

GMP Dynamic Sourcebook, version 2.1 - Appendix E: Foundation Statements

E.1 Examples of How All Elements of a Foundation Statement Interrelate

The following abbreviated examples from the Lava Beds National Monument and City of Rocks National Reserve foundation statements illustrates how the purpose, significance, primary interpretive themes, and fundamental resources and values all come together in the analysis of two fundamental resources — caves and the California Trail. The park purpose and significance statement with its associated fundamental resource relating to cave structures and features are identified below.

Lava Beds National Monument

Park Purpose: Lava Beds National Monument protects and interprets volcanic and natural features of scientific interest and evidence of prehistoric and historic human settlement, use, conflicts.

Significance: Lava Beds National Monument protects and interprets the largest concentration of lava tube caves in the continental United States along with its unique environments and cave-dependent species.

Fundamental Resource: Caves.

Fundamental Resource or Value	1.1 Cave structures and features
Importance of the Resources and Values	<p>The monument currently has more than 500 documented significant caves, which have formed in the parks basalt and andisite flows. The caves are products of volcanic processes that characterize the showering vents, rivers of molten rock, collapses and gaseous explosions that once sculpted the surrounding landscape. The park’s lava tubes systems and other caves are notable for their:</p> <ul style="list-style-type: none"> ▪ Abundance ▪ Complexity and lengths of passages ▪ Excellent preservation of primary volcanic features and secondary depositions. <p>Many of the park’s caves preserve archeological and historical materials including: Pictographs, remains, artifacts and CCC era developments.</p> <p>Sheltered deposits in caves also contain paleontological materials, along with sediments useful for evaluating past events and paleoclimate.</p>
Current Conditions and Trends	<p>Of the 500+ known significant caves in the park only 20% have had any formalized inventory or survey and even now many of these are out of date with current cave inventory and mapping standards. The potential area of cave development is vast, and there is a great likelihood of many more cave discoveries. Some of the park’s significant lava trenches and their associated cave systems are either sourced or meander outside the current park boundary. Future agreement with neighboring federal agencies will have to be made in order to protect these important systems.</p> <p>The park has seen a steady rise in visitation and with it an increase in impacts on caves open and closed to the public. In the future increased monitoring, impact studies, and restoration efforts will have to be undertaken to minimize these impacts on cave resources. Along with mitigation efforts the park will have to increase its efforts to educate the public on resource fragility and light caving techniques. Many visitors lack an understanding of cave development or the sensitive ecologies the caves contain, often resulting in unintended impacts. More callus visitors have left garbage, waist, and graffiti behind and damage sensitive features. Paint guns, geo cashing, off road vehicles, and the ease of which sensitive information can be published are all new challenges for the park.</p> <p>Climate change, development in the basin, agricultural practices, and transportation all pose serious challenges for the fragile ecologies of cave systems with in the park. Little is currently known about the parks unique cave and trench microenvironments, or the ecologies of the organism dependant on these stable systems. The effects of drawing down of the local water tables, introduction of petrol chemicals off of paved surfaces, fertilizer, pesticide loading, even air and water quality are still unknown.</p>
Potential Threats	<p>There are many threats to cave resources and their associated features both within and outside the National Monument.</p> <p>As the City of Klamath Falls and the 139 corridor continues to develop the park will begin to see increased impacts from outside and in turn pressures to facilitate a growing visitor base within the monument. The most relevant current threats outside the park are now global climate change, altered plant communities, fire repression, development within the basin and agricultural practices.</p> <p>Agricultural and residential use of herbicide, pesticide, nitrate and fertilizer use still have unknown affects for the park caves.</p>

Fundamental Resource or Value	1.1 Cave structures and features
	<p>The threat of chemical, waist and fuel spills along road ways either inside or outside the park could have serious consequences. Also the native silence of park caves is often broken by military and commercial over flights and road noise. The silent soundscape is a precious feature of caves.</p> <p>Within the park, future developments to facilitate an increased visitation use could adversely affect cave resources. The resurfacing of roads, expanding campground facilities, and an increase in cave visitation could degrade the park's well-preserved cave resources. Existing infrastructure such as parking lots, broken mains and sewage lines, along with leaking septic and fuel tanks could have dire consequences for cave resources. New and outdated infrastructure both pose potential threat that could introduce pollutants, divert drainage, increase runoff and introduce invasive flora in disturbed areas. The resurfacing of roads and heavy construction equipment may damage underlying cave systems or lead to the collapse of a cave roof.</p> <p>The repair or the development of trail systems in a cave can adversely affect cave resources. These activities disturb natural surfaces, often break irreplaceable formations and alter the natural cave environment. The modifying of entrances can have repercussion though out the rest of the cave.</p> <p>With visitation inevitably comes trampling, breakage and disturbance. Lint off of clothes, hair and dead skin cells rapidly accumulates in dry caves. Litter, tattered remains of shoes and clothes, and the material fallen from pockets. The ill effects of visitation are usually unintended however a few individuals leave a heavier mark on the park. Graffiti, theft, vandalism and littering are not strangers to the park. These impacts are accumulative and can rapidly degrade cave resources. The park staff spends a large amount of time and funds every year cleaning up after a few callus guests. An increase in visitation requires that more time and funds be allocated for monitoring and restorative measures.</p> <p>An increase in visitation may also bring about the greater recurrence of visitors wanting an undeveloped or wilderness cave experiences. Often time cavers notify and work with park staff; however clandestine trips are not unknown. An increase in visitation to the park's little visited backcountry caves will have negative affects on previously unimpaired cave resources.</p> <p>The park has a history of encouraging research and working with interest groups. However, studies within the park can impact cave resources. Collections, visitation and studies can have an accumulative impact on the often pristine cave environments or less visited caves researchers want to visit. These activities require training, oversight on researchers and the implementation of non impairing research methods.</p> <p>Natural events such as earthquakes and volcanic activities also have potential to alter cave resources. FOIA release of sensitive cave data for wide spread distribution is a threat to the protection of cave resources.</p>
Stakeholders	<p><i>Local and Regional Organizations:</i></p> <ul style="list-style-type: none"> Cave Research Foundation in supporting the preservation, data collection, and public understanding of the monument's cave resources. Shasta Grotto Speleological Society <p><i>National Organizations:</i></p> <ul style="list-style-type: none"> National Speleological Society, Cave Research Foundation, Bat Conservation International <p><i>Government Agencies and Tribes:</i></p> <ul style="list-style-type: none"> The Klamath Tribes, United States Geological Survey, Bureau of Reclamation, Modoc National Forest, Klamath National Forest, Shasta-Trinity National Forest, United States Fish & Wildlife
Law and Policies	<p>Cave Protection</p> <p>Source:</p> <ul style="list-style-type: none"> Federal Cave Resources Protection Act of 1988 (FCRPA) NPS <i>Management Policies 2006; NPS-77: Natural Resources Management Guidelines</i> <p>Policy Direction:</p> <p>The Park Service manages to perpetuate the natural systems associated with the caves and karst such as drainage patterns, air flows, mineral deposition, and plant and animal communities. Wilderness and cultural resources and values will also be protected.</p>