

U.S. Department of the Interior  
Bureau of Land Management  
Salt Lake Field Office  
2370 South 2300 West  
Salt Lake City, Utah 84119

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# Crystal Cave Management Plan

## Salt Lake Field Office



**Crystal Cave Management Plan**

**Box Elder Resource Area**

**Salt Lake Field Office**

Department of the Interior

Bureau of Land Management

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**Table of Contents**  
**Crystal Cave Management Plan**

- i. Title Page
- ii. Concurrence and Approval Sheet
- iii. Table of Contents

**CHAPTER 1 – INTRODUCTION**

Purpose and Need for the Management Plan.....	1
Authority.....	1
Public Involvement.....	2
Location and Setting.....	2
Resources in the Management Area.....	3
Biological Resources.....	3
Recreation.....	3
Cultural/Historical Resources.....	4
Water Quality.....	4
Issues, Concerns, and Opportunities.....	4
Biological Resources.....	4
Recreation.....	5
Access & Facilities.....	5
Camping.....	5
Information & Interpretation.....	5
Off-Highway Vehicle Management.....	5
Visitor Permit System.....	5
Cultural/Historical Resources.....	5
Law Enforcement.....	6
Water Quality.....	6
Volunteers.....	6
Monitoring & Mitigation.....	6

**CHAPTER 2 – MANAGEMENT DIRECTION, OBJECTIVES AND PLANNED ACTIONS**

Management Direction.....	6
Visual Resources Management.....	7
Recreation Opportunity Spectrum.....	7
Management Objectives and Planned Actions.....	7
Biological Resources.....	7
Recreation.....	8
Access and Facilities.....	8
Camping.....	8
Information and Interpretation.....	9
Off-Highway Vehicle Management.....	10
Visitor Permit System.....	10
Cultural/Historical Resources.....	12

Law Enforcement.....	12
Water Quality.....	13
Volunteers.....	14
Monitoring & Mitigation.....	14

**LIST OF ACRONYMS**

**REFERENCES**

**APPENDICES**

Appendix 1 – Crystal Cave Visitor Use Permit Form

## CHAPTER 1- INTRODUCTION

### Purpose and Need for Management of Crystal Cave

The purpose of this project is to secure, protect, and preserve Crystal Cave for the future use, enjoyment, and benefit of the public. Specifically, the plan will enhance the protection of Crystal Cave's sensitive cave resources, and protect Townsend's Big-Eared Bats (TBB), *Corynorhinus townsendii*, that seasonally occupy Crystal Cave. Over the past several decades, fragile and unique formations in Crystal Cave have been damaged or illegally removed, and critical bat habitat is continually being disturbed by uncontrolled visitor use. A gate coupled with a permit system will allow the BLM to control access and also provide an opportunity to educate the public on the need to protect cave resources.

The Crystal Cave Management Plan will set forth direction for long-range management, planning, and oversight of this important resource and identify specific management actions for the increased recreation use at Crystal Cave. The plan will emphasize recreational use and habitat protection while providing for natural resource protection and the enhancement of the visitor experience.

### Authority

The FCRPA (16 U.S.C. 4301-4309) requires the Bureau of Land Management (BLM) to protect and maintain cave and karst resources. Specifically, the stated purposes of the FCRPA are "to secure, protect, and preserve significant caves on Federal lands for the perpetual use, enjoyment, and benefit of all people..." The Act further authorizes the Interior Department to "take such actions as may be necessary to further the purposes of this Act. These actions shall include (but not be limited to)...regulation or restriction of use of significant caves..." The Salt Lake Field Office (SLFO) determined that Crystal Cave meets four of the six criteria of significance required under the provisions of FCRPA, and therefore listed Crystal Cave as a significant cave resource in 1994.

The authority for management of Crystal Cave is further delineated in the BLM Instruction Memorandum, #84 – 541, and subject: Cave Management Policy, June 12, 1984. It states that...

"Caves are a natural resource, which have important scientific, recreational, and educational values. As cave resources are non-renewable resources, easily destroyed or permanently damaged. The role of the Bureau of Land Management (BLM) is to protect and manage those resources when they occur on public land..."

## **Public Involvement**

In May 2000, the Secretary of the Salt Lake Grotto, Dale Green, mailed a letter to the SLFO Manager, requesting the installation of a bat-friendly gate to protect a maternity colony of Townsend's Big-Eared bats (TBB) and prevent the continued loss of mineral formations. Upon request, Mr. Green provided the plans for a bat-friendly gate.

Field trips by BLM staff and Salt Lake Grotto members were conducted to assess the cave, monitor the geologic resources and the bat colony. Recommendations to BLM management concerning that field trip included coordination with area NSS Grotto caving clubs to determine support for the bat-friendly gate and controlling access to Crystal Cave; conduct a search concerning mining claims; begin development of appropriate NEPA documents; determine level of commitment with potential partners; and based on the above items; make a decision on placement of a bat-friendly gate.

