

APPENDIX B: Minimum Requirements Analysis



ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE

WORKSHEETS

"... except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act..."

– the Wilderness Act, 1964

CLOSURE OF ABANDONED MINE OPENINGS ORGAN PIPE CACTUS NATIONAL MONUMENT, ARIZONA

Step 1: Determine if any administrative action is necessary.

Description: Briefly describe the situation that may prompt action.

Organ Pipe National Monument contains numerous abandoned mine features located throughout the park, which may include health and safety hazards associated with unsecured horizontal and vertical openings, unstable tailings and rubble, holes and prospect pits, unstable ground surfaces, and collapsed walls and debris.

The National Park Service (NPS) has prepared an Abandoned Mine Lands (AML) Closure Plan and Environmental Assessment (EA) to mitigate human health and safety hazards at abandoned mine lands (AMLs) within the park.

The proposed action is to eliminate human access to abandoned mine openings with severe health and safety risks and/or high level of wildlife use, while minimizing impacts on bats and other wildlife and significant cultural resources. This would be done by using a variety of closure methods depending on site-specific conditions and features. In some cases, the decision for a particular feature that is not a high risk (based on conditions at the site and/or low accessibility) would be to do nothing but continue to monitor that site. For most openings of substantial depth however, the proposed action for each consists of some type of gate, fencing, backfill, or other closure method.

To determine if administrative action is necessary, answer the questions listed in A - F on the following pages.

A. Describe Options Outside of Wilderness

Is action necessary within wilderness?

Yes: ☒ No: ☐

Explain:

Because all of the abandoned mine features at ORPI are located within designated wilderness, the action is necessary within wilderness.

B. Describe Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows consideration of the Section 4(c) prohibited uses? Cite law and section.

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

There are no special provisions that would allow consideration of prohibited uses.

C. Describe Requirements of Other Legislation

Is action necessary to meet the requirements of other laws?

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

No other legislation is relevant, unless it is found that any of the mine sites are eligible for listing on the National Register of Historic Places.

D. Describe Other Guidance

Is action necessary to conform to direction contained in agency policy, unit and wilderness management plans, species recovery plans, or agreements with tribal, state, and local governments or other federal agencies?

Yes: ☒ No: ☐ Not Applicable: ☐

Explain:

The NPS recognizes that the park resources it protects are not only visitor attractions, but that they may also be potentially hazardous. NPS Management Policies 2006 indicates that the NPS will "seek to

provide a safe and healthful environment for visitors and employees". Section 8.2.5.1 states that the NPS will strive to identify recognizable threats to the safety and health of persons, and to the protection of property, by applying nationally accepted codes, standards, engineering principles, and guidance from other NPS policies. When practicable, and consistent with congressionally designated purposes and mandates, the NPS will reduce or remove known hazards and apply other appropriate measures, including closures, guarding, signing, or other forms of education. In doing so, the NPS's preferred actions will be those that have the least impact on park resources and values.

NPS Management Policies 2006 section 6.4.1 states that NPS will promote education about the inherent risks of wilderness, but the NPS will generally not modify the wilderness area to eliminate risks normally associated with wilderness. Therefore, because abandoned mine features are not "normally associated with wilderness", eliminating or lessening the risks associated with these features would not be inconsistent with this particular NPS management policy.

E. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character including: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, or unique components that reflect the character of this wilderness area?

Untrammeled: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features, especially by backfilling and restoration, would result in the wilderness attaining a more untrammeled character than currently exists with more than 150 mine features.

Undeveloped: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features would not involve the installation of any structures that would be used for human occupation of the land. Backfilling of abandoned mine features would remove evidence of mining development from these areas. Installation of gates or cupolas would result in some evidence of human development/construction. However, gates would be installed inside of the opening of the feature and would consist of earth-tone materials that would weather over time. Five cupolas or large gates would be installed, as would six temporary fences, which would extend outside of the opening of feature to be closed. Materials for cupolas would be identical to those used for regular bat gates.

Natural: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain:

Although some of the abandoned mine features will require the installation of structural measures, the majority of them would be backfilled which would return them to a more natural state.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Noise generated by helicopter overflights and power tools would intermittently mask natural sounds.

Other unique components that reflect the character of this wilderness:

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

F. Describe Effects to the Public Purposes of Wilderness

Is action necessary to support one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?

Recreation: Yes: ☒ No: ☐ Not Applicable: ☐

Explain:

Closure of abandoned mine features is necessary to address public safety concerns associated with open shafts and pits

Scenic: Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

Scientific: Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

Education: Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

Conservation: Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

Historical use: Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

Step 1 Decision: Is any administrative action necessary in wilderness?

Yes: ☒ No: ☐ More information needed: ☐

Explain:

The NPS has proposed this project to mitigate the human health and safety hazards at abandoned mine lands within the park. The main hazards associated with abandoned mines in the park include falling into shafts, loose rock falling from the roofs of adits, and exposure to dangerous materials. Because all of the abandoned mine features at Organ Pipe Cactus are located within designated wilderness (often close to pedestrian trails), the action is necessary in wilderness.

If action is necessary, proceed to Step 2 to determine the minimum activity.

Step 2: Determine the minimum activity.

Description of Alternatives

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

Alternative A: No action

Description:

Under the no action alternative, the mine features listed in the tables in Chapter 2 would maintain current management status and remain in their present condition, subject to natural forces. Parks would conduct routine monitoring that would check for vandalism, safety concerns, and bat usage, as described in Chapter 2 of the Environmental Assessment, and warning signage would remain in place or be maintained as needed. Although park staff would continue to periodically monitor the mines for human use and sensitive species activity, the open adits, shafts, and some pits would continue to pose a safety risk to park visitors, NPS staff and UDIs. No correction of hazards would be undertaken.

Effects:

Wilderness Character

There would be no effects to wilderness character under the no action alternative

Heritage and Cultural Resources

There would be no effects on the protection or management of historic or pre-historic artifacts, sites, structures, or landscapes.

Maintaining Traditional Skills

This alternative would not help maintain proficiency in the use of traditional tools or skills.

