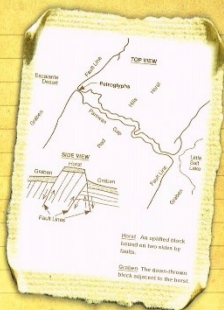
Paiute Elder Arthur Richards, of the Cedar Band, was mentored by the late Isaac Hunkkup who taught him traditional Paiute skills and ways. Today, both Hunkkup and Richards are considered by the Paiute Tribe to be historians.

Today the Paiute people convey the story of their tribal ties to Parowan Gap through their elders, one of whom is Elder Arthur Richards.

According to Richards, long ago the Gap was a beautiful place where water ran through it from the mountains. The Indian people, the first settlers, used the Gap as a main thoroughfare as they traveled back and forth from East to West.

Some of the people stopped and stayed at the Gap for a period of time. As they did, they left writings on the rocks. The area became a sacred site because of the visiting that took place. In winter the Gap area was covered in snow while in the summer the area was lush green.

transformation into stone, this area has been covered by thousands of feet of other sediment and volcanic rock. These rock units have been tipped and faulted by regional compression and extension events in the earth's crust. At the Gap, erosion has removed these overlying rock units. Due to its erosion resistance, the Navajo Sandstone ridge is a prominent exposed feature of the Gap area.



Journal Entry: Pre Historic Artisans: The People Behind The Petroglyphs

The many years of archaeological and geological research that continues today, verifies human occupation for at least 12,000 years or more in what is now known today as Utah. Transient hunters who tracked the large, now extinct animals of the late Pleistocene era (the time of the mammoth, giant bison, sloth camel, etc.) arrived first on the scene. As the area became warmer and dryer the "Archaic" lifestyle developed. These people practiced a more diversified economy through seasonal migration of following the resources as they became available, sometimes in rather far-reaching areas.

By at least A.D. 1, the practice of agriculture had moved from the Valley of Mexico into the American Southwest. By A.D. 500 the farming people known as the "Fremont" occupied the Parowan Valley - just beyond the east end of the Gap. Though the Fremont lived in permanent pit house villages, they grew wheat and other staples and made high-quality ceramics. They continued to hunt and gather to supplement or replace their crops in bad years.

Closely related culturally to the Hopi and other Southwestern tribes; the Fremont are thought to have made figures in the Gap sandstone

Richards learned from his mentor Isaac Hunkkup to build wickiups. These rounded structures made from willow branches, bound by willow bark and branches with leaves woven through the frame. A wickiup could also be covered by hides. When the Paiutes left the harsh winter climates in search of warmer lands, they left their wickiups for other travelers and to have some shelter when they returned.

According to Richards, small lakes with big fish were present in the Gap area. He recounted a legend of two brothers who went swimming, one was eaten by a fish. The other brother took a knife and cut the fish open so his captured brother could get out. Richards also noted that the land was once covered by water. People survived by climbing up the rocks, so "The Creator" turned them into big black ants. Even today the big black ants still get "crazy and climb up on the rocks when it rains."

Journal Entry: Stewards Of The Earth: From The Hopi Tribe

The Hopi people, or Hopisimom, with their story of our emergence from the Grand Canyon, entered into a sacred Covenant with Maasaw, the Earth Guardian. The Covenant declared their responsibility to be preservers, protectors and stewards of the Earth.

In accordance with that Covenant, some of their ancestors, or Hisatsinom, "People of Long Ago," migrated through the Parowan Gap. They settled in surrounding areas, and then migrated from Parowan Gap to Hopi, Tuuwanasavi, the Spiritual Center of the Earth. This is why the modern day Hopi Tribe claims cultural affiliation, or a shared group identity, with the so called "Fremont" prehistoric cultural group.

The rock "writings" at Parowan Gap include clan signs, like signatures, directional references, like maps, and references to ceremonies and songs, like the Ten Commandments. The spiral is the Hopi migration symbol.

The rock markings of Hopi ancestors at Parowan Gap are a manifestation of their stewardship through thousands of years, and their testimony in the fulfillment of their Covenant with Maasaw.

Journal Entry:

Perspectives on Petroglyphs meaning



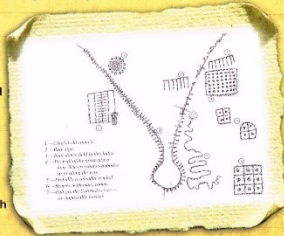
What is the meaning of these inscriptions and why are there so many at this location? Some believe that these glyphs are meaningless doodling. Simple observation tells us that this must be far beyond graffiti. Many glyphs here are deeply incised in the rock face, planned with geometric precision, and inscribed with great skill.

Although there are several interesting theories about the writings, the true meaning of the petroglyphs remains a mystery. Modern Indian tribes do not claim to fully understand their meaning. During the early 20th century some of the "writings" were lost due to vandalism and modern roadwork, so today the story cannot be completed.

The most notable of these geometric forms is the Zipper Glyph, generally the first glyph you see along the main panel just west of the parking lot.

In 1940, a Paiute Tribal member told newspaper editor Frank Beckwith that the Zipper petroglyph illustrates a map of travels. Also, local historian Alva Matheson was told that when the Paiute tribe was ready to leave the gap they sent out a scouting party. On their return, the scouts drew a map symbolizing the time taken and their journey path depicted by the Zipper Glyph.