In November 2003, a public meeting was held at the SLFO concerning the Crystal Cave Gate proposal. Attendees included BLM staff, Timpanogos Cave National Monument staff, members of the Salt Lake Grotto, and the Utah BLM Cave Program Coordinator. It was decided that the BLM would initiate a management plan, including the implementation of a permit system and the necessary NEPA document. Timpanogos Cave agreed to donate most of the materials and labor for installing the bat gate, and the Utah caving grottos also agreed to supply volunteer labor.

Development of the Draft Crystal Cave Management Plan began in January 2004. Comments on this draft plan were solicited in August 2005 via email to interested members of the BLM, NPS, NSS caving communities, and BSA.

This management plan has been developed with the participation and assistance of interested members of the public and the interdisciplinary team within the BLM. The BLM will continue to work closely with the public to provide quality recreational opportunities, comply with regulations, provide safety measures, and protect the living and geologic resources of Crystal Cave.

## **Location and Setting**

Crystal Cave, also known as Crystal-Tecoma Cave, is located in Box Elder County, Utah. The cave was discovered inside an exploratory mine adit around 1900. Mining excavation of the adit ceased upon discovery of the cave. The mine adit runs through dolomite, and the cave is a phreatic solution cave that is developed along structural joints and bedding surfaces in Devonian age limestones of the Guilmette Formation. The entrance to the cave lies on a rocky slope in pinyon-juniper woodlands.

Throughout its long history, Crystal Cave has suffered heavy vandalism to many of its

delicate and most unique formations. In accordance with the Federal Cave Resources Protection Act (FCRPA) of 1988, additional information on the location and specifics regarding the cave have been withheld as proprietary information of the BLM and will only be released to authorized individuals on a need-to-know basis at the discretion of the Salt Lake Field Office Manager.

## **Resources in the Management Area**

### **Biological Resources**

Crystal Cave provides critical habitat for various bat species. Bats have been observed on numerous field visits using the cave and mine adit. The most significant of these species is the Townsend's Big-Eared Bat (*Corynorhinus townsendii*, a Utah sensitive species of concern) which has previously used Crystal Cave as a maternity colony nursing site. Earlier researchers have determined that TBB are particularly sensitive to human disturbance. Disruption of colony sites may force nursing mothers to abandon the site and/or their young.

Average ambient temperatures inside the cave are between 50-60° F year-round. Data on temperature gradients within the cave is not currently available. No data or evidence has been gathered to indicate that Crystal Cave is used as a hibernaculum.

No studies of invertebrate species have been conducted in Crystal Cave.

Evidence of pack rat habitation in the mine adit and cave is also present. Snakes are not normally encountered at Crystal Cave.

### **Recreation**

Most visitors to Crystal Cave are caving enthusiasts, local caving club members, and Boy Scout (BSA) groups from Utah, eastern Nevada, and southern Idaho. Based on recent visitor logs, approximately 75-100 persons visit the cave each year. Most visitation occurs in the spring, summer, and fall during favorable weather. A visitor log has been located at the entrance to the cave for several years.

Recreational visits to Crystal Cave are usually day use only. Some overnight camping does occur with visitors who have traveled from more distant areas. Camping usually occurs at the base of the mountain, where most vehicles are forced to stop. Evidence of camping use has been noted by the presence of both fire rings and trash near the site. Local residents also use the area for recreational excursions.

## **Cultural/Historical Resources**

The Crystal Cave entrance is surrounded by the historic remnants of the mining operation that was responsible for discovering the cave around 1900. Also, there are numerous historical signatures on the walls inside Crystal Cave, some dating to as early as 1926. The Crystal Cave site was culturally surveyed by BLM staff in April 2004. This information is maintained in BLM Salt Lake Field Office cultural files. Following this survey, it was determined that installation of the bat gate and management of Crystal Cave as a recreation site would cause no adverse effect to historic properties, and would enhance protection of the cave resources.

## **Water Quality**

There are no perennial water sources in the immediate vicinity outside Crystal Cave.

Inside the cave, there are two primary fresh water pools located in separate rooms of the cave. Water temperature is usually between 53°F and 55°F. A very severe case of gastro-intestinal disease caused by a virulent strain of *Giardia* has been attributed to ingesting water from one of these pools. Evidence of packrats and bats is frequently encountered inside the cave and may have contributed to the contamination of the water.

All water sources in Crystal Cave are fed by active water drips and have a very high degree of esthetic quality. However, due to the evidence of bat and packrat habitation, this water should not be considered safe to drink. No water quality measurements have been taken.

## **Issues, Concerns, and Opportunities**

The following issues at Crystal Cave were identified by the public and BLM staff during scoping and preparation of this management plan:

### **Biological Resources**

- Disturbance of TBB and other bat species has occurred due to unrestricted visitor access to the cave.
- Bats inhabit the cave on a seasonal basis, and closure dates for the cave should be established that provide for maximize protection of bat habitat while maximizing recreational opportunities for cavers.
- Bats have been observed throughout the cave, including the "twilight zone" near the entrance to the mine adit. The bat gate needs to be located in an appropriate location to protect not only the cave itself, but also the critical twilight zone.
- No data on other biologic resources has been gathered at Crystal Cave.