Special Provisions

There are no special provisions or rights associated with the wilderness in the park.

Economic and Time Constraints

There are no costs or labor associated with the no action alternative.

Additional Wilderness-specific Comparison Criteria

N/A

Safety of Visitors, Personnel, and Contractors

Although park staff would continue to periodically monitor the abandoned mines for human use, the open adits, shafts, and some pits would continue to pose a safety risk to park visitors.

Alternative B: Eliminate human access to abandoned mine openings

Description:

The elimination of human access to abandoned mine openings would be accomplished using a variety of closure methods depending on site-specific conditions and features. In some cases, the decision for a particular feature that is not a high risk (based on conditions at the site and/or low accessibility) would be to do nothing but continue to monitor that site. For most openings of substantial depth however, the proposed action for each consists of some type of gate, backfill, or other closure method. For sites that are close to existing trails and roads, and where gating materials would not be required, crews would access mine sites on foot. No heavy machinery or power tools would be used in these instances.

For some mine sites that are close to established trails and have relatively small openings, there may be the ability to transport materials and equipment by pack animals, depending on proximity to an established trail and the type of equipment and materials needed. This will be determined in consultation with the closure contractor and with park approval on a site-by-site basis, and will be determined mainly by the size of the feature which determines the weight and configuration of the load. Pack animals are limited in the weight they can carry (about 75 pounds for a mule; 100 to 150 pounds maximum for a horse; J. Fant, Karst Solutions, pers comm with N. Van Dyke, Louis Berger Group 2010). Also, the weight must be distributed evenly, which is difficult to do for some materials. Materials and equipment for a typical gate can weigh up to several thousand pounds, and some longer steel components or welders cannot be carried by pack. Therefore, the use of pack animals will generally be used as a limited application for smaller features or those slated for a PUF treatment, which involves less weight.

However, for many of abandoned mine sites at ORPI, access for construction is not possible by roads or trails due to steep slopes, lack of established trails, and/or remote locations/distance. Also, if the closure method requires the use of materials and equipment of excessive weight, helicopter support would be needed. Equipment would be sling-loaded in bags or other containers and lowered via cable to target areas at mine closure locations. The minimum altitude for helicopter access would be 100 feet. The helicopter staging area or helipad would be located in previously disturbed areas near roads, and only minimal vegetation would need to be cleared to sling-load equipment or supplies. Helicopters would not land at the sites in designated wilderness.

Of the closures planned for Organ Pipe National Monument, 15 are currently identified as requiring the use of helicopters to transport construction equipment and materials into sites within designated wilderness. Helicopter loads would be managed and scheduled to minimize the number of trips needed and to keep these trips to the shortest time period possible. For the closures as proposed, helicopter flight times are estimated to be about 1- 3 hours total per site for PUF/backfill or gate closures. As previously mentioned, pack stock would be evaluated and used instead of helicopters for mines that are close to established trails or roads, reducing the need for the use of helicopters.

Construction and installation of gates would require the use of welders, generators, rock drills, cutting torches, and other power tools. Use of power tools would be during daylight hours only. However, some of the bat-compatible cupolas could take up to 9 days to install, and there are six of these proposed. At sites where the closures could be accomplished using light backfill or poly-urethane foam fill, no power tools would be required.

Effects:

Wilderness Character

"Untrammelled"

In most cases, the abandoned mine sites would not be considered a natural component of the ecological system, due to their anthropogenic origin. In cases where these features are actively being used by wildlife, a gate would be installed, which would allow unimpeded wildlife (bat) passage. However, nothing in this alternative would involve intentionally manipulating or controlling a natural system in wilderness.

"Undeveloped"

If a grate closure was selected, construction and installation would be accomplished using very low-profile methods that would ensure that the installed features were unnoticeable to visitors except at very close distances. A bat cupola would present a greater visual contrast to the surrounding setting as it would be a box-like structure over the vertical shaft several feet above the ground. Six bat-compatible cupola gates or chute gates would be installed, and an effort would be made to follow as closely as possible the form, line, color and texture of surrounding natural features. Existing topography would also be used to the extent possible in shielding the structure from long-range views. The staging areas and construction site would be returned to their natural state once construction is complete. Fences erected as part of the adaptive management approach for protection of the lesser long-nosed bat would also be highly visible, but would be temporary.

Sites using backfill or poly-urethane foam fill would be virtually undetectable in the long term. Although the existing state of "development" at each of the construction sites may vary, the sites would be returned to their natural state once construction is complete.

"Natural"

By restricting human access to abandoned mines containing active bat colonies, impacts from human disturbance of wildlife would be reduced. Also, backfilling of shafts would return the area to a more natural condition. Any disturbance to soils or vegetation would be short-term only.

"Outstanding opportunities for solitude or a primitive and unconfined type of recreation"

Visitors may hear crews during projects as they operate heavy machinery or power tools, in addition to helicopter over flights as needed to transport materials. These impacts would be short term, as installation of closures would be completed in a matter of days per site and over a period of several months.

Other unique components that reflect the character of this wilderness

N/A

Heritage and Cultural Resources

There would be no effects on the protection or management of historic or pre-historic artifacts, sites, structures, or landscapes.

Maintaining Traditional Skills

Mule packing would be used where appropriate and approved by the park (see above discussion) to get construction materials to the site.

Special Provisions

There are no special provisions or rights associated with the wilderness in the park.

Economic and Time Constraints

The American Recovery and Reinvestment Act of 2009 (ARRA), passed on February 18, 2009, invests in projects to rebuild the nation's infrastructure. Closure of the AML sites to mitigate hazards will be done under ARRA funding.

Time constraints associated with the project include avoiding critical life stages of sensitive wildlife species. Bat compatible gates or cupolas will be constructed during non-critical periods for bats (i.e. no closures at maternity sites during maternity period, and no work during hibernation period at hibernation sites). For lesser long-nosed bats at ORPI, this means avoiding their active season from April through August. Construction would also be avoided from February through July to protect the Sonoran pronghorn. Timing also needs to take into account other wildlife that could be

affected, such as nesting birds disrupted by helicopter transport of equipment and supplies. Overall, construction would therefore be limited to the late fall/early winter months

Additional Wilderness-specific Comparison Criteria

N/A

Safety of Visitors, Personnel, and Contractors

Closing of these abandoned mine sites would greatly improve visitor safety, because human entry into these dangerous features would be denied. During construction, public access to the site would be restricted.