During the 1960's, LaVan Martineau, an adopted son of the Paiute people, extensively studied petroglyphs throughout southern Utah and Nevada, including Parowan Gap. He began studying petroglyphs using crypto analytical methods and concluded that the rock writing was based on a sign language that was essentially universal.



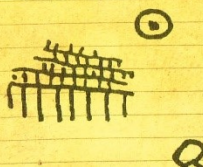
The existence of the symbolized writing systems lacking any phonetic components predates systems using alphabetic symbols. Martineau believed that petroglyphs are historical accounts of actual events and that even the surface of the sandstone petroglyph has special significance to the story being told.

In 1990, archaeoastronomy researcher Howell L. "Nai" Morris, and archeologist Garth Norman, began a ten-year study of the Parowan Gap petroglyphs. Their findings concluded that some of the Gap petroglyphs are solar and lunar calendars. While the theories of Morris and Norman are very compelling, they are still under review by the scientific and the American Indian communities.

The Archaeoastronomy Perspective

Archaeological research recognizes that a principal of survival for early civilizations was the creation of localized sundials and calendars, much like the Meso-American civilizations in South and Central America. The ability of these groups to observe and chart the cyclical and seasonal movement of the sun, the moon and the stars assisted them in knowing when to plant and harvest their crops, and to prepare for winter. Understanding seasonal changes allowed these early civilizations to plan their personal fertility and birthing cycles.

Morris and Norman believe that when American Indians came to the Gap, they discovered that Mother Nature had provided them with a natural solar and lunar calendar system with outcroppings and shadow markers. They believe that Parowan Gap, is a one of a kind phenomena, even more unique than Stonehenge, because it is a naturally formed structure rather than man made. Morris & Norman theorize that the only human hand involved in the Gap was a Shaman or spiritual leader who inscribed upon the stone panels instructions on how to use the outcroppings, shadow markers and geography of the mountains to tell time and seasons.



Journal Entry:

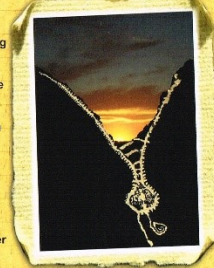
The Zipper Glyph

When you explore Parowan Gap you'll notice that the typical glyph is a geometric form with some repetitive element like dots or lines incorporated. Morris and Norman believe that the repetitive elements, or tick marks, represent something else; like a day, or month or even a year.

Morris and Norman believe that the main glyph or "Zipper Glyph," may have been created to serve as a solar calendar. Early in their research, the scientists placed an outline of the zipper glyph on a topographical map. They found that the outline conformed to the contours of the Gap and its surrounding mountain features. Based on this new information and using solar engineering technology, the team discovered a series of cairns (rock monuments) along the valley and foothills on both sides of the Gap opening. Each of these cairns is in direct alignment with the Gap opening.

The researchers believe that, depending on the time of the year, one can observe the rising and setting of the sun through the middle of the Gap opening. The tick marks, which make the glyph look like a zipper, could be interpreted as being individual day markers. Like a map, you can follow the count down from summer to harvest time, back through fall, up to winter and on to spring in time for planting.

The two dangling antenna-like lines at the bottom of the Zipper indicate two rock cairns where one can stand to watch the Summer Solstice. The sun gracefully set down in the middle of the Gap opening. By using a topographical map and aligning sunrises and sunsets on the horizons, the researchers also uncovered a series of cairns that were located along the neighboring foothills marking equinoxes, cross-quarters and several other annual solar events.

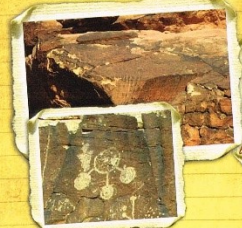


Journal Entry:

Calendaring system

Prehistoric farmers did not have modern day conveniences of clocks, computers and weather stations to tell time and seasons of the year. They relied instead upon predictable movements of the earth, sun and moon. Their culture beliefs gave support to a system of people and individuals living together in harmony with nature and their environment. Research in other American Indian archeological sites, particularly in the southwest, has shown many systems to tell time and seasons of the year. It was vital to their survival to be readily able to tell the season of the year, to plant crops in the spring and to harvest and store food before the onset of winter.

Among these writings, some scientists believe there are solar, lunar, and birthing calendars. Calendar events observed at the Gap include summer and winter solstices, spring and fall equinoxes, and lunar events. An interpretive program including the observation of the Summer solstice sun setting down the middle of the Gap is held annually.



It is important to remember that there is not one right translation of the petroglyphs, as they can be interpreted differently depending on the culture, time period, and background of the interpreter.

Journal Entry:

The Overseer

As you move into the depths of the Gap, turn and face the east, you may notice that the Gap Narrows has an overseer - Tooovts, pronounced Too-Vuts. On the southeast side of the Gap, there is an outcropping in the shape of a human profile with his mouth open. While standing inside the Gap it's possible to watch the morning sun rise over the horizon and move across the sky, enter and pass through the mouth. However, only on two days in November will you see the sun enter the mouth and sit still until all of a sudden the profile swallows the sun. This action could be interpreted as a sign to tell people that the summer sun has gone into its winter home and that cold harsh weather is approaching. Then again in March, the profile will spit out the morning sun, indicating that the summer sun has come out of its winter home and warmer weather is coming.



