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Intermountain
Region

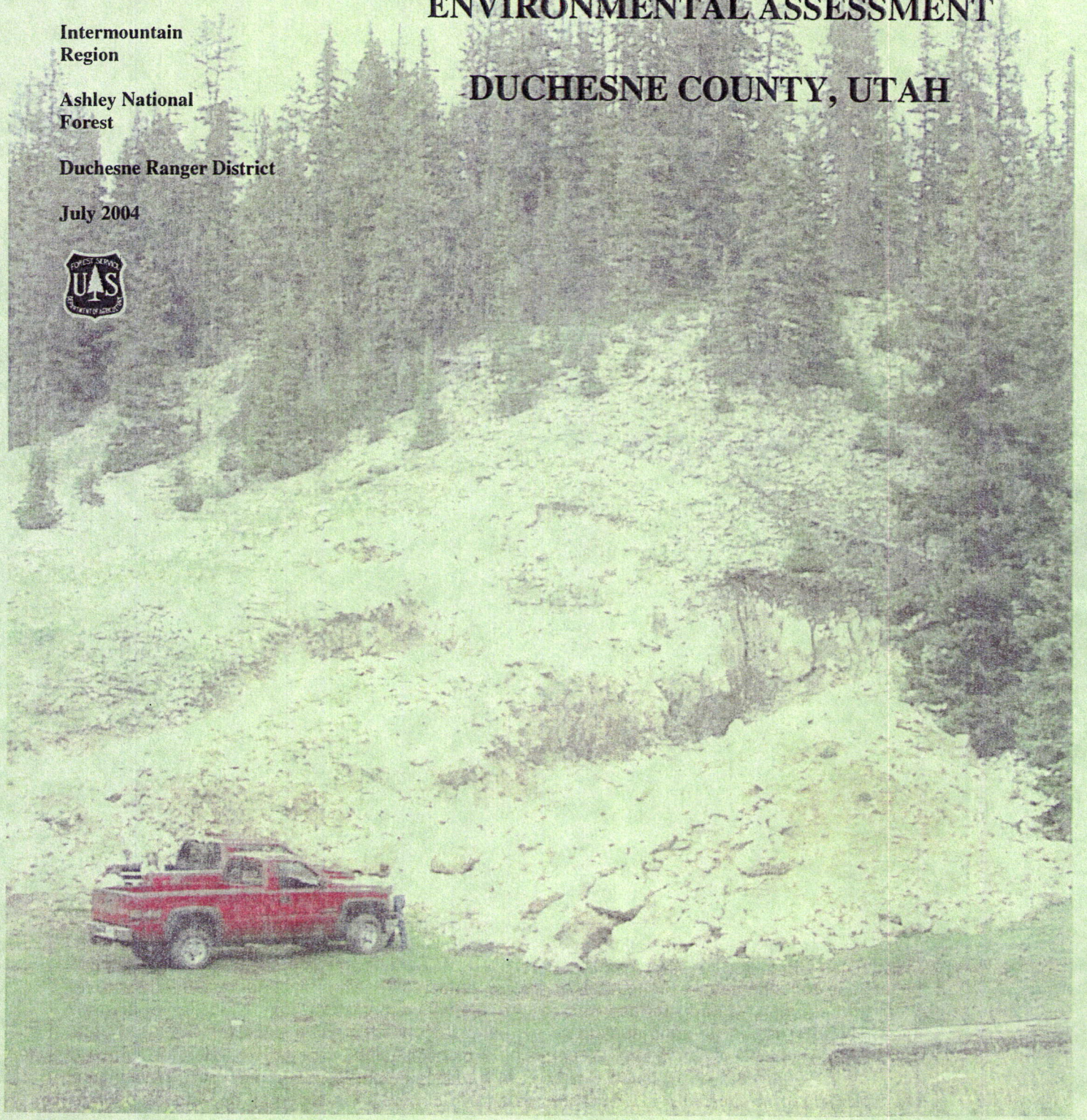
Ashley National
Forest

Duchesne Ranger District

July 2004

SHAMROCK - HONEYCOMB CALCITE MINING PROPOSAL ENVIRONMENTAL ASSESSMENT

DUCHESNE COUNTY, UTAH



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CHAPTER 1

PURPOSE AND NEED FOR ACTION

1.0 INTRODUCTION

Shamrock Mining Associates (Shamrock) is proposing to expand their mining operation on their unpatented lode mining claims located in the Blind Stream area of the Ashley National Forest. The mine site is located in Section 28, T2N, R8W, USM.

This particular calcite deposit has seen various mineral exploration and development activities for thirty or more years. Shamrock acquired the mining claims and began their operation in 1997 and removed about 200 tons of material to satisfy a small market and to develop a larger market.

1.1 Purpose and Need

Shamrock submitted a plan of operation to the Ashley National Forest in accordance with U.S. Mining Laws and regulations. The U.S. Mining Laws confer a statutory right to mining claim owners to access, explore and develop valuable minerals on their claims. The Federal Regulations, 36 CFR 228, Subpart A, sets forth rules and procedures for the protection of National Forest surface resources in connection with these operations. The proposed action is an extension of previous exploration and development of the site. The regulations require that each plan be evaluated in a manner meeting requirements of the National Environmental Policy Act (NEPA). This analysis provides the basis for the Forest Service to approve and/or require modification of the proposed operating plan. Decisions, mitigation measures, and monitoring requirements that result from the environmental analysis are subsequently implemented through the approved plan.

1.2 Proposed Action

The proposed action, if approved, would allow Shamrock to mine and haul an estimated 3,000 tons of calcite per year with a maximum limit of 6,000 tons of calcite per year for a period of up to 25 years. The operation would be re-evaluated every 5 years.