## **Recreation**

- Access and Facilities
  - The condition of the access route to the cave site should be monitored and maintained.
  - The bat gate should be designed and installed to provide for maximum durability, security, and efficient access for authorized users.
- Camping
  - Appropriate areas for camping should be established and regularly monitored.
- Information and Interpretation
  - Appropriate levels of signing and information dissemination need to be balanced to provide for both cave site security and visitor access.
  - Environmental interpretation and education should be stressed to provide for public health & safety, to promote responsible caving ethics, and minimize visitor impacts.
- Off-Highway Vehicle (OHV) Management
  - Appropriate management of vehicle access, parking, and routes should be established to minimize resource impacts and ensure public safety.
- Visitor Permit System
  - An appropriate amount of visitor access should be determined to balance resource protection and visitor enjoyment of Crystal Cave.
  - Administration of visitor permits must ensure public health and safety.
  - The appropriate group size and number of permits allowed in the cave should be established to minimize resource impacts and provide for a safe and enjoyable visitor experience.
  - BSA caving regulations need to be addressed in the permit.
  - Will fees be charged for obtaining a permit?
  - Additional visitor logs should be utilized to determine where inside the cave most visitation is occurring.

## **Cultural/Historical Resources**

- Important historical resources at the cave site should be protected and regularly monitored.

## **Law Enforcement**

- Search and rescue operations need to be addressed in the plan.

### Water Quality

- Ground water recharge and water sources inside the cave should be protected from human-caused impacts to maintain natural humidity levels affecting cave formations.

### Volunteers

- Appropriate use of volunteer monitors and labor should be utilized to augment BLM staff resources and maximize efficient management of the cave.

### Monitoring and Mitigation

- Regular monitoring and visitor post-use reports should be utilized to maintain resource protection and minimize vandalism to the both the cave and bat gate.
- Regular maintenance and repairs may be required to maintain safe and effective access to the cave.

## CHAPTER 2 MANAGEMENT DIRECTION, OBJECTIVES AND PLANNED ACTIONS

### **Management Direction**

The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. BLM goals for the management of recreation on public lands include improved access to appropriate recreation opportunities, ensuring quality recreational experiences, enjoyment of natural and cultural resources, and providing for and receiving fair value in recreation.

The overall objectives for the Crystal Cave recreation site are:

1. Protect significant cave and karst resources in accordance with FCRPA.
2. Protect critical bat habitat and other biological resources.
3. Provide a safe and appropriate setting for recreational experiences.
4. Improve overall visitor awareness of minimum-impact, leave-no-trace caving ethics.
5. Improve visitor awareness of cave/karst science and conservation.
6. Reduce user conflicts as much as possible.
7. Maintain the primitive and historic setting of the Crystal Cave site.
8. Protect the natural character of landscapes not already disturbed by management activities.
9. Minimize impacts to all natural resources values.

## Visual Resources Management (VRM)

Management actions at the Crystal Cave site must comply with the VRM Class III designation for the area, in accordance with the Box Elder Resource Management Plan (RMP), 1986, as amended. The objective for VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. All changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Management actions at the Crystal Cave site will at all times attempt to blend with the natural landscape and maintain the rustic character of the area. As much as possible, management will pursue a minimalist approach to the development of facilities necessary to achieve goals and objectives.

## Recreation Opportunity Spectrum (ROS)

Based on area size, the Crystal Cave recreation site does not qualify for class designation under the ROS system.

## Management Objectives and Planned Actions

The following objectives and planned actions were developed for those resources that had issues, concerns, and opportunities:

### Biological Resources

*Objective #1: Effectively protect and manage all bat species and bat habitat at Crystal Cave.*

Management Action #1: BLM will monitor bat populations regularly to more accurately determine bat migration and usage seasons at Crystal Cave and identify potential impacts from recreational use. Bat monitoring will be conducted by wildlife biologists trained in bat netting and identification. If monitoring data warrants, BLM will modify seasonal closure dates and/or visitor use regulations at Crystal Cave to ensure effective protection and survivability of sensitive bat populations.

Management Action #2: A locking bat-friendly gate utilizing the best available technology will be maintained at the entrance to the mine adit in order to protect the critical "twilight zone" and all other sections of the adit and cave. The gate will remain locked at all times. Only authorized access will be allowed to the cave.

Regular monitoring and maintenance will be performed on the gate to ensure proper function.

Management Action #3: BLM will encourage, coordinate, and support as necessary additional biologic surveys of Crystal Cave to determine what other biologic resources, besides mammals, may or may not exist at the cave.

## Recreation

### Access and Facilities:

*Objective #1: Maintain the existing character of the Crystal Cave recreation site.*

Management Action #1: Crystal Cave will be managed as a primitive, undeveloped recreation area. Permanent, developed recreational facilities or visitor services will not be installed unless specifically required to deal with issues of public health & safety.

*Objective #2: Maintain appropriate access for visitors to the Crystal Cave site.*

Management Action #1: Consistent with BLM budget and staffing, maintenance and repairs will be completed as needed on the access route and cave gate at Crystal Cave. The mine entrance and adit configuration will not be altered or improved unless public safety or access is threatened.