Journal Entry:

Observation Events

Today, interpretative programs are offered in conjunction with annual solar event observations, including summer solstice, spring and fall equinoxes.

For more information on when these programs will be scheduled, go online to www.scenicsothernutah.com or contact the Cedar City-Brian Head Tourism Bureau at 1-800-354-4849.



Summer Solstice Event

Visitors are encouraged to learn more about this site by researching various authors and sources. The list provided in this brochure includes source references used for this publication and additional sources.

Journal Entry:

A Home & Haven For Animals: Wildlife At The Gap

As you explore the Gap, you may notice petroglyphs of animals. Many of the animals are still found in the area today. Many different wildlife species live in and around Parowan Gap, its canyons, cliffs, broad plains, and forested areas. Some wildlife come for the summer to raise their young, traveling south again in the winter. Many spend the entire year in this area. While others, such as the bald eagle, come to enjoy the relatively mild winters, traveling north for the summer months.

Year round residents include many endangered species who are experiencing population declines. Two of these are closely tied to large areas of healthy sagebrush habitat - the sage grouse and the pygmy rabbit. They may be found on the surviving broad sagebrush plains surrounding the Gap. At the Petroglyph site itself, you are more likely to see black-tailed jackrabbits or cottontails.

Some of Our Other Gap Residents:

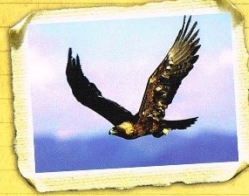


THE UTAH PRAIRIE DOG may be found in grassy or open areas. This particular prairie dog is found only in southwestern Utah and is protected under the Endangered Species Act. While they generally form large colonies in some places, they can be found in small groups around the Gap.



NESTING RAPTORS.

The Gap area has a high concentration of hawks, eagles, falcons, and owls. Many of these nest on large cliffs or rock outcrops, although hawks more often nest in trees. Golden eagles have nested at the Gap continuously for over 20 years.



Special Considerations:

Other, smaller critters also live here. Be sure to watch for rattlesnakes during the summer months. Remember, they are trying to warn you when they rattle, they just want to be left alone. Just go the opposite direction when you hear or see one. Snakes are very valuable in keeping small mammal populations (such as mice) under control.



Preserving The Gap's Resources For Future Generations:

All wildlife need our help to protect their homes, nests, and "grocery stores". Native plants provide food and shelter. Please keep vehicles on established roads or trails. The meadowlark whose song you enjoy, may have a nest just off the road. Eagles and other raptors need peace to raise their young. Please do not climb on cliffs or disturb their nests. We want our grandchildren to enjoy the sight of a golden eagle soaring overhead and to listen to wrens singing in the Gap, or watch sage grouse strut.

Please only take photos of wildlife. Do not drive off road because vehicles destroy plants that wildlife use for food and cover.

Journal Entry:

