



United States
Department of
Agriculture

Forest
Service

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Environmental Assessment

Big Ice Cave Withdrawal From Location And Entry Under The United States Mining Laws

Beartooth Ranger District Custer National Forest

Carbon County, Montana

Principal Meridian, Montana

T. 8 S., R. 27 E.

Sec. 3, SE¼;

Sec. 10, N½N½NW¼NE¼.

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PURPOSE AND NEED FOR ACTION

The February 1982 mineral withdrawal of Big Ice Cave expired on February 4, 2002. The geologic, hydrologic, scenic, historical, and aesthetic values of the Big Ice Cave and the adjacent area could be lessened and may be lost entirely should a mining claim be filed. Thus, there is a need to protect the cave resources and surrounding lands from mineral exploration and development from someone filing a claim pursuant to the locatable mineral laws of the United States. The purpose of the Big Ice Cave Withdrawal Project is to protect Big Ice Cave, its associated resources, and the 170 acres surrounding the cave from location and entry under the United States mining laws as identified in the Custer National Forest and National Grasslands Land Resources Management Plan (USDA, 1986). By regulation, withdrawals are subject to a 20-year timeframe, after which, the withdrawal will terminate unless an application for withdrawal is again submitted and approved.

The Forest Service has prepared this Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the project's foreseeable environmental effects for consideration in determining whether or not to prepare an Environmental Impact Statement or a Finding of No Significant Impact document (40 CFR 1508.9).

Existing Condition

There are numerous limestone caves in the Pryor Mountains (Pryors), but only a few of these develop large quantities of perennial ice. Worldwide, ice caves in limestone are fairly unique occurrences. Big Ice Cave has the best and most unique ice development and is the most visited of any known ice caves in the Pryors. The entrance opens into an immense room of ballroom proportions of which the floor is heavily underlain with ice year round. The ice floor is 25-feet thick at the left rear of the cave where a vertical passageway provides access to other chambers below. The lower-chamber walls are studded with ice crystals exhibiting high light refraction. Calcite crystals and fossils of the Mississippian Age are found at various locations throughout the cave.

There are three types of known mineral deposits in the vicinity of the Big Ice Cave. Historically, the area has been prospected for high-grade uranium deposits and there may be low to moderate potential for those types of deposits in the vicinity of the Cave. There has also been recreational collecting of low-grade agate and jasper in the area.

In February 1982, 170 acres in the Big Ice Cave area was withdrawn from locatable mineral entry. The mineral withdrawal is identified in the Custer National Forest and National Grasslands Land and Resource Management, page 167, (hereafter, Forest Plan). In the Forest Plan, part of this withdrawn area was allocated to Management Area F because of recreation improvements. These improvements consisted of a 13-unit picnic site and a paved 700-foot trail leading to the chain link fenced cave entrance. The cave interior contained walkways, platforms and a staircase leading to the lower chamber. In 1985, the Big Ice Cave was no longer operated on a set schedule due to budgetary constraints. Currently, it is available for public self-guided tours when the area is accessible; approximately mid-June to mid-October. In 1988, approximately six units were removed from the picnic site as well as the chain-linked fence at

the cave entrance, the wooden boardwalk within the cave's first room, the lighting system and the spiral staircase leading to the cave's second room. Current improvements include a road, parking area, vault toilet, seven picnic tables and grills, an asphalt trail and treated wood steps from the parking lot to the viewing platform just inside the cave mouth.

Big Ice Cave qualifies as a feature protected by the Cave Resources Protection Act of 1988. Forest Plan Amendment Number 8 dated March 29, 1991, adopted forest-wide management standards for protecting caves subject to the Act.

The Bureau of Land Management (BLM) notified the Forest Service the withdrawal order established by Public Land Order No. 6119 for the Big Ice Cave would expire February 4, 2002, (BLM memo, 2/1/00). In reply, the Forest Service notified BLM of its intent to request an extension of the withdrawal (FS 2760 memo dated 2/29/00). On November 25, 2001, the Regional Forester requested BLM extend the withdrawal for Big Ice Cave area (FS 2760-2 memo).