No new roads are proposed. Existing roads would meet all access requirements. These roads consist of Forest Development Roads 10135, 10140 and 10121. Material would be mined at the site and hauled over these roads to a stockpile site in Hanna, Utah. Minor maintenance of the existing roads would be conducted by Shamrock as needed, and as deemed appropriate by the Forest Service.

Mining would be conducted from a narrow open pit, up to 30 feet deep, using a track-hoe excavator. Calcite boulders would be extracted and loaded for hauling. Annually, mining operations would be conducted as access allows, which is typically between June 1 and October 31 of each year.

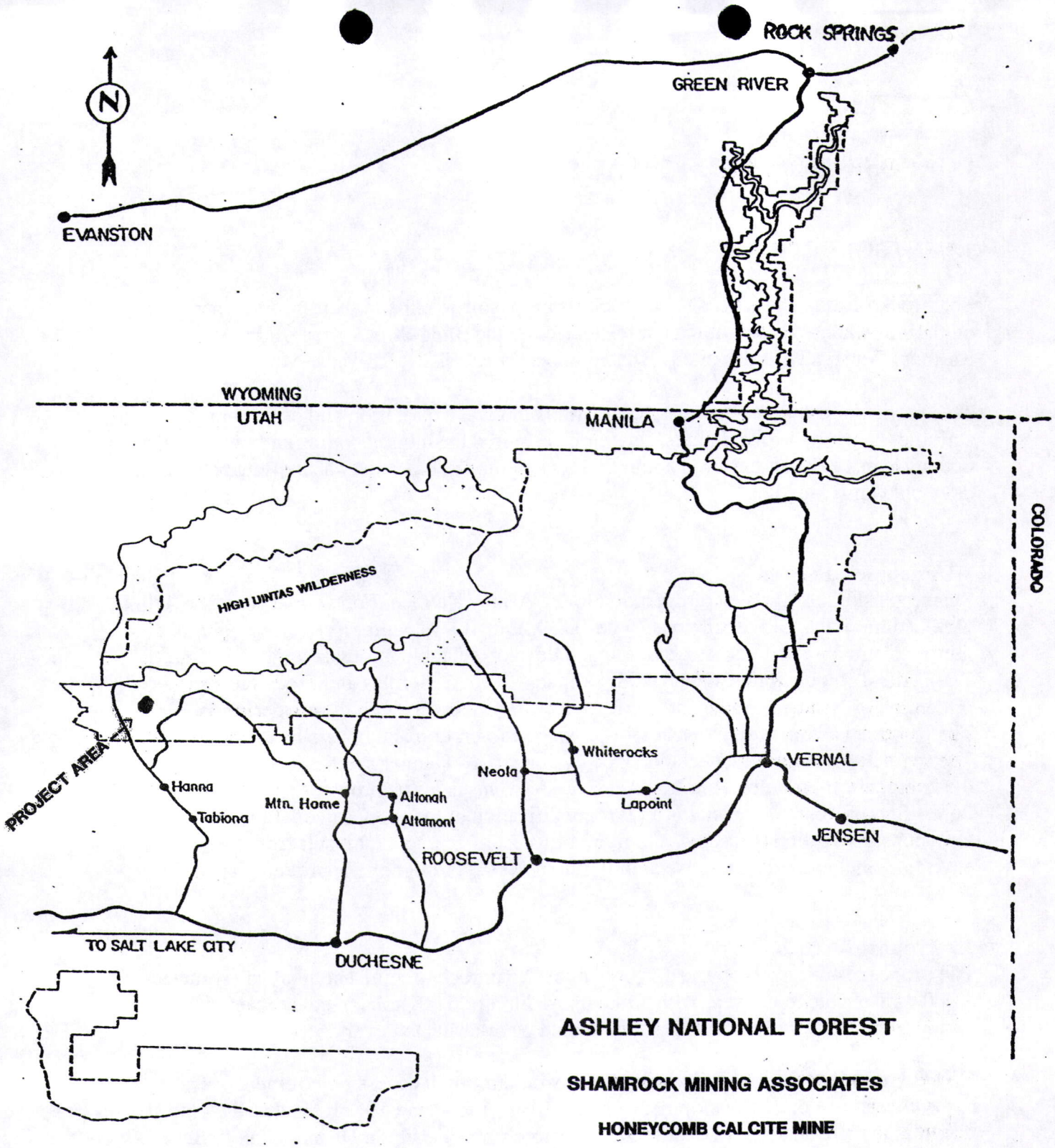


Figure 1 – Project Area Map

The calcite boulders would be loaded onto one or two 15-ton dump trucks for transport to the off-site location. Each truck would haul up to 3 to 4 loads per day, for a maximum of 6 to 8 round trips per day. No hauling would be done on weekends or holidays, with limited operations taking place during major hunting seasons. Miscellaneous equipment used during mining operations would also include a fuel and maintenance truck to service heavy equipment at the site.

Total disturbance for the open pit is estimated at less than 4 acres, with less than 1 acre of active disturbance at any given time, due to concurrent backfilling, re-contouring, and reseeding of the disturbed area. A front-end loader or dozer would be used to displace material and accomplish reclamation.

1.3 Forest Plan Direction

The Ashley National Forest Land and Resource Management Plan provides general direction for the management of the area at and adjacent to the Honeycomb Calcite Mine. This direction is found in Chapter II pp. 16-17, and Chapters IV and V of the Plan. Management Areas 'f ' and 'n' occur within the areas to be analyzed. General management guidelines and emphasis for these areas are listed below. Management prescriptions are found in Chapters IV pp. 5-13 of the Forest Plan.