When The Animals Were Gods: Paiute Traditions On Coexisting With Animals

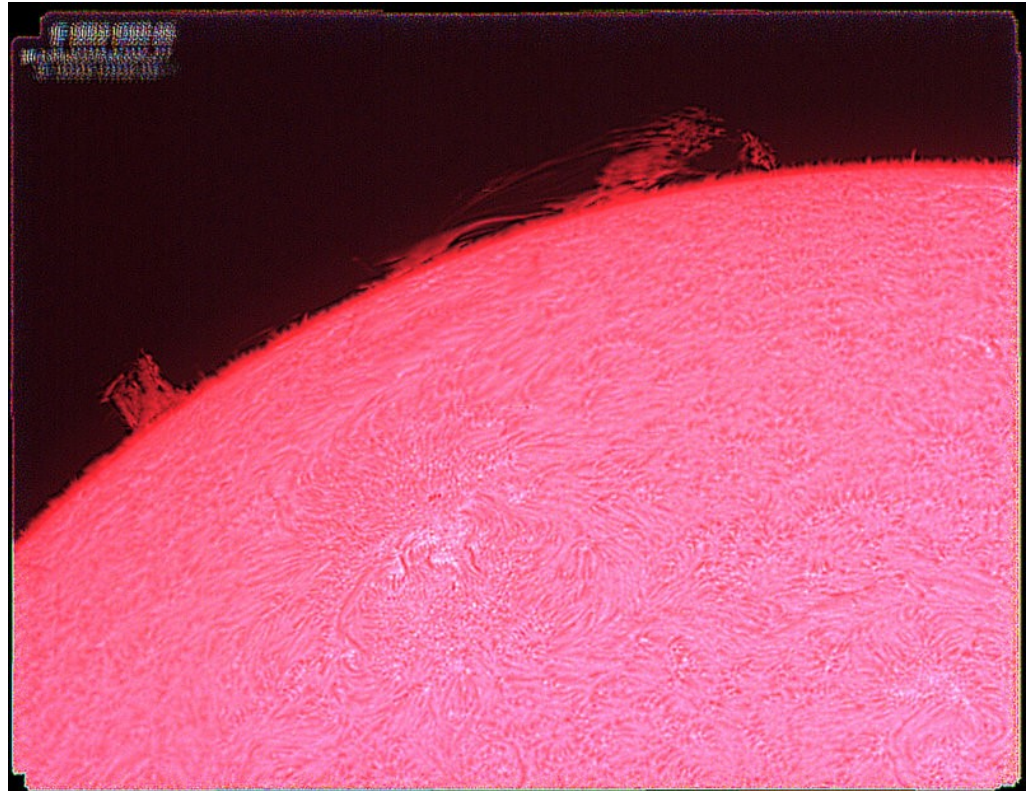
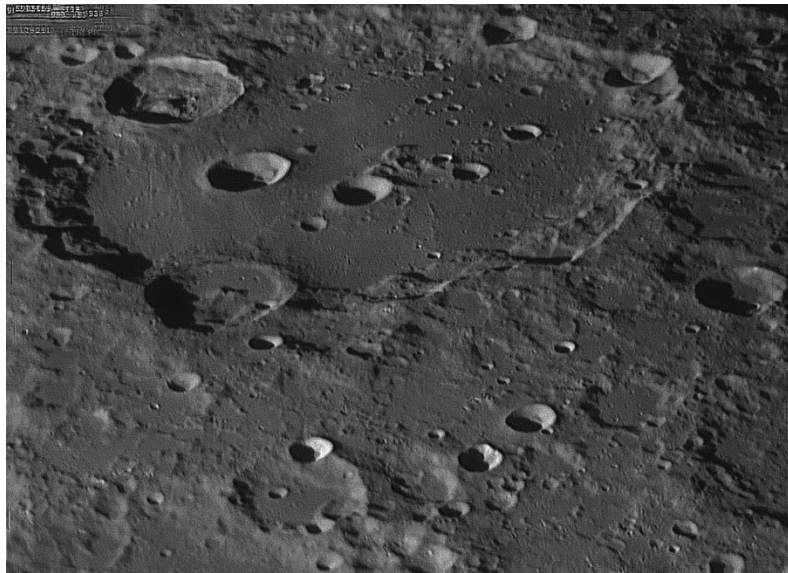
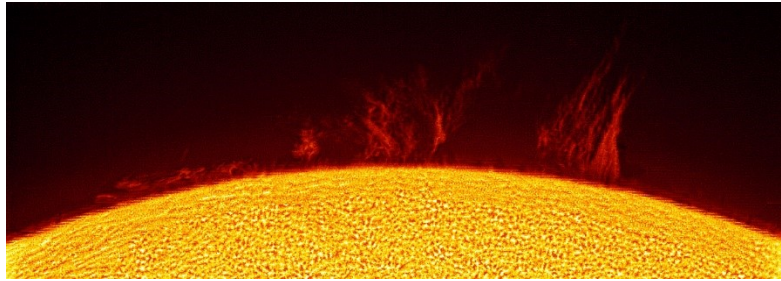
It is the Paiute tradition to respect all living animals. Paiute historian Hunkkup told Richards that "the Creator instructed the early Paiutes how to live on this land and how to hunt the animals." According to Hunkkup, animals were once "Gods". The Eagle said to the Creator, "If the Indians want to eat me it would be alright if they were starving. If not, leave me alone," the legends states. The Eagle is a sacred symbol to the Native people - a great spirit - a great bird. If the Tribe kills the Eagle it's for a purpose. The Eagle gives great powers in battle. The dark Eagle is "good medicine." The white Eagle is "bad medicine." In legend, the Deer said to the Creator, "They can eat me raw or cooked." The leather can be used on the wickiups - for structural strength, when dry it tightens. The Indians liked to eat deer. The Rabbit said the Indians could eat him any time and make rabbit blankets to keep warm during the winter. Hunkkup said the Paiute made blankets and shoes from rabbits, and wintertime is the best time to get rabbit skins. The Paiutes cut the rabbit skins into strips, rolled the strips on buckskin and hung them over trees or rocks to dry, then sewed the strips together to make blankets. Richards said if you hunt rabbit in the winter, the fur won't come away from the hide when you make the skins into rabbit blankets. The Coyote said "Nobody is going to eat me!" So he urinated all over himself. According to Richards, if you get near a coyote you can smell urine.