Potential safety hazards associated with the implementation of this alternative include the use of heavy machinery, helicopters, power tools, and hand tools. The use of any tools or machinery presents some level of risk to safety of the people involved in the project. For this reason, a safety talk is given before any activity begins for all staff and volunteers.

When motorized tools or heavy machinery are required, only staff (or in some cases, contractors) who have received the proper training and possess any required licenses will be authorized to operate the equipment.

Step 2 Decision: What is the Minimum Activity?

Selected alternative:

Closure of selected abandoned mine features using helicopters for transporting construction materials unless pack stock could be used in limited applications for smaller features or those requiring less material/equipment weight and where there are existing trails. Motorized tools would only be required to assemble gates, as they must be assembled on site to precisely fit the mine/shaft opening.

Rationale for selecting this alternative (including documentation of safety criterion, if appropriate):

The selected alternative is the alternative that would accomplish the project objectives of:

- Provide safe and appropriate actions to close or monitor abandoned mine features on a park-wide basis, including appropriate closure methods, designs, and means of access
- Avoid or minimize impacts on the park's cultural and natural resources and values, visitor use and experience, and human health and safety.
- Prevent impairment of the park's resources and values.

Although it would be preferable to use pack stock for the transport of materials to all mine sites if there are exiting trails, the weight of the construction materials along with topographic constraints, great distances between access points and mine sites, or the lack of access trails severely limits the use of pack stock for some sites. The only other viable option to access the more remote sites would be by helicopter. Although helicopter noise would result in temporary wilderness impacts as a result of engine noise, the use of a helicopter would, overall, have only limited adverse impacts as they would not land in the wilderness and the length and number of flights would be minimized by locating staging areas at the closest functional location possible. The use of helicopters would not result in ground disturbance in wilderness areas. Park visitors in the area could be disturbed by the noise of the helicopter, but this would be an overall brief period of disturbance and would only persist during daylight hours. The same would be

true for the use of power tools and heavy machinery. Use of helicopter may have fewer adverse impacts on the environment and wilderness values than ground access.

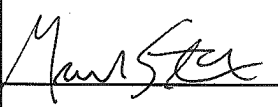
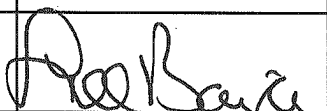
Construction of barriers strong enough to permanently restrict human use of abandoned mine sites requires the use of power tools on site, as welding and cutting steel cannot be accomplished through the use of hand tools. Hand tools would be used for sites requiring only light backfill or polyurethane foam fill. The use of power tools would also ensure that the overall duration of the project was reduced, thus minimizing impacts to visitor use and experience in the long term. The fact that the bat gates must be precisely fit to each mine/shaft opening precludes the construction of these off site. Furthermore, it is not possible to use hand tools to cut and weld the metal bars that are required for gate construction. Therefore, the use of power tools would be necessary within wilderness, at the abandoned mine site locations.

Monitoring and reporting requirements:

Check any Wilderness Act Section 4(c) uses approved in this alternative:

- | | |
|--|--|
| <input checked="" type="checkbox"/> mechanical transport | <input type="checkbox"/> landing of aircraft |
| <input checked="" type="checkbox"/> motorized equipment | <input type="checkbox"/> temporary road |
| <input type="checkbox"/> motor vehicles | <input type="checkbox"/> structure or installation |
| <input type="checkbox"/> motorboats | |

Record and report any authorizations of Wilderness Act Section 4(c) uses according to agency procedures.

Approvals	Signature	Name	Position	Date
Prepared by:		Louis Berger	Group Contractor	
Recommended:		MARK STURM	Chief of Res Mgt	1/29/10
Recommended:				
Approved:		LEE BAZA	Supt	2/1/10



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“ . . . except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act...”

– the Wilderness Act, 1964

CLOSURE OF ABANDONED MINE OPENINGS GRAND CANYON NATIONAL PARK, ARIZONA

Step 1: Determine if any administrative action is necessary.

Description: Briefly describe the situation that may prompt action.

Grand Canyon National Park contains numerous abandoned mine features located throughout the park, which may involve health and safety hazards associated with unsecured horizontal and vertical openings, unstable tailings and rubble, holes and prospect pits, unstable ground surfaces, collapsed walls and debris, and possibly pools of water and bad air within the mine openings.

The National Park Service (NPS) has prepared an Abandoned Mine Lands (AML) Closure Plan and Environmental Assessment (EA) to mitigate human health and safety hazards at abandoned mine lands (AMLs) within the park.

The proposed action is to eliminate human access to abandoned mine openings with severe health and safety risks and/or high level of wildlife use, while minimizing impacts on bats and other wildlife and significant cultural resources. This would be done by using a variety of closure methods depending on site-specific conditions and features. In some cases, the decision for a particular feature that is not a high risk (based on conditions at the site and/or low accessibility) would be to do nothing but continue to monitor that site. For most openings of substantial depth however, the proposed action for each consists of some type of gate, fencing, backfill, or other closure method.

To determine if administrative action is necessary, answer the questions listed in A - F on the following pages.

A. Describe Options Outside of Wilderness

Is action necessary within wilderness?

Yes: ☒ No: ☐

Explain:

Because 14 of the abandoned mine features to be closed are located within areas recommended for wilderness designation, the action is necessary within recommended wilderness.

B. Describe Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows consideration of the Section 4(c) prohibited uses? Cite law and section.

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

No portion of Grand Canyon National Park has been designated as wilderness; therefore, there are no special provisions that would allow consideration of prohibited uses.

C. Describe Requirements of Other Legislation

Is action necessary to meet the requirements of other laws?