The objective of Management Area 'f ' is to provide for dispersed recreation in a roaded environment. (Portions of the access road cross through this management area). This area receives a variety of uses in a variety of landforms and vegetation types. While traditional uses are not precluded, the area emphasis is to maintain and enhance dispersed recreation, wildlife, and visual opportunities. Transitory range would be allocated to wildlife. Wildlife improvements would be designed to enhance recreation opportunities and to optimize species diversity, and key or critical wildlife areas would be emphasized. Mineral restrictions would be those developed by established regulations and policies, or as mitigation measures for any one particular activity.

Management Area 'n' has the objective of allowing a range of resource uses and outputs with commodity production modified for amenity production. (Most of the access road and the mine site itself is located in this management area). While no traditional use is precluded by this prescription, one of its basic assumptions is that commodity production would be modified for amenity production. The framework of prescription 'n' allows the decision maker a multitude of management options dependent upon the resource constraints (identified throughout this analysis) and the standards and guidelines contained within the Forest Plan. While mineral development is an appropriate activity under this prescription, operations must be coordinated with wildlife and recreation uses. There are no mineral restrictions, other than the existing Standards and Guidelines in the Forest Plan and those developed as mitigation measures for any particular activity.

The two management areas call for maintenance and protection of riparian areas. Neither precludes mining activities.

1.4 Decision To Be Made

In accordance with the Federal Land Policy and Management Act of 1976, the Forest Service must consider that all National Forest System lands are available for mineral exploration and development unless the lands in question are withdrawn from mineral entry. With that understanding, the decisions to be made are:

Authorize the proposed action submitted by Shamrock, including the proposed measures for environmental protection and reclamation; or modify the proposed action to include additional measures and monitoring methods for appropriate protection of the environment, based on disclosure of all environmental impacts and development of appropriate mitigation measures.

1.5 Permits/Agreements Required

The U.S. Mining Laws as amended, and the Forest Service locatable mineral regulations (36 CFR 228, Subpart A) provide direction for all activities that are part of the Proposed Action. When approved and signed, the submitted Plan of Operations becomes the authorizing document.

If required, Shamrock would be responsible for obtaining any other appropriate licenses or permits from various federal, state and county offices. These agencies and licenses/permits might include:

- Ashley National Forest – Road Use Permit and Commensurate Use Agreement for hauling on Forest Development Roads.
- State of Utah NPDES (National Pollutant Discharge Elimination System)/storm drainage permit or plan.
- State of Utah Department of Transportation – Truck hauling on state roads.
- State of Utah Department of Natural Resources, Division of Oil, Gas and Mining - Compliance with Rule R647-3 of the Utah Mined Land Reclamation Act of 1975, Title 40-8, et seq., Utah Code Annotated.
- Duchesne County – Truck hauling on county roads.

1.6 Scoping and Public Involvement

Public input for the Shamrock proposal was invited through public notices and mailing of scoping documents. The proposal has been listed in the Schedule of Proposed Actions for the Ashley National Forest since spring of 2003. In addition, scoping documents were mailed out to potentially interested parties, on or about March 11, 2003, and a scoping notice was published in the Uintah Basin Standard on March 11, 2003. Forest Service specialists were also consulted, and an Interdisciplinary Team (IDT) was involved throughout the analysis. A review of the scoping efforts can be found in the analysis file in the Forest Supervisor's Office.

1.7 Issues and Concerns

Comment letters were received from public scoping, which listed various potential issues and environmental concerns. The IDT also identified several potential issues and public or management concerns. These issues and concerns are related to potential effects from the proposed action to the following resources:

- Effects of the proposal on Wildlife habitat, including the effects to threatened, endangered, and sensitive animals, and management indicator species.
- Effects of the proposal on Water Quality
- Effects of the proposal on Air Quality
- Effects of the proposal on High Uintas Wilderness
- Effects of the proposal on Inventoried Roadless Areas
- Effects of the proposal on Visual Quality
- Effects of the proposal on Access and Public Safety

Other concerns were identified during public and internal scoping, but were either deemed insignificant, beyond the scope of this analysis, pertaining to past actions, or were resolved by modifications to the Proposed Action. A few of these concerns are listed below, with a brief explanation, but will not be discussed further in the document.

- Effects of the proposal on threatened, endangered, and sensitive plant species. No threatened or endangered plant species are known to be growing on the area under analysis (refer to Plant Biological Evaluation in Project File). Effects to threatened, endangered, and sensitive plant species will not be discussed further.
- Effects of the proposal on Cultural Resources. A cultural resource survey was completed on the project area. No cultural resources were found (refer to Letter of Concurrence from the State Historic Preservation Office in Project File). Effects to Cultural Resources will not be discussed further.

CHAPTER 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.0 Alternatives to be Analyzed

The interdisciplinary Team (IDT) considered reasonable alternatives. Three alternatives were selected for detailed analysis and represent a reasonable range of alternatives.

Alternative A – Proposed Action (Current Plan of Operations)
The proposed action, if approved, would allow Shamrock to mine and haul an estimated 3,000 tons of calcite per year with a maximum limit of 6,000 tons of calcite per year for a period of 25 years. The operation would be re-evaluated every 5 years.

Access - No new roads are proposed. Existing roads would meet all access requirements. These roads consist of Forest Development Roads 10135, 10140 and 10121. Material would be mined at the site and hauled over these roads to a stockpile/processing site in Hannah, Utah. Minor maintenance of the existing roads would be conducted as needed.