### Camping

*Objective #1: Proactively manage camping activities at Crystal Cave to minimize resource impacts and threats to public health & safety.*

Management Action #1: Camping will be authorized at the base of the mountain below Crystal Cave near the designated parking area. The topography of the area is suitable and appropriate for camping. BLM will make every effort to limit camping impacts to this area. Authorized camping areas will be marked with designated campsite signs.

Management Action #2: To avoid user conflicts, only one party of visitors at a time will be allowed to occupy the Crystal Cave recreation site. A party of visitors camped outside the cave may include up to 25 individuals. However, at no time can the number of persons inside the cave exceed the maximum group size limit set by BLM Salt Lake Field Office.

Management Action #3: Visitors will not be permitted to camp within one-quarter mile of the entrance to the mine adit.

Management Action #4: Campfires will be limited to existing fire rings only. No open fires will be permitted.

Management Action #5: All solid human waste and toilet paper must be buried in the ground at least 6 inches deep and at least 200 feet from the camping/parking area.

### **Information and Interpretation**

*Objective #1: Develop and distribute appropriate interpretive information to educate the public about regulations, safety issues, area information, and responsible recreation at Crystal Cave.*

Management Action #1: To protect the cave area from unauthorized use and/or vandalism, the location of the cave and directions to the site will be provided to authorized visitors only. *Although the interior of Crystal Cave has been mapped, this is BLM proprietary information protected by Federal law and will not be disclosed to the public.*

Management Action #2: BLM will include permit stipulations, risk awareness info, a cave safety checklist, and a brochure on Leave No Trace (LNT) caving ethics to all permitted visitors to Crystal Cave. A video on cave conservation and ethics will also be made available.

Management Action #3: BLM will offer an educational presentation on safe and ethical caving to all interested groups. Initially, visitor attendance at this presentation will be voluntary and not required for obtaining a permit to enter Crystal Cave. However, if BLM staff determines that impacts to cave resources from visitor use have become unacceptable, attendance at the educational presentation may become mandatory before obtaining a permit.

### **Off-Highway Vehicle (OHV) Management**

*Objective #1: Proactively manage OHV travel at Crystal Cave to minimize resource impacts and threats to public health & safety.*

Management Action #1: All motor vehicle use at Crystal Cave will be limited to existing roads and trails year-round for public safety, as defined in the Box Elder Resource Area OHV Designation Map.

Management Action #2: Motor vehicles will be required to park adjacent to the camping area at a location approximately 1/4 mile below the entrance to the cave. Vehicle closure signs will be posted. Vehicles will be prohibited from continuing up the mountain beyond the route closure signs. This is to prevent potential vehicle accidents, impacts to historical resources, soil erosion problems on the steep slope, and vandalism to the gate. Visitors will be required to hike from the parking area to the cave.

Management Action #3: Consistent with ongoing BLM budget and staffing, appropriate efforts will be made to maintain a vehicle route leading from the highway to the Crystal Cave parking/camping area. In some cases, this may require coordination with the BLM Elko Field Office and Elko County officials.

Management Action #4: Vehicle intrusions or the creation of new routes or modification of existing routes, which occur illegally and/or are inconsistent with this plan, will be rehabilitated, reclaimed, and/or otherwise remedied. Route rehabilitation may include but is not limited to the following:

- signing
- route barriers or barricades
- raking and/or scarring
- camouflage
- seeding
- native material mulching
- organic fiber mats
- water bars
- erosion control blankets
- straw bales and/or wattles.

### Visitor Permit System

*Objective #1: Provide for a safe and enjoyable visitor experience at Crystal Cave.*

Management Action #1: A Recreation Use Permit (RUP) will be required to access Crystal Cave in accordance with the form in Appendix #1. The permit form and requirements may be modified by the BLM as needed to address changing resource conditions at Crystal Cave. Permits will be issued on a first-come, first-serve basis during the open access season. BLM staff will issue a permit only after establishing the permit applicant understands proper caving procedures and agrees in writing to follow all permit stipulations. Fees for obtaining a permit will not be charged unless BLM determines that significant funding is necessary to maintain the cave gate and/or recreation site. Any fees

for Crystal Cave would be established via standard BLM fee site procedures and official notice in the Federal Register.

Management Action #2: Seasonal access dates, visitor use regulations, and/or permit stipulations will be reviewed and modified as needed by BLM based on monitoring of resource conditions at the cave site.

Management Action #3: Due to the physical restrictions causing safety issues inside the cave, the number of visitors allowed in Crystal Cave at any one time will be limited to a maximum of 6 persons per group by the BLM. The minimum number per group will be set at 4 persons to ensure visitor safety (e.g. if someone is injured, one person can stay with the victim while the other two go for help). Group size limitations will be reviewed and modified as needed by BLM based on monitoring of resource conditions at the cave site.

Management Action #4: When required for visitor safety, BLM staff will give general directions to Crystal Cave, a map showing the location of the cave entrance, and a basic description of the cave interior to permitted visitors only.

Management Action #5: Boy Scout leaders who wish to lead trips into Crystal Cave must provide a copy of their BSA tour permit and adhere to all permit requirements, including group size limits.