On November 27, 2001, the BLM Montana State Office forwarded the withdrawal extension request through various internal offices from November 2001 until February 2002. The withdrawal action expired on Feb. 4, 2002. The Montana State Office was notified February 19, 2002, that the extension could not be processed after expiration of the withdrawal and a new application would need to be submitted. On August 22, 2002, a Federal Register notice was published announcing a proposed withdrawal and opportunity for public meeting of the Big Ice Cave mineral withdrawal. No comments were received regarding the mineral withdrawal.

Desired Condition

The present and future use of this area as identified in the Forest Plan is for recreation and the protection of the unique geologic ice cave attraction. The desired condition of Big Ice Cave and the surrounding area is the protection of the geologic, hydrologic, scenic, historical, and aesthetic values. The cave is the resource to be protected by continuing the withdrawal of the area from location and entry under the United States mining laws; it can neither be replaced nor relocated.

The objective is to withdraw from location and entry under the United States mining laws Big Ice Cave and the 170-acre area surrounding the cave. It would be preferable to secure the withdrawal indefinitely because of the importance of Big Ice Cave to the public, but by regulation is limited to 20 years. Thus, the Forest Service will seek to secure the withdrawal for as long as that permitted by regulation.

ALTERNATIVES

Alternative 1 – Proposed Action

The Forest Service proposes to request the Secretary of the Interior, through the BLM, withdraw Big Ice Cave and the surrounding 170-acre area from location and entry under the United States mining laws. The project area is located in the SE $\frac{1}{4}$ section 3, and the N $\frac{1}{2}$ N $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ section 10, T. 8 S., R. 27 E., P.M.M; see enclosed map. Included as part of the proposed action is a

correction to Forest Plan Appendix IV, page 167, to note that the acreage withdrawn is 170 acres rather than 90 acres.

The proposed action does not include requesting withdrawal of any National Forest System (NFS) lands from proposals to lease, explore, and develop oil and gas resources. Oil and gas leasing requests are discretionary, meaning decisions to lease or not to lease legally available NFS lands must be made in accordance with planning regulations and appropriate NEPA analysis. No NFS lands in the Pryor Mountains have been analyzed for oil and gas leasing. A separate oil and gas leasing analysis would have to be completed to determine whether any NFS lands in the Pryor Mountains land unit would be made available to lease for oil and gas development before any proposals to lease, explore and develop oil and gas resources would be allowed. Due to the Forest Service's discretion to allow or not allow this activity on NFS land, it was determined to not withdraw the land from mineral leasing.

Alternative 2 – No Action

Under this alternative, the withdrawal remains expired. In this instance, someone could file a claim to develop the limestone, or other locatable minerals, subject to the 1872 mining law. This would be a change in the current management direction for Big Ice Cave and the area subject to the withdrawal.

No significant issues were identified from the earlier scoping; therefore, no alternatives other than the proposed action and the no action alternatives have been fully developed and analyzed. The No-Action Alternative is required to be considered pursuant to NEPA.

ENVIRONMENTAL CONSEQUENCES

This section provides a summary of the environmental impacts of the Proposed Action to resources found within and around Big Ice Cave and the surrounding area in relation to whether there may be significant environmental effects as described in 40 CFR 1508.27. Further analysis and conclusions about the potential effects are available in resource specialist reports and other supporting documentation located in the project record. This assessment is consistent with the National Forest Management Act, 16 U.S.C. 1604(g)(1) and with the management direction described in the Forest Plan for the Custer National Forest. The following analysis was compared against this management direction for consistency purposes. The 1974 EA for Big Ice Cave Withdrawal is hereby incorporated by reference and can be found in the Project Record (Wetzsteon, February 1974).

Forest Plan Direction

Big Ice Cave and part of the surrounding area are allocated to Management Area F in the Forest Plan, pages 61-63. This management area includes all developed recreation sites on the Forest as well as most access corridors to and from those sites. The management area goal is "To provide a spectrum of recreation opportunities and settings in and around developed sites and the access corridors to the sites in the categories of Semi-primitive Non-motorized/ Motorized, Roaded Natural Appearing and Rural. Resource management conflicts are resolved in favor of maintaining or enhancing the recreation opportunities including the visual setting." The

management area standard for mineral withdrawal reads: "Withdrawal from mineral entry under the General Mining Law of 1872 will be evaluated for developed sites based on the criteria contained in the Forest Management Direction for the review of existing withdrawals." (Forest Plan, page 62, 6. Minerals. d. 2.). See also Appendix A.