Mining – Mining would be conducted from a narrow open pit, up to 30 feet deep, using a track-hoe excavator. Calcite boulders would be extracted and loaded for hauling. Annually, mining operations would be conducted as access allows, which is typically between June 1 and October 31 of each year.

Hauling - The calcite would be loaded onto one or two 15-ton dump trucks for transport to the off-site location. Each truck would haul 3 to 4 loads per day, for a maximum of 6 to 8 round trips per day. No hauling would be done on weekends or holidays, with limited operations taking place during major hunting seasons. Miscellaneous equipment used during mining operations would include a fuel and maintenance truck to service heavy equipment at the site.

Total disturbance for the open pit is estimated at less than 4 acres, with less than 1 acre of disturbance at any given time, due to concurrent backfilling, re-contouring, and reseeding of the disturbed area. As an area is mined out, it will be reclaimed while the next area is being opened up. The mine site is primarily a rocky bedrock outcrop with little or no recoverable topsoil. However, any topsoil that can be effectively segregated would be stockpiled and used for reclamation. Vegetation would be re-established to the extent possible using a Forest Service approved seed mix. A front-end loader or dozer would be used to displace material and accomplish reclamation. Shamrock proposes the option to use a small drill, wire-line-quarrying techniques, long arm saws or hydraulic fracturing in the future to displace the calcite material. During the operating season the work site would include a portable self-contained camp trailer, a portable tool shed, and a portable toilet. All structures would be removed at the end of each operating season.

Seasonal reclamation of the project area would include removal of all structures and equipment from the site, as well as reclamation of portions of the open pit no longer needed for active mining. Reclamation of the open pit areas would include backfilling and recontouring with local materials (waste dump), replacement of available segregated topsoil, if any, and seeding and revegetation to the extent possible, as deemed appropriate by the Forest Service. Monitoring for vegetation establishment along with any needed treatment for noxious weeds would be performed or funded by Shamrock. Final reclamation of the project area would be similar to seasonal reclamation.

If Alternative A is selected, and the proposed action approved, the additional mitigation listed in Appendix B would also be incorporated into the proposed action as part of the approval process. These mitigation measures were recommended by the interdisciplinary team, as part of this analysis, and have been incorporated into the analysis for Alternative A.

Alternative B – No Action (Continue with existing operation)
This alternative, if approved, would allow Shamrock to continue mining as previously approved. This would include similar activities as Alternative A, except mining would take place at a maximum rate of 600 tons per year. At this slower mining rate, the calcite would be loaded onto one or two 15-ton dump trucks for transport to the off-site location. Each truck would haul 1 to 2 loads per day for a maximum of 2 to 4 round trips per day. Access requirements, mining and hauling methods, and reclamation methods would be the same as Alternative A. Excavation would be at a slower rate based on the maximum allowed per year. Seasonal and final reclamation would be similar to Alternative A.

Alternative C - Base Line Comparison
This alternative would end mining and development activities at the Honeycomb Calcite Mine and the site would be rehabilitated. Although technically feasible, this alternative does not have a support base in Federal land and minerals policy. In accordance with the Federal Land Policy and Management Act of 1976, the Forest Service must consider that all National Forest System lands are available for mineral development unless the lands in question are withdrawn from mineral entry. The proposed project area has not been withdrawn. Nevertheless, this alternative is included and analyzed in order to quantify baseline environmental conditions that would exist if mining operations were to end and proposed operations were not initiated. To arrive at comparable and quantifiable data, this alternative will show the results of rehabilitation of all disturbed areas, including establishment of vegetative cover. Reclamation of existing disturbance, under this alternative, would be similar to that for Alternative A.

2.1 Alternatives Considered But Not Analyzed In Detail
Underground mining methods were considered as an alternative to the proposed open pit method. Underground mining was not considered feasible because the calcite veins are located at or near the surface and would be much more easily mined by open pit methods. Additionally, the size of the boulders encountered in the present operation would not be easily handled in an underground operation.

2.2 Forest Plan Objectives, Standards and Guidelines for All Alternatives (applicable to mining activities in Management Areas 'f' and 'n')

Refer to Ashley National Forest Land and Resource Management Plan, pages IV-14 through IV-55.

Recreation Values –

Objective 1 – manage access and travel to protect other resources, provide for public safety, and minimize conflicts with other users. Standards and Guidelines:

- Restrict access seasonally to protect roadbed, wildlife species and habitat.
- Restrict access temporarily to provide for public safety.

Objective 9 – implement and manage for visual quality objectives. Standards and Guidelines:

- Manage according to the inventoried Visual Quality Objective.

Wildlife and Fish Values –

Objective 2 – develop the species/habitat relationship of fish and wildlife. Standards and Guidelines:

- Identify management indicator species to determine their occurrence, abundance, distribution, habitat requirements, and population trends.

Objective 3 – manage the habitat of all T&E or sensitive plant and animal species to maintain or enhance their status. Standards and Guidelines:

- Resource management activities will be allowed if they will not adversely affect any T&E species.
- Identify sensitive plant and animal species to determine their occurrence, abundance, distribution, habitat requirements, and population.
- Consult with the U.S. Fish and Wildlife Service when actions have the potential to affect any T&E species.

Soil, Water, and Air Values –

Objective 1 – increase and protect water yields through resource management activities. Standards and Guidelines:

- Analyze cumulative impacts of sediment and water yield resource activities.
- Determine sediment and water yield thresholds to meet aquatic habitat requirements.
- Protect all surface waters from chemical contamination.

Objective 2 – maintain or improve soil stability, site productivity and repair or stabilize damaged watersheds. Standards and Guidelines:

- Stabilize road corridors and control use to reduce soil erosion.
- Stabilize areas damaged by fire, mining, or other events.