Nelson Cabin



Solar & Lunar Astronomy with Hilton Long



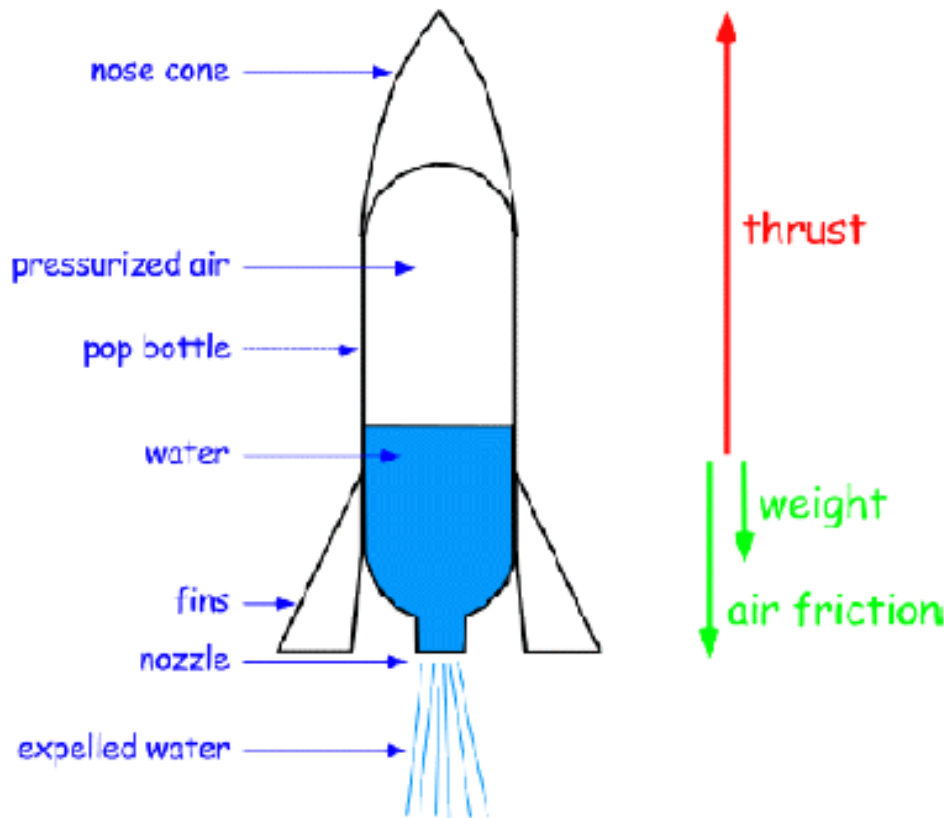
Night Astronomy with Hilton Long, Ray Gardner, & Brent Sorenson



Water Bottle Rockets

2-Liter Water Bottle Rockets Overview

Great detailed website: <http://www.et.byu.edu/~wheeler/benchtop/flight.php>



The equation for thrust, caused by water exiting the nozzle, is:

$$T = (P_{in} - P_{out}) \cdot A_n$$

where $P_{in} - P_{out}$ is the difference between pressure within the rocket and atmospheric pressure, and A_n is the cross-sectional area of the nozzle opening. Thrust is dependent on pressure, nozzle diameter. The amount of water dictates how long the thrust force will be applied, and therefore contribute to the rocket's total kinetic energy.

Water Bottle Rockets continued

The following values are the optimal values for maximum height at 90 psi:

- Air/Water ratio = 0.5 liters
- Dry Weight = 220 grams
- Stabilizer Length = 3.5 inches
- Maximum Height = 350 ft (impact pressure = 120 mph baseball pitch)

Water Bottles with thicker plastic (cord strength) can be pressurized greater; many European bottles have much stronger cord strengths than U.S. plastic bottles.

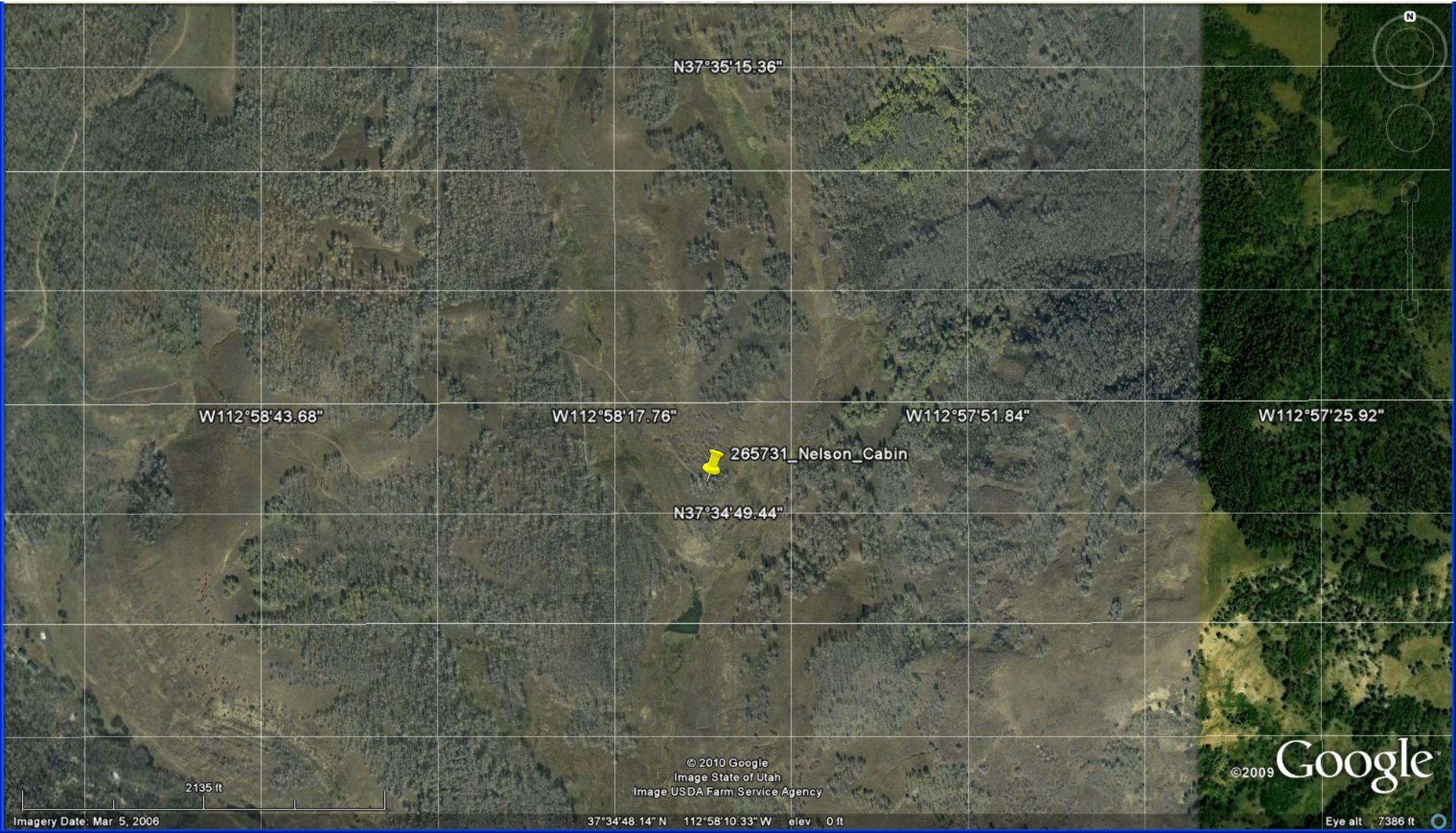
The following mathematical expression yields ~apogee height for a given total flight time:

$$h_{ap} = (g/8)(t_{end})^2 - 3.5 \text{ meters}$$

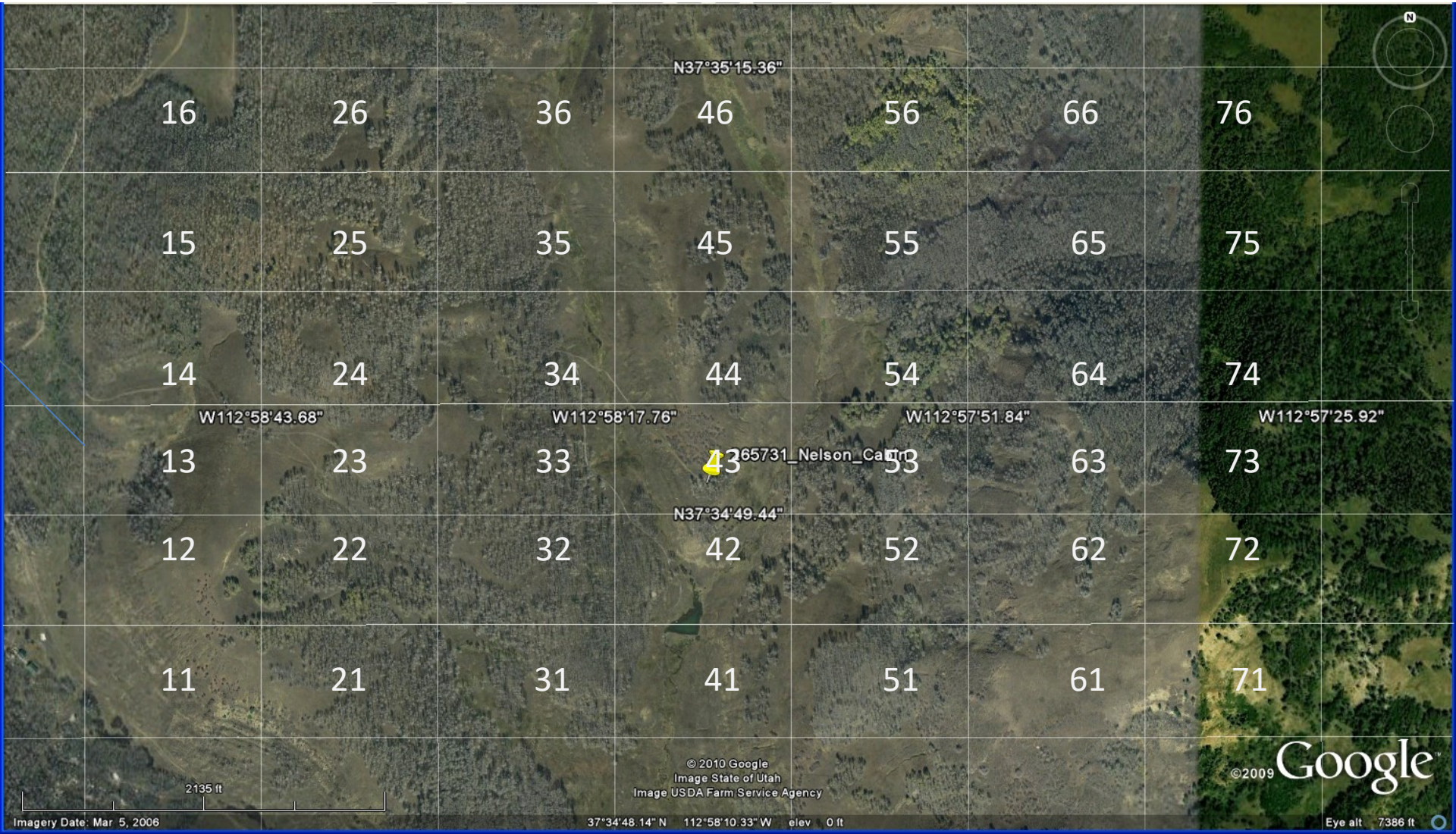
Water rockets, requiring a largish capacity for air and water, are usually large in diameter, this causing a large amount of drag and limiting the height achieved. However, the impulse rating for even a 2 liter water rocket is normally E - four times the impulse of a pyro motor that can be bought over the counter in a high street toy shop.