The area beyond the developed recreation area surrounding Big Ice Cave is allocated to Management Area B in the Forest Plan. The goal of the Management Area B is to provide for the continuation of livestock grazing, implementation of intensive range management systems and the facilitation of minerals and energy development with consideration of other resource needs. Special uses may be considered as long as they are consistent with the goal of the area. This area is currently part of the Crooked Creek grazing allotment, an active allotment. The proposed mineral withdrawal is consistent with Forest Plan direction, pages 45 and 47, for this management area, and does not prohibit use for the Crooked Creek grazing allotment.

Botany

Proposed Action: There are no known threatened and endangered plant species within the withdrawal proposal. However, three small populations of Jove's Buttercup (*Ranunculus jovis*), Northern Region sensitive species, are found within the proposed Big Ice Cave Withdrawal project area. The proposed withdrawal benefits these populations. No impacts are expected.

No Action: Under this alternative, a claim to explore for and develop locatable minerals could be filed. This action would require a separate, site-specific NEPA analysis that would also include additional botanical surveys to determine project impacts to threatened, endangered, or other R1 sensitive plant species, including Jove's Buttercup, if mineral entry were allowed. The results of those surveys would determine the scope of effects to any threatened, endangered, or sensitive plant species would be and what, if any, mitigation might be required.

Cultural Resources

Proposed Action: The proposal is an administrative action, would prevent mineral activity on the site, and would continue to protect the cave. Therefore, there are no anticipated immediate or long-term adverse environmental effects to cultural and historic properties.

No Action: Under this alternative, a claim to explore for and develop locatable minerals could be filed. This action would require a separate, site-specific NEPA analysis that would also include surveys for cultural and historic properties. The results of those surveys would determine the scope of effects to any cultural or historic properties and what, if any, mitigation might be required.

Geology/Minerals

Proposed Action: The proposal is an administrative action, would prevent mineral activity on the site, and would continue to protect the cave. Therefore, there are no anticipated immediate or long-term adverse effects to geologic resources.

No Action: Under this alternative, a claim to explore for and develop locatable minerals could be filed. The most significant locatable mineral deposit is the high calcium limestone around Big

Ice Cave that may be of high enough quality to be claimed under the 1872 Mining Law. The grade (calcium content) is most similar to the grade tested in other claims several miles to the southwest. As demonstrated by the activity near Warren, Montana, future demand for high calcium limestone may create a moderate potential for mineral activity and claim staking for high calcium limestone elsewhere in the Pryors. Therefore, a moderate risk exists that claims could be staked and mineral activity proposed in the vicinity of Big Ice Cave as long as the area is open to mineral entry. There could be immediate and long-term adverse consequences to the Big Ice Cave.

Hydrology

Proposed Action: This alternative would withdraw 170 acres surrounding Big Ice Cave from mineral entry. This withdrawal would reduce the risk of affecting subsurface flow paths and ice formations over the No-Action Alternative, but would not completely eliminate the risk due to the larger area of potential influence. In the event extraction of locatable minerals occurs outside of the withdrawal area, there is still potential to collapse subsurface fractures and cavities and disrupt subsurface flow paths that route water to Big Ice Cave. In a worse case scenario, significant disruption of flow paths could ultimately result in loss of ice formations over time. However, as discussed in the No-Action Alternative, there is a low potential for locatable minerals to actually be developed adjacent to Big Ice Cave, and therefore there is a low risk of affecting subsurface flow paths and ice formations also under this alternative.

No Action: This alternative would allow exploration and development of locatable minerals in and around Big Ice Cave. In the event extraction of locatable minerals occurs, there is potential to collapse subsurface fractures and cavities and disrupt subsurface flow paths that route water to Big Ice Cave. In a worse case scenario, significant disruption of flow paths could ultimately result in loss of ice formations over time. However, there is a low potential for locatable minerals to actually be developed in this area, and therefore there is a low risk of affecting subsurface flow paths and ice formations in Big Ice Cave.