- Obtain at least 80% of original ground cover within 5 years after project completion.
- Design activities to minimize project-caused sediment rates, not to exceed 125% increase of the pre-project rates the first year and a 105% increase at the end of five years.

Objective 4 – control and minimize air pollutant impacts from land management activities. Standards and Guidelines:

- Integrate air resource management objectives into all resource planning and management activities.
- Preserve and protect air quality related values within the Flaming Gorge NRA and High Uintas Wilderness.

Minerals and Energy –

Objective 1 – control mineral activities to protect other resources, and restore disturbances resulting from mining or leasing activities. Standards and Guidelines:

- Prohibit the depositing of material from drilling, processing, or site preparation in natural drainages or floodplains unless restricted to prevent contamination of overland flow.
- Specific stipulations will be assigned on a case-by-case basis to protect other resource values.
- Mineral activity will not be allowed on areas where the erosion hazard rating or geologic hazard rating is high. Note: Erosion hazard ratings will be determined for individual projects based on site-specific soil and geologic data. A low, medium or high identifier will be assigned, along with corresponding mitigation or prohibitions.

Facilities (roads, buildings, etc.) –

Objective 1 – Locate, design, construct, reconstruct, and maintain roads and trails to serve the projected land management objectives at the lowest cost for transportation consistent with environmental protection and safety considerations. Standards and Guidelines:

- Close and rehabilitate unneeded roads after completion of the required use.
- Minimize sedimentation and erosion during construction, and continue restoration and erosion prevention measures where needed.
- Use dust abatement material to maintain road surface and provide for public safety.
- Construct intercepting dips to displace water as needed to prevent surface erosion where drainage is not otherwise provided.
- Clean and reshape roadway ditches to provide adequate drainage that does not undercut slopes.
- Eliminate side casting excess material from construction and maintenance activities where damage to other resources may occur.
- Stockpile and preserve topsoil for re-vegetation of disturbed areas.

- Reshape, replace topsoil, and seed existing unstabilized slopes to prevent erosion and meet Visual Quality Objectives.

TABLE 2-1 SUMMARY OF DISTURBANCE BY ALTERNATIVE

Issue	Alternative A	Alternative B	Alternative C
Project duration	25 years	25 years with enough material to warrant at least 25 years more.	1 – 2 years for full reclamation.
Land disturbance	Would remove portions of 2 rocky hillslopes covering approximately 4 acres or less.	Would remove portions of 2 rocky hillslopes covering approximately 2-3 acres or less.	Existing disturbance of approximately 1 acre would be reclaimed.
Soil disturbance	Little from hillslope excavation; may disturb some soils in karst depressions between hillslopes.	Same as for Alternative A.	Short-term soil disturbance associated with rehabilitation.
Terrestrial wildlife	Some displacement of individuals would occur to some T.E.S., MIS, and migratory birds, but not at a level that would adversely those species.	Same as for Alternative A, but on a smaller scale.	There would be some temporary disturbance from reclamation activities to T.E.S., MIS, and migratory birds, but no adverse affects would occur to these species.
Hazardous materials spill potential	Low	Low	Low
Surface or ground water pollution	No pollution.	No pollution	No pollution
Pollution to 303(d) water bodies.	None	None	None
Air quality, noise, emissions, dust	Apparent only in close proximity to mining activities (mineral extraction and haul trucks) over 5 summer-fall months per year, for up to 25 years. No dust abatement on roads.	Same as for Alternative A, but for a few weeks each year, instead of 5 months each year. Mineral extraction may continue beyond 25 years so effects may last longer than Alternative A.	Some noise and dust emissions for a few weeks during the reclamation period.
Revegetation	Little where rock material excavated due to low topsoil naturally. Good where karst depression areas are disturbed.	Same as for Alternative A.	Same as for Alternative A
Impacts to High Uintas Wilderness and destination recreation facilities.	None	None	None