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

No other legislation is relevant, unless it is found that any of the mine sites are eligible for listing on the National Register of Historic Places.

D. Describe Other Guidance

Is action necessary to conform to direction contained in agency policy, unit and wilderness management plans, species recovery plans, or agreements with tribal, state, and local governments or other federal agencies?

Yes: ☒ No: ☐ Not Applicable: ☐

Explain:

The NPS recognizes that the park resources it protects are not only visitor attractions, but that they may also be potentially hazardous. NPS Management Policies 2006 indicates that the NPS will "seek to

provide a safe and healthful environment for visitors and employees". Section 8.2.5.1 states that the NPS will strive to identify recognizable threats to the safety and health of persons, and to the protection of property, by applying nationally accepted codes, standards, engineering principles, and guidance from other NPS policies. When practicable, and consistent with congressionally designated purposes and mandates, the NPS will reduce or remove known hazards and apply other appropriate measures, including closures, guarding, signing, or other forms of education. In doing so, the NPS's preferred actions will be those that have the least impact on park resources and values.

NPS Management Policies 2006 section 6.4.1 states that NPS will promote education about the inherent risks of wilderness, but the NPS will generally not modify the wilderness area to eliminate risks normally associated with wilderness. Therefore, because abandoned mine features are not "normally associated with wilderness", eliminating or lessening the risks associated with these features would not be inconsistent with this particular NPS management policy.

E. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character including: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, or unique components that reflect the character of this wilderness area?

Untrammeled: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features would not involve modern human control of areas with wilderness character. Backfilled areas would return to a more natural state.

Undeveloped: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features would not involve the installation of any structures that would be used for human occupation of the land. Backfilling abandoned mine features would remove evidence of mining development from some areas. Installation of gates or cupolas would result in some evidence of human development/construction. However, gates would be installed inside of the opening of the feature and would consist of earth-tone materials that would weather over time. Only one cupola or large gate is proposed in the park.

Natural: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain:

Although most of the abandoned mine features will require the installation of structural measures, some of them would be closed using polyurethane foam (PUF) to plug openings and covered with backfill, which would return them to a more natural state.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Noise generated by helicopter overflights and power tools would intermittently mask natural sounds.

Other unique components that reflect the character of this wilderness:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

F. Describe Effects to the Public Purposes of Wilderness

Is action necessary to support one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?

Explain:

Closure of abandoned mine features is necessary to address public safety concerns associated with open shafts and pits.

Scenic: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Scientific: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Education: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Conservation: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Historical use: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Step 1 Decision: Is any administrative action necessary in wilderness?

Yes: ☒ **No:** ☐ **More information needed:** ☐

Explain:

The NPS has proposed this project to mitigate the human health and safety hazards at abandoned mine lands within the park. The main hazards associated with abandoned mines in the park include falling into shafts, loose rock falling from the roofs of adits, and exposure to dangerous materials. Because many of these abandoned mine features are located within recommended wilderness (often close to pedestrian trails), the action is necessary in wilderness.

If action is necessary, proceed to Step 2 to determine the minimum activity.

Step 2: Determine the minimum activity.

Description of Alternatives

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

Alternative A: No action

Description:

Under the no action alternative, the mine features listed in the tables in Chapter 2 of the Environmental Assessment would maintain current management status and remain in their present condition, subject to natural forces. Parks would conduct routine monitoring that would check for vandalism, safety concerns, and bat usage, as described in Chapter 2 of the Environmental Assessment, and warning signage would remain in place or be maintained as needed. Although park staff would continue to periodically monitor the mines for human use and sensitive species activity, the open adits, shafts, and some pits would continue to pose a safety risk to park visitors or NPS staff. No correction of hazards would be undertaken.

Effects:

Wilderness Character

There would be no effects to wilderness character under the no action alternative

Heritage and Cultural Resources

There would be no effects on the protection or management of historic or pre-historic artifacts, sites, structures, or landscapes.

Maintaining Traditional Skills

This alternative would not help maintain proficiency in the use of traditional tools or skills.

Special Provisions

There are no special provisions or rights associated with the wilderness in the park.

Economic and Time Constraints

There are no costs or labor associated with the no action alternative.

Additional Wilderness-specific Comparison Criteria

N/A

Safety of Visitors, Personnel, and Contractors

Although park staff would continue to periodically monitor the abandoned mines for human use, the open adits, shafts, and some pits would continue to pose a safety risk to park visitors.

Alternative B: Eliminate human access to abandoned mine openings

Description:

The elimination of human access to abandoned mine openings would be accomplished using a variety of closure methods depending on site-specific conditions and features. In some cases, the decision for a particular feature that is not a high risk (based on conditions at the site and/or low accessibility) would be to do nothing but continue to monitor that site. For most openings of substantial depth, however, the proposed action for each consists of some type of closure method. For sites that are close to existing trails and roads, and where gating materials would not be required, crews would access mine sites on foot. No heavy machinery or power tools would be used in these instances.

For mine sites that are near established trails and have relatively small openings, pack animals are often considered to transport materials and equipment, depending on proximity to an established trail and the type of equipment and materials needed. This method needs to be determined in consultation with the closure contractor and with park approval on a site-by-site basis, and at the Grand Canyon, it is unlikely that pack stock could be used. Pack animals are limited in the weight they can carry (about 75 pounds for a mule; 100 to 150 pounds maximum for a horse; J. Fant, Karst Solutions, pers comm with N. Van Dyke, Louis Berger Group 2010). Also, the weight must be distributed evenly, which is difficult to do for some materials. Materials and equipment for a typical gate can weigh up to several thousand pounds, and some longer steel components or welders cannot be carried by pack. At the Grand Canyon, pack animals have been considered but eliminated for mine closure work because of trail conditions (not stock standard) and the size of the materials; the mules could not handle the types/dimensions of the materials. However, for mine sites that are close to the Colorado River, boat access would be considered and evaluated.