Land Status

The February 1982 public land order withdrew 170 acres from mineral entry. Originally, the Forest Service requested 90 acres be withdrawn from mineral entry. Based on a field review by the Forest Service and BLM, the expansion in acreage from 90 to 170 acres is documented in BLM memos dated 9/25/80 (Stark), 10/21/80 (Stark) and 12/30/80 (Perfald). The original withdrawal request did not adequately cover the area needed for protection of the ice cave and to avoid a costly survey it was necessary to increase the withdrawal acres to 170. The increased area is shown on the plats submitted with BLM memo dated 7/28/80 (Minnie), originally signed by George Schaller dated 10/29/79, and then referenced in the 9/25/80 Edgar Stark memo, as agreed upon by the Forest Service and BLM.

The Forest Plan notes the withdrawal acreage as 90 acres. Since the Forest Plan was signed June 10, 1987, and Public Land Order No. 6119 was published February 5, 1982, a correction is needed to Forest Plan Appendix IV, page 167. There is no evidence as to why the acreage in the appendix is different than that in the public land order, except that it was an oversight and that the acreage should be 170 rather than 90.

Recreation

Proposed Action: Big Ice Cave is an attractive geologic and hydrologic feature that draws several hundred visitors a year. It offers a spectrum of recreation opportunities in the categories of Motorized, Roaded Natural Appearing and Rural. The amount of visitation is expected to continue and will likely increase as the populations in Billings and Red Lodge, Montana grow. This action would result in no change to visitor experience. That is, people would continue to visit Big Ice Cave because it is an attractive geologic and hydrologic feature, offering a spectrum of recreation opportunities. This is consistent with Forest Plan management area goals.

No Action: Allowing mineral entry would be a change in current area management. This could potentially result in future new surface disturbance, including road construction, prospect pits, tailings piles, increased traffic etc., which may adversely impact Motorized, Roaded Natural Appearing and Rural recreational opportunities.

It could also degrade visitor experience because of potential effects related to the operation resulting in increased dust, vehicular traffic and sound.. Although mining activity would not prohibit public use of the surrounding area, it could reduce visitation and the desire to visit the area for the recreation qualities for which it was established.

Research Natural Areas

No research natural area, existing or nominated, lies within the bounds of the withdrawal. However, Lost Water Canyon Research Natural Area lies east and down drainage from the project area. See the Forest Plan Management Area Map for the Beartooth Ranger District.

Roadless

There are no roadless areas within the project area. There is no new or temporary road construction proposed. Access to Big Ice Cave is provided via the existing National Forest System Roads, specifically roads 2308 and 2308A. As noted previously, the project area is not comprised of any portion of a Forest Plan inventoried roadless area (Forest Plan, Appendix C).

Wilderness/Recommended Wilderness

The project area for the mineral withdrawal is not proposed for wilderness designation under the Forest Plan nor is it being considered before Congress as a wilderness area. However, it does lie adjacent to Lost Water Canyon that has been recommended for wilderness designation in the Forest Plan, pages 67-68. See the Forest Plan Management Area Map for Beartooth Ranger District (Management Area H).

Wildlife

Species or their habitats potentially present in the project area include the following:

Federally threatened and endangered species:

Canada lynx

Gray wolf

Forest Service sensitive species:

Northern goshawk
Townsend's big-eared bat
Spotted bat

Management Indicator Species:

Northern goshawk
Ruffed grouse
Elk

Proposed Action: Withdrawal from mineral entry is an administrative action that would prevent mineral activity in the project area. Thus, this alternative would have no short or long-term adverse impacts to species or habitats present.

No Action: Allowing mineral entry would be a change in current management of the area. This could potentially result in future new surface disturbance, including road construction, prospect pits, tailings piles, etc., that may adversely impact habitat for threatened, endangered, sensitive, and management indicator species, as well as other wildlife species. Implementation of this alternative may also result in increased human use of the area, potentially causing behavioral disturbance of species occupying the area. This action would require a separate, site-specific NEPA analysis.

PROJECT CONTACTS AND RECORDS

The project planning record is located at the Beartooth Ranger District office. Information concerning the project can be obtained from that office. The mailing address for the Beartooth Ranger District is HC 49 Box 3420, Red Lodge, Montana, 59068, or by telephone at 406-446-2103. The EA and Finding of No Significant Impact, and once a decision is made, the decision notice, is also available on the Custer National Forest web page at www.fs.fed.us/r1/custer/.