*Objective #2: Minimize resource impacts caused by recreational visitation at Crystal Cave.*

Management Action #1: Visitation to Crystal Cave will be limited to 2 permits (12 persons maximum) per day during the open access season. The visitor limit may be modified by BLM as needed based on monitoring of resource conditions at the cave site.

Management Action #2: A completed post-use report must be returned to the BLM field office within 72 hours of exiting Crystal Cave.

Management Action #3: Failure to comply with any permit stipulations may result in denial of subsequent permits.

Management Action #4: A map of the interior of Crystal Cave will only be distributed to authorized persons under special circumstances, such as resource monitoring, scientific study, or emergency search & rescue operations, as determined by BLM.

*Objective #3: Prevent unauthorized access and/or resource damage to Crystal Cave.*

Management Action #1: Permit holders and party members will be prohibited from disclosing the gate lock combination to anyone outside their permitted party. ***Failure to comply will result in denial of subsequent permits.***

Management Action #2: The lock and combination for Crystal Cave will be changed randomly throughout the year by BLM staff. Once a number has been used, it will not be used again.

#### Cultural/Historical Resources

*Objective #1: Provide protection of all historical resources and sites located in and around Crystal Cave.*

Management Action #1: The location of any historical sites at Crystal Cave will not be disclosed to the public without authorized approval.

Management Action #2: Removing, destroying, or damaging any historical sites in the cave or altering any part of the mine adit without authorization will be prohibited. Removing, defacing, or altering any of the historical signatures or adding new signatures to the walls of the cave and/or mine adit is strictly prohibited. Suspected violations will be thoroughly investigated by law enforcement.

#### Law Enforcement

*Objective #1: Provide effective management of emergency search & rescue (SAR) response at Crystal Cave.*

Management Action #1: SAR operations will be coordinated between BLM officials, local law enforcement, Utah Cave Search & Rescue, and local caving clubs.

Management Action #2: BLM staff will prepare and maintain a Crystal Cave SAR Plan. An up-to-date copy of the SAR plan will be provided to all cooperating agencies.

Management Action #3: BLM will authorize, coordinate, and participate in SAR training exercises at Crystal Cave, as needed.

*Objective #2: Protect sensitive cave resources as much as possible during SAR operations.*

Management Action #1: At least one BLM staff specialist must be on site during SAR operations at Crystal Cave. BLM staff will closely monitor SAR activities and make every effort to minimize unnecessary damage to cave resources.

Management Action #2: The use of drilling, bolts, or passage modification will be prohibited, except during an actual SAR incident when absolutely necessary to safely extract injured visitors.

Management Action #3: Following any SAR incidents, BLM staff will prepare a resource assessment of the cave to determine if any damage was caused during the incident and what measures may be appropriate for rehabilitation or mitigation. The cave should be thoroughly checked for any equipment, flagging, or other debris left behind after the SAR incident or exercise.

## Water Quality

*Objective #1: Protect the watershed and ground water recharge surrounding Crystal Cave from human-caused impacts, in order to maintain natural humidity levels affecting cave formations.*

Management Action #1: Contamination or discharge of foreign substances into any body of water within Crystal Cave is strictly prohibited.

Management Action #2: For public safety, removal and/or ingestion of any water found inside Crystal Cave is strictly prohibited.

Management Action #3: BLM staff will observe and record water clarity during regular monitoring visits to the cave. BLM will impose additional visitor use stipulations or access restrictions to water resources within the cave if water quality is observed to be deteriorating beyond acceptable conditions.

Management Action #4: BLM will prescribe mitigation measures to and strictly monitor all land use activities that have the potential to impact the watershed and/or ground water recharge near Crystal Cave.

## Volunteers

*Objective #1: Utilize volunteer resources as much as possible to augment BLM staff resources and management of Crystal Cave.*

Management Action #1: Whenever possible and/or appropriate, BLM will utilize volunteer assistance for monitoring, maintenance, clean up, rehabilitation, or repairs at Crystal Cave.

Management Action #2: BLM will ensure that all volunteers at Crystal Cave have appropriate safety and conservation experience.

Management Action #3: All volunteers will be required to sign an Individual Volunteer Services Agreement, Standard Form 1114-4.

## Monitoring & Mitigation

*Objective #1: Utilize regular monitoring of Crystal Cave to minimize or mitigate any resource impacts from recreational visitation and other land use activities.*

Management Action #1: BLM staff will conduct monitoring visits and condition assessments at Crystal Cave. Monitoring will focus on resource values such as bat counts and habitat, delicate cave formations, air and water quality, historical features, and recording damage. Photo monitoring may be utilized to assist monitoring efforts. If impacts to important resource values are observed to be reaching critical thresholds, BLM may take steps to mitigate these impacts. Mitigation measures may include but are not limited to:

- Increased visitor education regarding appropriate caving ethics (may include mandatory attendance at caving education presentation).
- Increased signing at the cave
- Modification of permit stipulations and requirements
- Modifications or restrictions on parking, camping, and/or access routes
- Changes to seasonal access dates
- Changes to group size limits
- Restrictions on travel and/or areas authorized for visitor access within the cave
- Requiring BLM-approved caving monitors or guides to accompany groups into Crystal Cave
- Restoration projects, including but not limited to graffiti removal, formation repair, cave cleaning, and gate repairs
- Limitations on numbers of permits per season
- Emergency closure of the cave

Management Action #2: Visitor logs will be maintained at strategic locations throughout the cave to monitor which parts of the cave are receiving the most frequent visitation.