Therefore, for the majority of abandoned mine sites at GRCA, access for construction is not possible by roads or trails due to extremely steep slopes, lack of established trails, and/or remote locations/distance. If boat or foot access is not an option, and the closure method requires the use of materials and equipment of excessive weight, helicopter support would be needed. At most sites, equipment would be sling-loaded in bags or other containers and lowered via cable to target areas at mine closure locations. The minimum altitude for helicopter access would be 100 feet. The helicopter staging area or helipad would be located in previously disturbed areas near roads, and only minimal vegetation would need to be cleared to sling-load equipment or supplies. Helicopters would not land in proposed wilderness unless the crew determines that a landing is necessary and would result in fewer impacts than hovering over the site.

Of the closures planned for GRCA, 13 sites are currently identified as requiring the use of helicopters to transport construction equipment and materials into sites within proposed wilderness. Helicopter loads would be managed and scheduled to minimize the number of trips needed and to keep these trips to the shortest time period possible. For the closures as proposed, helicopter flight times are estimated to be about 1- 3 hours total per site for PUF/backfill or gate closures.

Construction and installation of gates would require the use of welders, generators, rock drills, cutting torches, and other power tools. Use of power tools would be during daylight hours only. However, some of the bat-compatible cupolas could take up to 9 days to install, but there is only 1 of these proposed. At sites where the closures could be accomplished using poly-urethane foam/backfill, no power tools would be required.

Effects:

Wilderness Character

“Untrammelled”

In most cases, the abandoned mine sites would not be considered a natural component of the ecological system, due to their anthropogenic origin. In cases where these features are actively being used by wildlife, a gate would be installed, which would allow unimpeded wildlife (bat) passage. However, nothing in this alternative would involve intentionally manipulating or controlling a natural system in wilderness.

“Undeveloped”

If a cupola was selected, construction and installation would be accomplished using very low-profile methods that would ensure that the installed features were unnoticeable to visitors except at very close distances. A bat cupola would present a greater visual contrast to the surrounding setting as it would be a box-like structure over the vertical shaft several feet above the ground. However, only one bat-compatible cupola would be installed in the park, and an effort would be made to follow as closely as possible the form, line, color, and texture of surrounding natural features. Existing topography would also be used to the extent possible in shielding the structure from long-range views. The staging areas and construction site would be returned to their natural state once construction is complete.

Sites using poly-urethane foam plugging would be virtually undetectable in the long term. Although the existing state of “development” at each of the construction sites may vary, the sites would be returned to their natural state once construction is complete.

“Natural”

By restricting human access to abandoned mines containing active bat colonies, impacts from human disturbance of wildlife would be reduced. Also, closure of shafts using polyurethane foam (PUF) to plug openings and covering the plugs with backfill would return the area to a more natural condition. Any disturbance to soils or vegetation would be short-term only.

“Outstanding opportunities for solitude or a primitive and unconfined type of recreation”

Visitors may hear crews during projects as they operate heavy machinery or power tools, in addition to helicopter over flights as needed to transport materials. These impacts would be short term, as installation of closures would be completed in a matter of days per site and over a period of several months.

Other unique components that reflect the character of this wilderness

N/A

Heritage and Cultural Resources

There would be no effects on the protection or management of historic or pre-historic artifacts, sites, structures, or landscapes.

Maintaining Traditional Skills

This alternative would not help maintain proficiency in the use of traditional tools or skills.

Special Provisions

There are no special provisions or rights associated with the wilderness in the park.

Economic and Time Constraints

The American Recovery and Reinvestment Act of 2009 (ARRA), passed on February 18, 2009, invests in projects to rebuild the nation’s infrastructure. Closure of AML sites to mitigate hazards at these mine features will be done under ARRA funding.

Time constraints associated with the project include avoiding critical life stages of sensitive wildlife species. Bat compatible gates or cupolas will be constructed during non-critical periods for bats (i.e. no closures at maternity sites during maternity period, and no work during hibernation period at hibernation sites), generally avoiding the spring to summer months. Timing also needs to take into account other wildlife that could be affected, such as nesting birds disrupted by helicopter

transport of equipment and supplies. Construction would be avoided during March through August to avoid disrupting the Mexican spotted owl (*Strix occidentalis lucida*) breeding season. The federal government currently lists the owl as a threatened species. Overall, construction would generally be limited to the fall/early winter months

Additional Wilderness-specific Comparison Criteria

N/A

Safety of Visitors, Personnel, and Contractors

Closing of these abandoned mine sites would greatly improve visitor safety, because human entry into these dangerous features would be denied. During construction, public access to the site would be restricted.

Potential safety hazards associated with the implementation of this alternative include the use of heavy machinery, helicopters, power tools, and hand tools. The use of any tools or machinery presents some level of risk to safety of the people involved in the project. For this reason, a safety talk is given before any activity begins for all staff and volunteers.

When motorized tools or heavy machinery are required, only staff (or in some cases, contractors) who have received the proper training and possess any required licenses will be authorized to operate the equipment.

Step 2 Decision: What is the Minimum Activity?

Selected alternative:

Closure of selected abandoned mine features using river access where possible/approved and primarily helicopters for transporting construction materials to remote sites. NPS crew and contractors will hike to locations if possible. Motorized tools would only be required to assemble gates, as they must be assembled on site to precisely fit the mine/shaft opening.

Rationale for selecting this alternative (including documentation of safety criterion, if appropriate):

The selected alternative is the alternative that would accomplish the project objectives of:

- Provide safe and appropriate actions to close or monitor abandoned mine features on a park-wide basis, including appropriate closure methods, designs, and means of access
- Avoid or minimize impacts on the park's cultural and natural resources and values, visitor use and experience, and human health and safety.
- Prevent impairment of the park's resources and values.

Use of helicopter may have fewer adverse impacts on the environment and wilderness values, depending on the specific location. The length and number of flights would be minimized by locating staging areas as the closest functional location possible. The use of helicopter may result in limited ground disturbance in the proposed wilderness if landing is necessary. Park visitors in the area could be disturbed by the helicopter noise, but this would be a short-term impact and only during daylight hours. The same would be true for the use of power tools and machinery.. Park visitors in the area could be disturbed by the noise of the helicopter, but this would be an overall brief period of disturbance and would only persist during daylight hours. The same would be true for the use of power tools and heavy machinery.