Motor Impulse Classes	
Impulse /Ns	Class
$I \leq 0.625$	¼A
$0.625 < I \leq 1.25$	½A
$1.25 < I \leq 2.5$	A
$2.5 < I \leq 5$	B
$5 < I \leq 10$	C
$10 < I \leq 20$	D
$20 < I \leq 40$	E
$40 < I \leq 80$	F
$80 < I \leq 160$	G
$160 < I \leq 320$	H
$320 < I \leq 640$	I
$640 < I \leq 1280$	J
$1280 < I \leq 2560$	K
$2560 < I \leq 5120$	L
$5120 < I$	>L

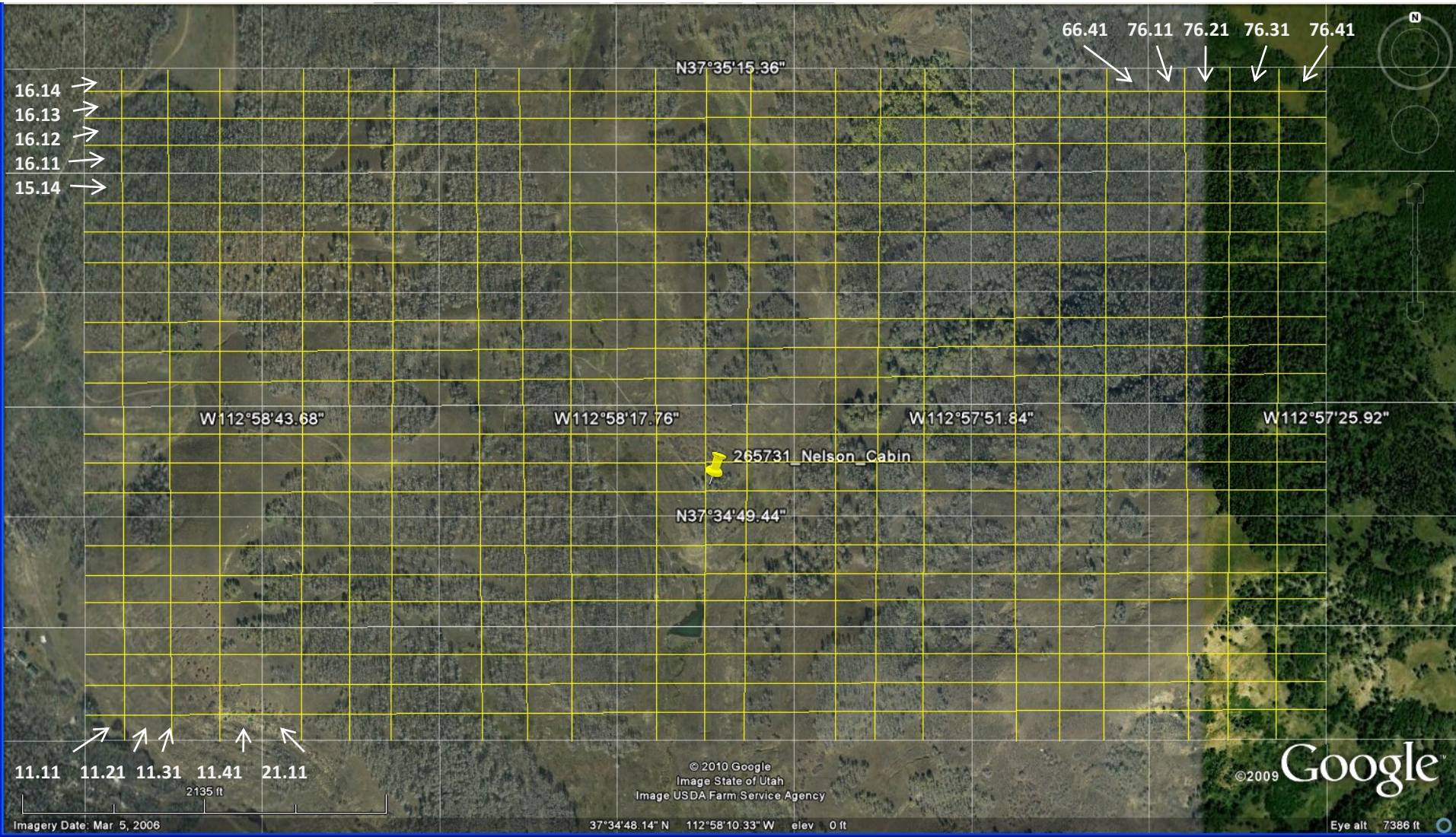
Nelson Cabin Map