CHAPTER 3

AFFECTED ENVIRONMENT

3.0 Introduction

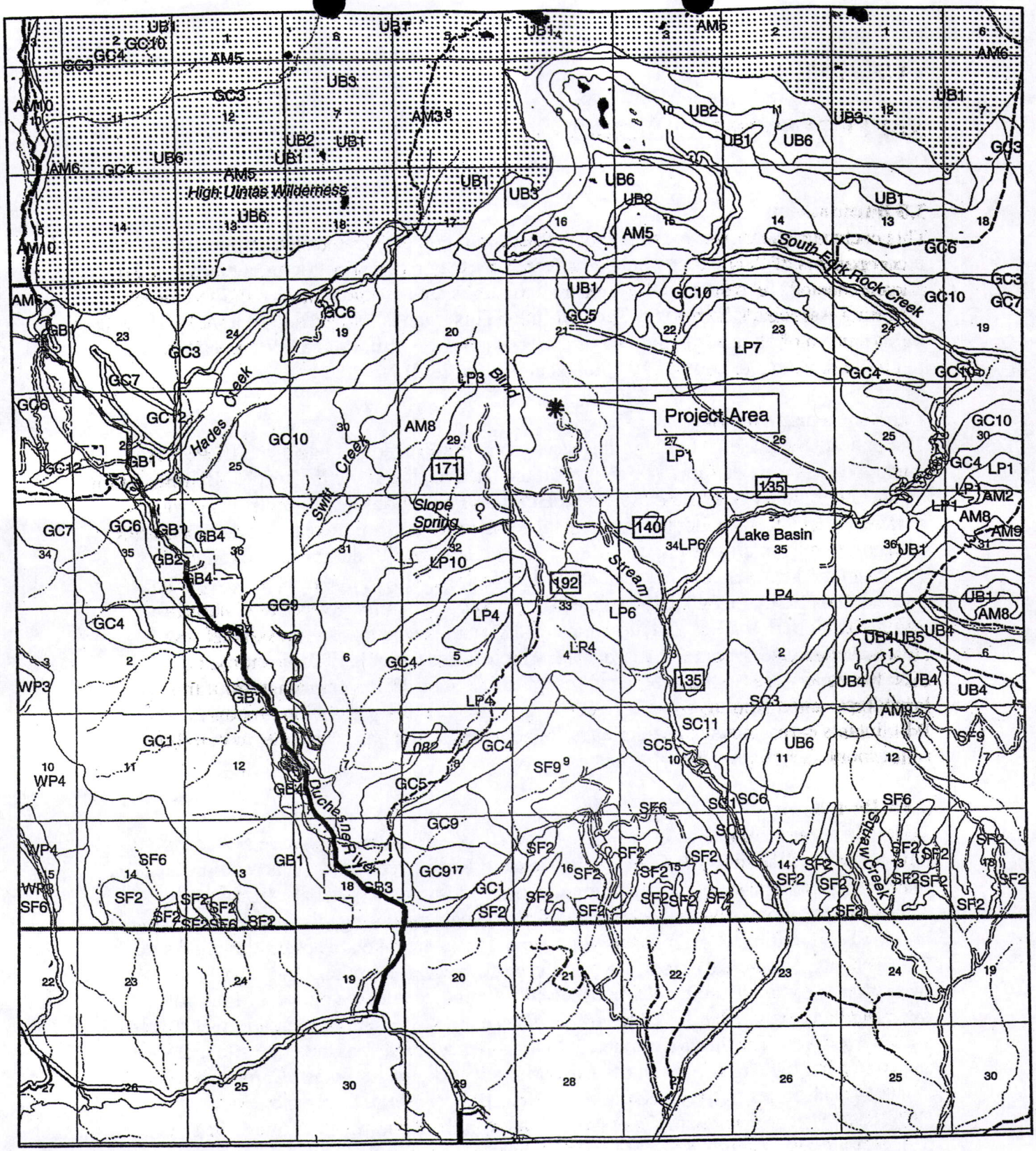
This chapter presents the existing environment and describes the environmental components of the area that would be affected by the proposed action or alternatives if implemented. The proposed action and alternatives are associated with the Shamrock Mining Associates Honeycomb Calcite Mine. This mine is located approximately 10 air miles north of Hanna, Utah in Section 28, Township 2 North, Range 8 West, USM. The mine site is at an elevation of 10,600 feet above sea level.

Land Systems Inventory

The mine site and the last mile of the access road are located in Land Type LP1. This land type is an area of karst topography on the upland plateaus at the head of Blind Steam and is underlain by both the Deseret and Humbug Formations. The dominant process currently shaping this landtype is chemical solution of the limestone bedrock. This has produced many small and large sinkholes, dry valleys, and underground drainages. Although the local relief is not much over 150 feet, the slopes in places are over 70 percent, thus producing a locally rugged topography. The limestones that underlie the unit contain chert nodules and disseminated silica and clays that form a skeletal soil. However, because the calcium carbonate, which forms the bulk of the bedrock, is dissolved away, the soils are thin and rocky. Since most of the drainage from this landtype is underground, there is potential for ground water pollution problems. Pollutants entering subsurface drainage channels in karst areas have the potential to be transported rapidly over great distances.

3.1 Recreation

The main access to the area is by Forest Road 10135, a single lane, native surface road that goes from Hanna to the Upper Stillwater and Rock Creek area. This road provides a main transportation route for recreation visitors and is open to general vehicle travel. This route receives low to moderate use for sight seeing, hunting, dispersed recreation, and firewood cutting. Forest Roads 10140 and 10121 are taken to access the mine site. These are single-lane native surface roads used for access to hunting and dispersed recreation. Season of use would be expected to coincide with the period of mining operations (Approx. June 1 – October 31). There are no developed recreation sites in the area. Grandview Trailhead is located 2.25 air miles northwest of the mine site and is accessed from the North Fork of the Duchesne River drainage. Aspen Campground is located 4.0 air miles to the southwest on the North Fork of the Duchesne River. Developed recreation sites to the east are located in the Rock Creek drainage and are 5 to 6 air miles away. Dispersed recreation in the area consists of sight seeing, hunting, dispersed camping, and firewood cutting where permitted.



Legend

- Private Land
- Wilderness Area
- Non_Roadless
- Ecological Units

N

Land Systems Inventory Map
Shamrock-Honeycomb Calcite Mining Proposal
Ashley National Forest
Duchesne Ranger District

Figure 2 – Land Systems Inventory Map

3.2 High Uintas Wilderness

The project area is located outside of the High Uintas Wilderness Area. The closest distance to the wilderness area boundary is approximately 2 miles. Due to undeveloped mountainous terrain, the project area is not visible from the wilderness.

3.3 Visual Resources

3.3.a Scenic Attractiveness

The characteristic landscape involves a karst valley surrounded with mountain ridges extending over 10,000 feet with groves of fir and openings with forbs and grasses. The aspect of the karst drainage at the mine site is south to southeast. The slopes to the north and west of the mine site are moderate to steep and consist of openings with forbs and grasses with groves of fir trees farther up the slopes. The slopes to the south and west of the mine site are gentle to moderate consisting of larger openings with forbs and grasses with groves of fir trees on the ridges and knolls. Land managers consider Scenic Attractiveness high, and this rating supports visitor expectations for quality scenery.