The park's wilderness coordinator and project manager will determine the appropriate methods and transportation on a site-by-site basis. While in many cases, helicopter transport may be necessary other

transportation options are available. If helicopter transport is chosen, park staff and contractors will be expected to hike to sites, unless environmental conditions prohibit safe travel.

Construction of barriers strong enough to permanently restrict human use of abandoned mine sites requires the use of power tools on site, as welding and cutting steel cannot be accomplished through the use of hand tools. Hand tools would be used for sites requiring only polyurethane foam plugging. The use of power tools would also ensure that the overall duration of the project was reduced, thus minimizing impacts to visitor use and experience in the long term. The fact that the bat gates must be precisely fit to each mine/shaft opening precludes the construction of these off site. Furthermore, it is not possible to use hand tools to cut and weld the metal bars that are required for gate construction. Therefore, the use of power tools would be necessary within wilderness, at the abandoned mine site locations.

Monitoring and reporting requirements:

N/A

Check any Wilderness Act Section 4(c) uses approved in this alternative:

- | | |
|--|---|
| <input checked="" type="checkbox"/> mechanical transport | <input checked="" type="checkbox"/> landing of aircraft |
| <input checked="" type="checkbox"/> motorized equipment | <input type="checkbox"/> temporary road |
| <input type="checkbox"/> motor vehicles | <input type="checkbox"/> structure or installation |
| <input checked="" type="checkbox"/> motorboats | |

Record and report any authorizations of Wilderness Act Section 4(c) uses according to agency procedures.

Approvals	Signature	Name	Position	Date
Prepared by:				
Recommended:	/s/ Linda Jalbert		Wilderness Coordinator	1/29 /10
Recommended:	/s/ Martha Hahn		Chief, Science & Resource Management	1/29 /10
Approved:	/s/ Palma Wilson		Deputy Superintendent, Park Operations	1/29 /10



ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE

WORKSHEETS

"... except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act..."

– the Wilderness Act, 1964

CLOSURE OF ABANDONED MINE OPENINGS SAGUARO NATIONAL PARK, ARIZONA

Step 1: Determine if any administrative action is necessary.

Description: Briefly describe the situation that may prompt action.

Saguaro National Park contains numerous abandoned mine features located throughout the park, which may include health and safety hazards associated with unsecured horizontal and vertical openings, unstable tailings and rubble, holes and prospect pits, unstable ground surfaces, collapsed walls and debris, and possibly pools of water and bad air within the mine openings.

The National Park Service (NPS) has prepared an Abandoned Mine Lands (AML) Closure Plan and Environmental Assessment (EA) to mitigate human health and safety hazards at abandoned mine lands (AMLs) within the park.

The proposed action is to eliminate human access to abandoned mine openings with severe health and safety risks and/or high level of wildlife use, while minimizing impacts on bats and other wildlife and significant cultural resources. This would be done by using a variety of closure methods depending on site-specific conditions and features. In some cases, the decision for a particular feature that is not a high risk (based on conditions at the site and/or low accessibility) would be to do nothing but continue to monitor that site. For most openings of substantial depth however, the proposed action for each consists of some type of gate, fencing, backfill, or other closure method.

To determine if administrative action is necessary, answer the questions listed in A - F on the following pages.

A. Describe Options Outside of Wilderness

Is action necessary within wilderness?

Yes: ☒ No: ☐

Explain:

Because many of the abandoned mine features are located within designated wilderness, the action is necessary within wilderness.

B. Describe Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows consideration of the Section 4(c) prohibited uses? Cite law and section.

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

There are no special provisions that would allow consideration of prohibited uses.

C. Describe Requirements of Other Legislation

Is action necessary to meet the requirements of other laws?

Yes: ☐ No: ☒ Not Applicable: ☐

Explain:

No other legislation is relevant, unless it is found that any of the mine sites are eligible for listing on the National Register of Historic Places.

D. Describe Other Guidance

Is action necessary to conform to direction contained in agency policy, unit and wilderness management plans, species recovery plans, or agreements with tribal, state, and local governments or other federal agencies?

Yes: ☒ No: ☐ Not Applicable: ☐

Explain:

The NPS recognizes that the park resources it protects are not only visitor attractions, but that they may also be potentially hazardous. NPS Management Policies 2006 indicates that the NPS will "seek to

provide a safe and healthful environment for visitors and employees". Section 8.2.5.1 states that the NPS will strive to identify recognizable threats to the safety and health of persons, and to the protection of property, by applying nationally accepted codes, standards, engineering principles, and guidance from other NPS policies. When practicable, and consistent with congressionally designated purposes and mandates, the NPS will reduce or remove known hazards and apply other appropriate measures, including closures, guarding, signing, or other forms of education. In doing so, the NPS's preferred actions will be those that have the least impact on park resources and values.

NPS Management Policies 2006 section 6.4.1 states that NPS will promote education about the inherent risks of wilderness, but the NPS will generally not modify the wilderness area to eliminate risks normally associated with wilderness. Therefore, because abandoned mine features are not "normally associated with wilderness", eliminating or lessening the risks associated with these features would not be inconsistent with this particular NPS management policy.

E. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character including: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, or unique components that reflect the character of this wilderness area?

Untrammeled: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features, especially by backfilling and restoration, would result in the wilderness attaining a more untrammeled character than currently exists with more than 150 mine features.

Undeveloped: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features would not involve the installation of any structures that would be used for human occupation of the land. Backfilling of abandoned mine features would remove evidence of mining development from these areas. Installation of gates or cupolas would result in some evidence of human development/construction. However, gates would be installed inside of the opening of the feature and would consist of earth-tone materials that would weather over time. At least four cupolas or large gates would be installed, which would extend outside of the opening of feature to be closed. Materials for cupolas would be identical to those used for regular bat gates.