Management Action #3: BLM will issue administrative permits for approved groups to enter the cave for monitoring, restoration work, education, and/or scientific study.

## List of Acronyms

BLM	Bureau of Land Management
BSA	Boy Scouts of America
CFR	Code of Federal Regulations
CRF	Cave Research Foundation
EA	Environmental Assessment
FCRPA	Federal Cave Resources Protection Act of 1988
LNT	Leave No Trace
MP	Management Plan
NEPA	National Environmental Policy Act
NSS	National Speleological Society
OHV	Off-Highway Vehicle
RMP	Resource Management Plan
ROS	Recreation Opportunity Spectrum
RUP	Recreation Use Permit
SAR	Search and Rescue
SLFO	Salt Lake Field Office
TBB	Townsend's Big-Eared Bats
USC	United States Code
VRM	Visual Resources Management

## References

- Bureau of Land Management (2001). *Special Status Species Policy, BLM Manual 6840*.
- CFR 43, Part 37.11 (c), Significant Cave Criteria.
- Endangered Species Act of 1973, Section 7.
- Federal Caves Resources Protection Act of 1988 (16 U.S.C. 4301-4309).
- Federal Land Policy and Management Act, 1976 (FLPMA) (Section 103).
- Green, Dale J. (1997). *Crystal Cave, Box Elder County, Utah Technical Note 95*. Salt Lake City: National Speleological Society, Salt Lake Grotto.
- Oliver, George V. (2000). *The Bats of Utah: A Literature Review*. Ogden, Utah: Utah Division of Wildlife Resources, Publication No. 00-14.
- USDI-BLM (1994). *Bear River Resource Area, Significant Cave Listing*.

USDI-BLM (2005). *Bureau of Land Management Cave Safety Standards*. Washington, DC: BLM Washington Office, Instruction Memorandum No. 2005-095, Change 1.

Utah-DEQ (2002). *Utah's 303(d) List of Water*. Salt Lake City: Utah Department of Environmental Quality. Division of Water Quality.

Utah-DEQ (2000). *Utah Non-Point Source Pollution Management Plan*. Salt Lake City: Utah Department of Environmental Quality. Division of Water Quality.

USDI-BLM (1989). *Record of Decision Box Elder Resource Management Plan*. Salt Lake City: Salt Lake District Office, Bureau of Land Management.

## Appendix #1

### Crystal Cave Visitor Use Permit Form



D. Optional Medical Information: (Name and condition, i.e. disability, asthma, diabetes, allergies, medications)

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_  
\_\_\_\_\_
6. \_\_\_\_\_  
\_\_\_\_\_

E. Purpose of Visit: Recreation \_\_\_ Geology\_\_\_ Photography \_\_\_ Education \_\_\_ Research \_\_\_  
Other: \_\_\_\_\_  
\_\_\_\_\_

F. Parental or Legal Guardian Consent:

**\*\*\*The consent of a parent or legal guardian is required for all individuals under 18 years of age who will not be accompanied on the proposed cave trip by their parent or legal guardian.**

As part of the application to enter the cave(s) administered by the Bureau of Land Management, I consent to allow my child to participate in the proposed cave trip. The trip leader named on this application form is delegated the responsibility for the care and instruction of my child while he or she is in the cave(s). By my signature on this form. I also agree on behalf of my child to be bound by the permit General Conditions and any Special Stipulations that will apply to authorization for the cave visit.

CHILD'S NAME AND AGE (PRINT)	SIGNATURE OF PARENT OR LEGAL GUARDIAN
------------------------------	---------------------------------------

- |          |       |
|----------|-------|
| 1. _____ | _____ |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |
| 5. _____ | _____ |

**\*\*\*Boy Scout leaders must provide a copy of an approved BSA "tour permit" prior to taking groups into caves.**



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
SALT LAKE FIELD OFFICE  
2370 SOUTH 2300 WEST  
Salt Lake City, Utah 84119  
Ph: (801) 977-4300  
Fax: (801) 977-4397



## VISITOR USE PERMIT CRYSTAL CAVE, BOX ELDER COUNTY, UTAH

PERMIT. NO. \_\_\_\_\_ USE DATE: \_\_\_\_\_

Permission is hereby granted to \_\_\_\_\_ and a party of up to \_\_\_\_\_ other people as reflected by signatures below to enter the above named cave(s), located on public lands. Authorized by:

\_\_\_\_\_ Date \_\_\_\_\_ Lock Combination: \_\_\_\_\_

### **Please return the lock numbers to 0000**

\*\*\*\*\*

The following signatures indicate that permittees have received and understand information provided by the BLM on risk awareness in the cave (s), and agree to comply with the general conditions, attached Special Stipulations, and Cave Safety Checklist for this authorization:

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_

### **IN CASE OF EMERGENCY, DIAL 911**

**BLM FIELD OFFICE, 801-977-4300**  
**UTAH CAVE SEARCH & RESCUE, 801-243-RESQ (7377)**

### GENERAL REQUIREMENTS:

- 1. This permit neither authorizes nor implies permission for the intentional or unintentional damage or removal of cave resources, such as: archaeological and historical artifacts, natural materials or features, plant and animal life, or any item of public property. Violations of federal or state

laws, general conditions or special stipulations are punishable, upon conviction, by fines up to \$100,000.00, or imprisonment not to exceed one year, or both (Federal Cave Resources protection Act of 1988, 43 CFR 8364.1, 43 CFR 8360.0-7).