Agencies and Persons Consulted

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Appendix B – Minerals Withdrawal Criteria

Forest Plan Appendix IV Minerals Withdrawal, pages 165-167, sets forth criteria to evaluate existing or proposed withdrawals. Based on these criteria, the Big Ice Cave area was recommended for continuation of the mineral withdrawal. The criteria and site-specific analysis for this proposal follow.

a) Is the area withdrawn or to be withdrawn as a Research Natural Area, interpretive or cultural site, scenic area, geologic area, botanical area, or otherwise unique area?

World-wide, ice caves in limestone are fairly unique occurrences. There are numerous limestone caves in the Pryor Mountains, but only a few of these develop significant quantities of perennial ice. Big Ice Cave has the best and most unique ice development of any of these known ice caves in the Pryor Mountains and is the most visited. The entrance opens into an immense room of ballroom proportions of which the floor is heavily underlain with ice year round. The ice floor is 25-feet thick at the left rear of the cave where a vertical passageway provides access to other chambers below. The walls of the lower chambers are studded with ice crystals exhibiting high light refraction. Calcite crystals and fossils of the Mississippian Age are found at various locations throughout the cave.

b) Is the area withdrawn or to be withdrawn as an administrative site?

No. The area is allocated as a developed recreation site, Management Area F, in the Forest Plan. The area was withdrawn from mineral entry in February 1982, and recommended for continued withdrawal in the Forest Plan, Appendix IV (pp. 165-167). The surface area that extends beyond the recreation site is part of an active grazing allotment, lies within Management Area B, and is consistent with Forest Plan direction.

c) Is the area withdrawn or to be withdrawn currently occupied by significant capital improvements in which relocation or replacement would be impractical or impossible?

Yes and No. Improvements on the site consist of a road and parking area, vault toilet, seven picnic tables and grills, asphalt trail and treated wood steps from the parking lot to the viewing platform just inside the cave mouth. The number of picnic sites is fewer than in 1968, and facilities within Big Ice Cave have been removed (Errata to 11/2001 minerals report). Some capital improvements at the site could be relocated, for example, the picnic benches, barbecue grills, and toilet could all be moved to another location; however, the parking area, asphalt trail and treated wood steps could be replaced in place but cannot be relocated since they facilitate the opportunity to visit the Big Ice Cave (improvements have been capitalized based on facilities built in 1968 and 1988 valued at \$22,874.00). In October 2007, the district replaced the treated wood steps and platform.

The Forest Plan identifies recreation and the protection of the unique geologic ice cave attraction. The cave is the resource to be protected by continuing the withdrawal of the area from mineral entry; it can neither be replaced nor relocated.

d) Is the area withdrawn or to be withdrawn as a road, trail, right-of-way, gravel pit, fire lane, utility line, cabin or other isolated improvement, fence, pasture or campground?

No, please see item b.

e) **Is the land being used for the purpose for which it (was/will be) withdrawn?**

Yes, please see item b.

f) **Are there alternative means of protecting the resource values of concern?**

No, the cave cannot be moved or replaced. If the area is not withdrawn, the scenic, historical, and aesthetic values of Big Ice Cave and the adjacent area will be lessened and could be lost entirely should a mineral claim be filed to develop the limestone mineral features.

f) **Are the values at risk of such a nature that a significant financial, social, or cultural loss could occur? If such values exist answer the following:**

(1) What is the monetary value of the physical improvement at risk?

At risk is the loss of a unique geologic ice cave, for which there is no adequate means of calculating a monetary value.

(2) What is the current and projected use demand?

Big Ice Cave is an attractive geologic and hydrologic feature that draws several hundred visitors a year. This amount of visitation is expected to continue and will likely increase as the populations in Billings and Red Lodge, and south central Montana grow.

(3) Is the resource unique or irreplaceable?

Yes. This geologic ice cave is unique and irreplaceable.

(4) What is the mineral potential?

In the Mineral Report Supplement the Forest Geologist notes that the limestone within the Big Ice Cave area is not locatable. The grade (calcium content) is most similar to the grade tested in another claim several miles to the southwest. However, in order for a locatable mineral to have value, it must be mined, processed, transported to market and sold at a profit (prudent man test). There are no all-season routes to the Big Ice Cave area and transportation costs of moving product from the Big Ice Cave area would be significantly higher than those associated with current or future mining locations along the southwest perimeter of the Pryor Mountains (the claim(s) to the southwest).