Natural: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain:

Although many of the abandoned mine features will require the installation of structural measures, the majority of them would be backfilled which would return them to a more natural state.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Other unique components that reflect the character of this wilderness:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

F. Describe Effects to the Public Purposes of Wilderness

Is action necessary to support one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?

Recreation: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain:

Closure of abandoned mine features is necessary to address public safety concerns associated with open shafts and pits and winzes hidden within adits.

Scenic: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Scientific: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Education: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Conservation: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Historical use: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain:

Step 1 Decision: Is any administrative action necessary in wilderness?

Yes: ☒ **No:** ☐ **More information needed:** ☐

Explain:

The NPS has proposed this project to mitigate the human health and safety hazards at abandoned mine lands within the park. The main hazards associated with abandoned mines in the park include falling into shafts, loose rock falling from the roofs of adits, exposure to dangerous materials. Because many of these

abandoned mine features are located within designated wilderness (often close to pedestrian trails), the action is necessary in wilderness.

If action is necessary, proceed to Step 2 to determine the minimum activity.

Step 2: Determine the minimum activity.

Description of Alternatives

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

Alternative A: No action

Description:

Under the no action alternative, the mine features listed in the tables in Chapter 2 of the Environmental Assessment would maintain current management status and remain in their present condition, subject to natural forces. Parks would conduct routine monitoring that would check for vandalism, safety concerns, and bat usage, as described in Chapter 2 of the Environmental Assessment, and warning signage would remain in place or be maintained as needed. Although park staff would continue to periodically monitor the mines for human use and sensitive species activity, the open adits, shafts, and some pits would continue to pose a safety risk to park visitors, NPS staff and undocumented aliens. No correction of hazards would be undertaken.

Effects:

Wilderness Character

There would be no effects to wilderness character under the no action alternative

Heritage and Cultural Resources

There would be no effects on the protection or management of historic or pre-historic artifacts, sites, structures, or landscapes.

Maintaining Traditional Skills

This alternative would not help maintain proficiency in the use of traditional tools or skills.

Special Provisions

There are no special provisions or rights associated with the wilderness in the park.

Economic and Time Constraints

There are no costs or labor associated with the no action alternative.

Additional Wilderness-specific Comparison Criteria

N/A

Safety of Visitors, Personnel, and Contractors

Although park staff would continue to periodically monitor the abandoned mines for human use, the open adits, shafts, and some pits would continue to pose a safety risk to park visitors.

Alternative B: Eliminate human access to abandoned mine openings

Description:

The elimination of human access to abandoned mine openings would be accomplished using a variety of closure methods depending on site-specific conditions and features. In some cases, the decision for a particular feature that is not a high risk (based on conditions at the site and/or low accessibility) would be to do nothing but continue to monitor that site. For most openings of substantial depth however, the proposed action for each consists of some type of gate, backfill, or other closure method. For sites that are close to existing trails and roads, and where gating materials would not be required, crews would access mine sites on foot. No heavy machinery or power tools would be used in these instances.

For some mine sites that are close to established trails and have relatively small openings, there may be the ability to transport materials and equipment by pack animals, depending on proximity to an established trail and the type of equipment and materials needed. This will be determined in consultation with the closure contractor and with park approval on a site-by-site basis, and will be determined mainly by the size of the feature which determines the weight and configuration of the load. Pack animals are limited in the weight they can carry (about 140 to 200 pounds maximum; M. Weesner pers comm with N. Van Dyke, Louis Berger Group 2010). Also, the weight must be distributed evenly, which is difficult to do for some materials. Materials and equipment for a typical gate can weigh up to several thousand pounds, and some longer steel components or welders cannot be carried by pack stock. Therefore, the use of pack animals will generally be used as a limited application for smaller features or those slated for a PUF treatment, which involves less weight.

However, for many of the abandoned mine sites at SAGU, access for construction is not possible by roads or trails due to steep slopes, lack of established trails, and/or remote locations/distance. Also, if the closure method requires the use of materials and equipment of excessive weight, helicopter support would be needed. Equipment would be sling-loaded in bags or other containers and lowered via cable to target areas at mine closure locations. The minimum altitude for helicopter access would be 100 feet. The helicopter staging area or helipad would be located in previously disturbed areas near roads, and only minimal vegetation would need to be cleared to sling-load equipment or supplies. Helicopters would not land at the sites in designated wilderness.

Of the 143 closures planned for SAGU, 7 are currently identified as requiring the use of helicopters to transport construction equipment and materials into sites within designated wilderness, and access for others slated for future closures may include helicopter access (these sites are currently listed as no action but action may be taken in the future pending results of additional monitoring and surveys). Helicopter loads would be managed and scheduled to minimize the number of trips needed and to keep these trips to the shortest time period possible. For the closures as proposed, helicopter flight times are estimated to be about 1- 3 hours total per site for PUF/backfill or gate closures. As previously mentioned, pack stock would be evaluated and used instead of helicopters for mines that are close to established trails or roads, reducing the need for the use of helicopters.

Construction and installation of gates would require the use of welders, generators, rock drills, cutting torches, and other power tools. Use of power tools would be during daylight hours only. However, some of the bat-compatible cupolas could take up to 9 days to install, and there are 4 of these currently proposed. At sites where the closures could be accomplished using light backfill or poly-urethane foam fill, no power tools would be required.

Effects:

Wilderness Character

"Untrammelled"

In most cases, the abandoned mine sites would not be considered a natural component of the ecological system, due to their anthropogenic origin. In cases where these features are actively being used by wildlife, a gate would be installed, which would allow unimpeded

wildlife (bat) passage. However, nothing in this alternative would involve intentionally manipulating or controlling a natural system in wilderness.

“Undeveloped”

If a grate closure was selected, construction and installation would be accomplished using very low-profile methods that would ensure that the installed features were unnoticeable to visitors except at very close distances. A bat cupola would present a greater visual contrast to the surrounding setting as it would be a box-like structure over the vertical shaft several feet above the ground. Four bat-compatible cupolas are currently planned to be installed, and an effort would be made to follow as closely as possible the form, line, color and texture of surrounding natural features. Existing topography would also be used to the extent possible in shielding the structure from long-range views. The staging areas and construction site would be returned to their natural state once construction is complete.