2. This authorization is validated only upon signature of the Permittees, and is valid only for those individuals whose signatures appear hereon.
3. Each person in the caving party will wear a safety helmet (hard hat) with chin strap at all times while in the cave(s) and have in their possession at least three sources of light, one of which will be attached to the helmet. Candles, matches and cigarette lighters are not acceptable as second light sources.
4. At least one person in the caving party must be 21 years of age or older and will be responsible for the actions of younger members of the party.
5. This authorization is issued only for the time period specified on the face of this permit. It is revocable for any breach of conditions hereof, or at the discretion of the Authorized Officer of the Bureau of Land Management at any time upon notice.
6. Permittees shall exercise diligence in protection from damage of the land and property of the United States covered by this authorization, and shall pay the United States for any damage resulting from negligence or from the violation of the terms of this authorization or of any law or regulations applicable to public lands.
7. Permittees agree as a condition precedent to the issuance of this authorization, to indemnify, defend, and hold harmless the United States and/or its agencies and representatives against and from any and all demands, claims, or liabilities of every nature whatsoever including, but not limited to, damages to property, injuries to or death of persons arising directly or indirectly from or connected in any way with the use and occupancy of the lands and cave(s) described on this authorization.
8. Camping is not permitted within 1/4 mile of the gated entrance to the cave. All solid human waste and toilet paper must be disposed of outside the cave, buried at least 6 inches deep and at least 200 feet from camping areas.
9. Obey all motor vehicle closure signs and notices. Do not drive vehicles past closure signs.
10. The gate lock is to be secured while permittees are in the cave (secure the lock but don't lock yourself in) and before you depart from the cave area. You must determine there are no other people still in the cave before locking the gate. Mechanical problems with locks will be promptly reported to the authorizing officer.
11. **The gate combination lock must be returned to 0000 prior to leaving the cave site.**
12. A completed post-use report must be returned to the Salt Lake Field Office within 72 hours.

## RISK AWARENESS

All undeveloped caves, by their very nature, contain some safety risks. When you go caving, you do so of free will and at your own risk. Make your trip a safe and enjoyable one by being prepared and careful. Most caves contain some risks that are common to the underground environment, such as loose rocks, low ceilings, tight passages, slippery surfaces, standing water, and unstable or uneven floors. Be prepared by wearing the proper clothes and carrying the proper equipment, following safety hints, staying within your group's capabilities, keeping your group together, and using common sense.

Specific safety issues described below may be encountered at any time in Crystal Cave, but additional risks due to natural causes could have occurred since the last time the cave was visited.

- Cave surfaces can be slick and slippery. Areas of dripping water and mud may be encountered. Risk of falling and serious injury exists in Crystal Cave. **Proceed with caution at all times. Do not go into an area you are not sure you can safely exit.**
- Parts of the cave consist of small crawlways and squeeze ways. Narrow, turning passageways can cause confusion and loss of orientation.
- Beware of areas of deep water inside Crystal Cave. Proceed with caution near these areas. Do not go underwater in a cave without being trained and certified as a cave diver (open water scuba divers are not certified in cave diving). **Cavers wishing to dive in Crystal Cave must first get specific permission from the BLM Salt Lake Field Office.**
- Cavers should be aware of the risk of exposure to Hantavirus and Giardia. Avoid areas of rodent concentration or bat roosts. Use a dust mask or respirator for best protection. **Do not drink from cave water sources!** Risk of serious gastrointestinal infection may exist.

## SPECIAL STIPULATIONS

1. This permit is not transferable without prior approval of the issuing office.
2. For visitor safety, **the minimum group size for entering Crystal Cave is 4 persons.**
3. Due to the confined nature of the cave, **the maximum group size allowed inside the cave at any one time is limited to 6 persons**, including the group leader who must be an adult.
4. **Only one group of 4-6 persons may go inside the cave at any one time.**
5. Whenever possible, stay on previously traveled routes while inside the cave. **Do not tread on or touch delicate formations in the cave, especially along the walls and ceilings.**
6. All equipment or material taken into the cave by visitors must be removed at the end of each cave visit.
7. **Leaving human waste or toilet paper behind in the cave is prohibited.** Take along a plastic bottle or bag if you must urinate or defecate inside the cave.
8. Smoking, overnight camping, pets, firearms, open fires, and gas or propane lanterns are prohibited inside the cave and/or mine adit.