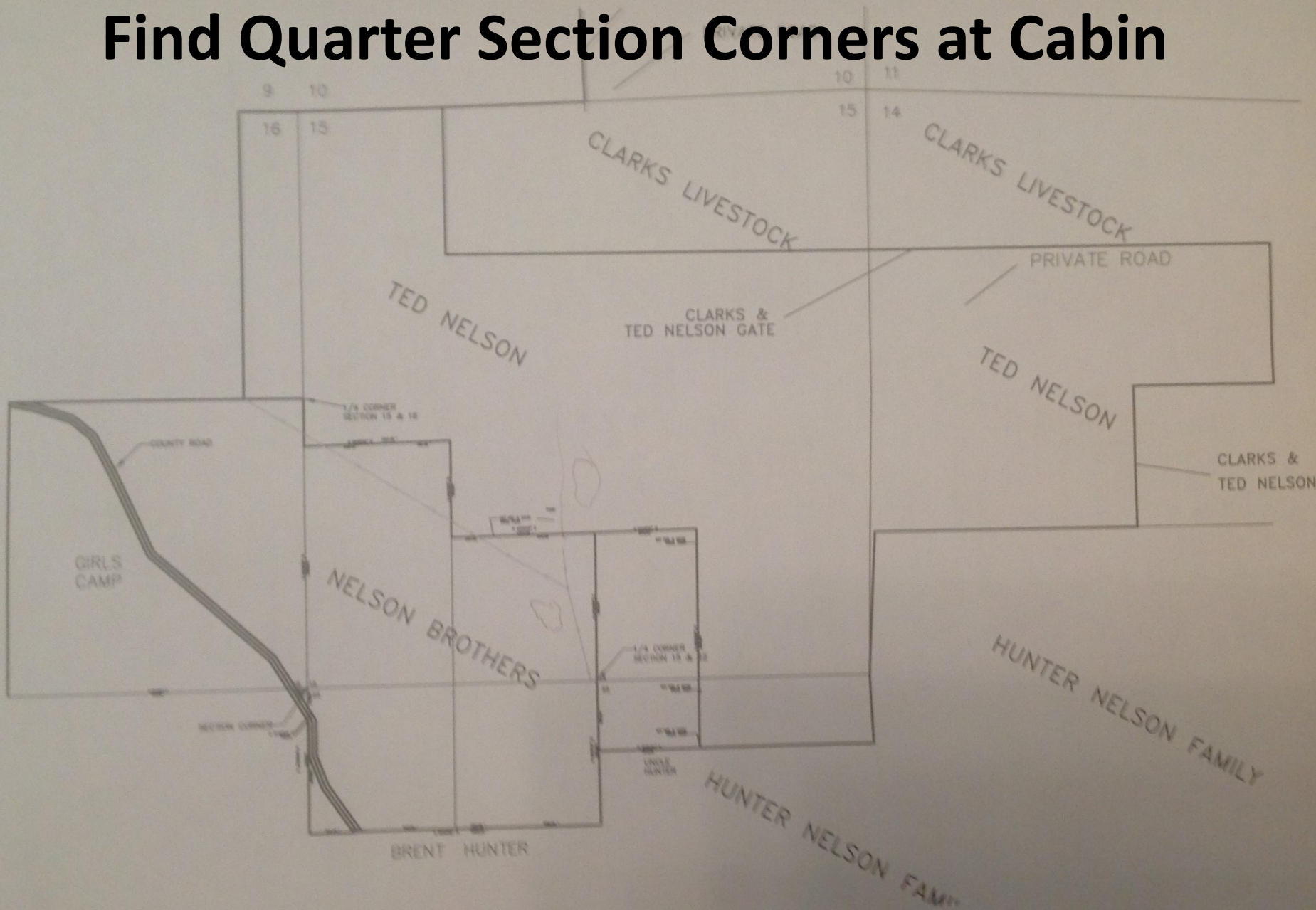
Reference Grid



More Detail Reference Grid



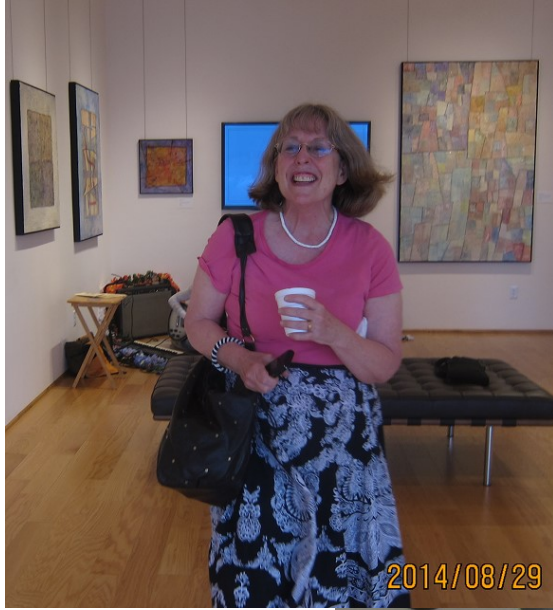
Find Quarter Section Corners at Cabin



Swimming om Cedar City



Dinner with Uncle Des & Aunt Sara



2015 Science Camp

- What was best about 2015 Science Camp?

- _____
- _____
- _____

- What would be your ideal 2016 Science Camp?

- _____
- _____
- _____