Sites using backfill or poly-urethane foam fill would be virtually undetectable in the long term. Although the existing state of “development” at each of the construction sites may vary, the sites would be returned to their natural state once construction is complete.

“Natural”

By restricting human access to abandoned mines containing active bat colonies, impacts from human disturbance of wildlife would be reduced. Also, backfilling of openings would return these areas to a more natural condition. Any disturbance to soils or vegetation would be short-term only.

“Outstanding opportunities for solitude or a primitive and unconfined type of recreation”

Visitors may hear crews during projects as they operate heavy machinery or power tools, in addition to helicopter over flights as needed to transport materials. These impacts would be short term, as installation of closures would be completed in a matter of days per site and over a period of several months.

Other unique components that reflect the character of this wilderness

N/A

Heritage and Cultural Resources

There would be no effects on the protection or management of historic or pre-historic artifacts, sites, structures, or landscapes.

Maintaining Traditional Skills

Mule packing would be used where appropriate and approved by the park (see above discussion) to get construction materials to the site..

Special Provisions

There are no special provisions or rights associated with the wilderness in the park.

Economic and Time Constraints

The American Recovery and Reinvestment Act of 2009 (ARRA), passed on February 18, 2009, invests in projects to rebuild the nation’s infrastructure. Closure of the AML sites to mitigate hazards will be done under ARRA funding.

Time constraints associated with the project include avoiding critical life stages of sensitive wildlife species. Bat compatible gates or cupolas will be constructed during non-critical periods for bats (i.e. no closures at maternity sites during maternity period, and no work during hibernation period at hibernation sites). For lesser long-nosed bats at SAGU, this means avoiding April through July.

Some of the abandoned mines may have hibernacula for the California leaf-nosed bat. The presence of different species of bats will be determined for each mine opening, and the timing of closure will be set to avoid disturbing use of the site by bats. Timing also needs to take into account other wildlife that could be affected, such as nesting birds disrupted by helicopter transport of equipment and supplies. Overall, construction would generally be limited to the late fall/early winter months

Additional Wilderness-specific Comparison Criteria

N/A

Safety of Visitors, Personnel, and Contractors

Closing of these abandoned mine sites would greatly improve visitor safety, because human entry into these dangerous features would be denied. During construction, public access to the site would be restricted.

Potential safety hazards associated with the implementation of this alternative include the use of heavy machinery, helicopters, power tools, and hand tools. The use of any tools or machinery presents some level of risk to safety of the people involved in the project. For this reason, a safety talk is given before any activity begins for all staff and volunteers.

When motorized tools or heavy machinery are required, only staff (or in some cases, contractors) who have received the proper training and possess any required licenses will be authorized to operate the equipment.

Step 2 Decision: What is the Minimum Activity?

Selected alternative:

Closure of selected abandoned mine features using helicopters for transporting construction materials unless pack stock could be used in limited applications for smaller features or those requiring less material/equipment weight and where there are existing trails. Motorized tools would only be required to assemble gates, as they must be assembled on site to precisely fit the mine/shaft opening.

Rationale for selecting this alternative (including documentation of safety criterion, if appropriate):

The selected alternative is the alternative that would accomplish the project objectives of:

- Provide safe and appropriate actions to close or monitor abandoned mine features on a park-wide basis, including appropriate closure methods, designs, and means of access
- Avoid or minimize impacts on the park's cultural and natural resources and values, visitor use and experience, and human health and safety.
- Prevent impairment of the park's resources and values.

Although it would be preferable to use pack stock for the transport of materials to all mine sites if there are exiting trails, the weight of the construction materials along with topographic constraints, great distances between access points and mine sites, or the lack of access trails severely limits the use of pack stock for some sites. The only other viable option to access the more remote sites would be by helicopter. Although helicopter noise would result in temporary wilderness impacts as a result of engine noise, the use of a helicopter would, overall, have only limited adverse impacts as they would not land in the wilderness and the length and number of flights would be minimized by locating staging areas at the

closest functional location possible. The use of helicopters would not result in ground disturbance in wilderness areas. Park visitors in the area could be disturbed by the noise of the helicopter, but this would be an overall brief period of disturbance and would only persist during daylight hours. The same would be true for the use of power tools and heavy machinery. Use of helicopters may have fewer adverse impacts on the environment and wilderness values than ground access.

Construction of barriers strong enough to permanently restrict human use of abandoned mine sites requires the use of power tools on site, as welding and cutting steel cannot be accomplished through the use of hand tools. Hand tools would be used for sites requiring only light backfill or polyurethane foam fill. The use of power tools would also ensure that the overall duration of the project was reduced, thus minimizing impacts to visitor use and experience in the long term. The fact that the bat gates must be precisely fit to each mine/shaft opening precludes the construction of these off site. Furthermore, it is not possible to use hand tools to cut and weld the metal bars that are required for gate construction. Therefore, the use of power tools would be necessary within wilderness, at the abandoned mine site locations.

Monitoring and reporting requirements:

Check any Wilderness Act Section 4(c) uses approved in this alternative:

- | | |
|--|--|
| <input checked="" type="checkbox"/> mechanical transport | <input type="checkbox"/> landing of aircraft |
| <input checked="" type="checkbox"/> motorized equipment | <input type="checkbox"/> temporary road |
| <input type="checkbox"/> motor vehicles | <input type="checkbox"/> structure or installation |
| <input type="checkbox"/> motorboats | |

Record and report any authorizations of Wilderness Act Section 4(c) uses according to agency procedures.

Approvals	Signature	Name	Position	Date
Prepared by:	<i>Margaret W. Weesner</i>	Margaret W. Weesner	Chief, Science & Res. Mgmt.	1/26/10
Recommended:	<i>Robert W. Love</i>	Robert W. Love	Chief Ranger/ Wilderness Coordinator	1/27/10
Recommended:	—	—	—	—
Approved:	<i>Kristy P. Lund</i>	Kristy P. Lund	Acting Superintendent	1/20/10