3.3.b Scenic Integrity

Scenic Integrity is a measure to which a landscape is visually perceived as "complete". The Scenic Integrity rating for the Blind Stream area is "high".

3.3.c Class Rating and Visual Quality Objective

The resultant Scenic Class rating is "1" for the area. The corresponding Visual Quality Objective for this area is Retention of Landscape Character. This means that management activities should be visually subordinate to the surrounding landscape.

3.3.d Visual Conditions

The mine site is located in the bottom of a karst valley making it difficult to see from any direction. Driving up the access road the site is hidden from view by the topography and groves of fir trees until arriving at the site. The few Forest visitors accessing this area are hunters, ranchers checking on livestock and visitors wanting to see the mine site. The access road is located in a canyon that is seen from very few locations.

3.4 Inventoried Roadless Areas

3.4.a Background

<u>Roadless Area Review and Evaluation (RARE II)</u>

In 1979, the National Forest System Lands were inventoried for roadless areas. The purpose of the inventory was to identify all lands exhibiting wilderness characteristics that could be considered for inclusion in the National Wilderness Preservation System. As a result of the study the Forest Service recommended 511,000 acres of the High Uintas for wilderness designation. Congress in the Utah Wilderness Act of 1984

established 460,000 acres as wilderness and released the balance for Forest Plans to determine the appropriate management direction. The inventory was updated in 1983 and called RARE II as part of the forest planning process.

Roadless Area Conservation Implementation

In 1999 the Forest Service began the Roadless Conservation Initiative. A Final Environmental Impact Statement was prepared and released on December 12, 2000. A Final Rule was released in the Federal Register on January 12, 2001. The Final Rule prohibits new road construction, reconstruction, and timber harvest in Inventoried Roadless Areas because they have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate, long-term loss of roadless area values and characteristics. Notwithstanding this prohibition, the rule recognizes prior rights associated with existing valid mining claims, and leasable and salable minerals presently under lease or contract.

3.4.b Conditions within the Project Area

The mine site is outside of inventoried roadless because the existing prior right predates the roadless inventory and designation. The area surrounding the mine and access road is inventoried roadless. The project area is easily accessible during the summer months over existing maintained native surface roads.

3.4.c Characteristics of the Inventoried Roadless Area Surrounding the Project Area

The term "roadless character" refers to an area of at least 5,000 acres that is substantially natural, without development and maintained roads. Roadless areas have varying degrees of wilderness characteristics; wilderness is specifically defined in the Wilderness Act of 1964 (P.L. 88-577). Roadless characteristics include: natural integrity, apparent naturalness, remoteness, solitude, opportunities for primitive recreation, special features, and manageability/boundaries. No special features are designated in the vicinity of the mineral operation and there are no known manageability or boundary problems.

Natural Integrity –
Natural integrity is the extent to which long-term ecological processes are intact and operating. Impacts to natural integrity are measured by the presence and magnitude of human-induced change to an area. This change includes physical developments as well as activity in the area.

> Human induced changes in the area that have impacted natural integrity include past wood product utilization, past mineral activities, road construction, livestock grazing practices, and recreation activities. Impacts from wood utilization, livestock grazing practices and recreation activities are scattered about the landscape while mineral activities and road construction produce more concentrated impacts. These activities and impacts are not independent, however,

since most of these activities are at least partially dependant upon the road system. The road system and mineral activities are outside the inventoried roadless area. The long-term ecological processes are intact and operating. Some natural integrity has been lost due to past human activities.

Apparent Naturalness –
Apparent naturalness is an indicator of whether an area appears natural to most people who are using the area. It is a measure of importance of visitor's perception of human impacts to the area. There could be some human impact, but it will not be obvious to the casual observer and the area would have the appearance of being affected only by the forces of nature.