9. **You may NOT kill, disturb, or remove any geological, biological, or organic materials from the cave or mine adit.** Everything in the cave is protected by Federal law. Suspected violations will be investigated and prosecuted.
10. Avoid contact with bats; keep lights away from bats; **DO NOT INTENTIONALLY ANNOY OR DISTURB BATS AT ANY TIME.**
11. Do not attempt to alter or remove any of the historical signatures and/or dates visible on the walls of the cave.
12. Do not write anything on the inside the cave or mine adit.
13. Do not remove, relocate, or tamper with any scientific instruments or devices that you may encounter inside the cave.
14. ***Do no disclose the gate lock combination to any person outside of your permitted group.***

\_\_\_\_\_  
Signature of Permittee/Trip Leader

\_\_\_\_\_  
Date



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
SALT LAKE FIELD OFFICE  
2370 SOUTH 2300 WEST  
SALT LAKE CITY, UT 84119  
Phone: (801) 977-4300  
Fax: (801) 977-4397



## CAVE SAFETY CHECKLIST

### ***IN CASE OF EMERGENCY, CALL 911***

#### ***UTAH CAVE SEARCH & RESCUE, 801-243-RESQ (7377)***

##### ***Equipment:***

- Helmet or hardhat with sturdy chinstrap for all party members.
- Electric headlamp on every helmet (so hands are free for crawling and climbing).
- Two more reliable sources of light (flashlight, glow sticks, etc.). Extra batteries and spare bulbs. Keep them within easy reach.
- Coveralls or long-sleeve shirt & pants, leather gloves, and good boots with ankle support. Knee and elbow pads are also recommended.
- First aid kit & emergency space blanket.
- Water and quick energy food.
- Fluorescent flagging tape or glow sticks for marking your route thru the cave. Make sure your party removes all route markers before leaving.
- Climbing rope or length of webbing (at least 25 ft.) in good condition.
- Warm and/or waterproof clothing. Many caves are cold & damp. Standing water may also be encountered.
- Dust mask or handkerchief.
- Small backpack or gear bag.

### ***Before you go:***

- \_\_\_ Itinerary. Leave word of your plans and directions with someone at home. Let people know when to expect your party's return. Give phone numbers to call in case of emergency.
- \_\_\_ Inspect and test all equipment before leaving.
- \_\_\_ Never go caving alone. Go with at least three other cavers; in case of emergency, two can go for help while one stays with the victim.
- \_\_\_ Be sure at least one member of your group has adequate caving experience.
- \_\_\_ Map & compass or GPS should be brought if you are unfamiliar with the area. Get directions or bring along someone who has been there before.
- \_\_\_ Place your car's ignition keys in a safe location near your car before entering the cave. Do not bring keys into the cave. You could lose them.

### ***Inside the cave:***

- \_\_\_ Keep your group together to avoid disorientation or separation. Never attempt to go further into a cave than a point from which you can safely find your way out. Use flagging tape to mark your back trail out of the cave. Remove all trail markers before leaving.
- \_\_\_ Proceed slowly and with caution. Monitor members of your party and exit the cave before anyone becomes too exhausted or stressed to continue.
- \_\_\_ Stay within your limits. Do not use ropes or cable ladders until you have been adequately trained for vertical-entry caving. Do not jump down climbs or over obstacles. Do not climb up or down passageways that you are not sure you can get out of.
- \_\_\_ Beware of encounters with snakes, rodents, bats, insects, and other potential wildlife. Avoid areas of rodent (packrat) waste or bat roosts. Do not drink water inside a cave. Exposure to Hantavirus and Giardia is possible.
- \_\_\_ Don't enter caves that are known to be flooded or affected by seasonal water flow conditions. Use particular caution while traversing around standing water or lakes. Do not go underwater in a cave without being trained as a cave diver (open water scuba divers are not certified in cave diving).



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## CRYSTAL CAVE POST-TRIP REPORT:

TRIP LEADER: \_\_\_\_\_  
CRYSTAL CAVE PERMIT NO. \_\_\_\_\_  
USE DATE: \_\_\_\_\_

- Gate locked, combination numbers returned to 0000: YES \_\_\_ NO \_\_\_
- Condition of Access Road, Signs, and Parking/Camping Area:  
\_\_\_\_\_  
\_\_\_\_\_
- Condition of Gate & Lock: \_\_\_\_\_  
\_\_\_\_\_
- Condition of Adit Passage, Cave Entrance Ladder & Handholds: \_\_\_\_\_  
\_\_\_\_\_
- Trash or debris found (please help us by removing it): \_\_\_\_\_  
\_\_\_\_\_
- Water Quality in Cave: (please circle)    Clear        Cloudy        Dirty
- Evidence of recent vandalism: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Approx. # of Bats encountered: \_\_\_\_\_ Area(s) of cave: \_\_\_\_\_  
\_\_\_\_\_
- Injuries/accidents: \_\_\_\_\_  
\_\_\_\_\_
- Other issues/comments/concerns: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Trip Leader's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

PLEASE COMPLETE AND RETURN THIS FORM WITHIN 72 HOURS AFTER THE CAVE TRIP. Thank you for your assistance and commitment to the conservation of public lands.