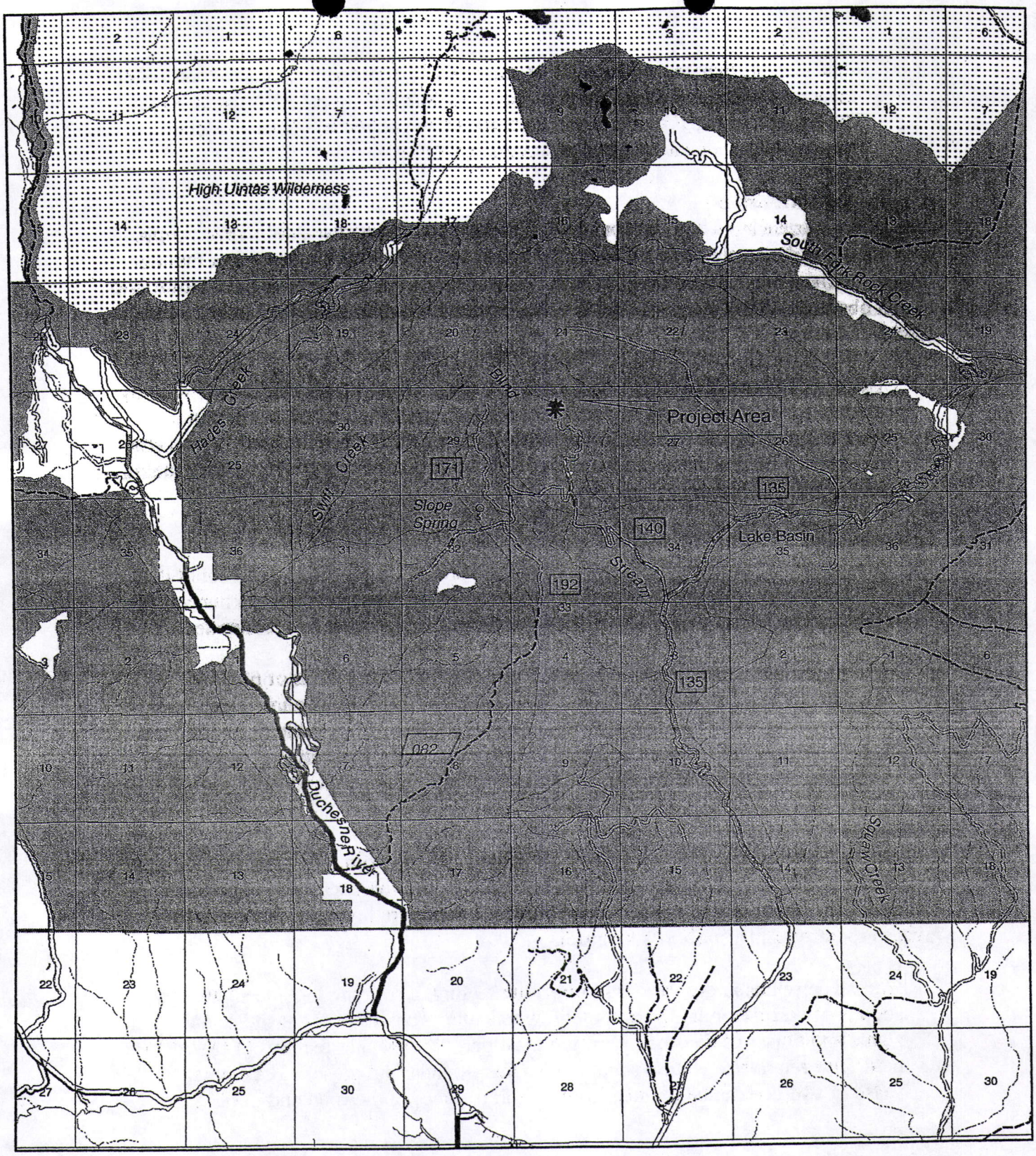
Evidence of human activities is common in several areas. This evidence is primarily associated with roads, signs of previous logging activities, mineral exploration, livestock grazing, and recreation activities. Getting away from the road system and mine site the naturalness is apparent except for occasional signs of livestock grazing and signs of off-highway vehicles.

Remoteness –
Remoteness is the perceived condition of being secluded, inaccessible, and "out of the way". Topography, vegetative screening, distance from human impacts, distance from the sights and sounds of man, and difficulty of travel all contribute to remoteness.

Most locations in the area are screened from the sights and sounds of man by topography or dense stands of trees. The mine site itself is hidden in a karst valley with few views of or from the surrounding area. Sounds from vehicles on the local road system can sometimes be heard. Due to topography and natural vegetative screening, the sights and sounds of human activities disappear within a short distance.

Solitude –
Solitude is a personal, subjective value defined as isolation from the sights, sounds, and presence of others, and the developments of man. A primitive recreation experience includes the opportunity to experience solitude, a sense of remoteness, closeness to nature, serenity, and a spirit of adventure.

Human activities in the area that impact the feeling of solitude include sights and sounds of vehicles, mining equipment, woodcutter's chainsaws, gunshots, and the sights and noises of livestock. For the most part, topographic features of the area and natural vegetative screening isolate the sights, sounds, and presence of others. The sense of solitude can be found within a short distance of the road and mine site.



Legend

- Wilderness Area
- Non_Roadless
- Inventoried Roadless Area
- Private Land

N

Inventoried Roadless Area Map
Shamrock-Honeycomb Calcite Mining Proposal
Ashley National Forest
Duchesne Ranger District

Figure 3 – Inventoried Roadless Map

Opportunities for Primitive Recreation –
Primitive recreation is defined as recreation opportunities outside wilderness in generally unmodified natural environments where interaction with other visitors is infrequent, and the opportunity for independence and self-reliance is high.

Human activities in the area that impact the opportunities for primitive recreation include sights and sounds of vehicles, mining equipment, woodcutter's chainsaws, gunshots, and the sights and noises of livestock. For the most part, topographic features of the area and natural vegetative screening isolate the sights, sounds, and presence of other activities. The opportunities for primitive recreation can be found within a short distance of the road and mine site.

3.4.d Existing Travel Administration Policies

The Travel Opportunity Guide for the Roosevelt and Duchesne Ranger Districts, dated 2001, shows that the project area is located in travel opportunity area C. The use opportunities and restrictions for the area include:

- Street legal vehicles on designated routes.
- Over snow vehicles allowed area-wide and on unplowed routes when snow is at least 12 inches deep.
- ATVs on routes with specific restrictions allowing them.
- No travel off-road or trail within 0.25 miles of any developed recreation site.

The Travel Opportunity Guide has the access road to the mine site classified as a travel route 4, which means the road is open to all types of vehicles, but is not recommended for low clearance vehicles.

3.5 Lands Status and Land Uses

The area of the Shamrock Associates mineral operations is part of the Ashley National Forest designated as R1 Lands. These lands were reserved from the Public Domain and received National Forest Status in 1905. The area became part of the Ashley National Forest in 1953. These lands are open for mineral exploration and development under the 1872 Mining Law. All surface and mineral estates are owned by the United States and under the management of the Forest Service.

Land use in the vicinity of the proposed project includes recreation, wildlife habitat, watershed management, livestock grazing, and forest management (see sections for individual resources). Part of the Bonneville Unit Central Utah Project known as Hades Diversion Tunnel is located approximately one half mile southeast of the project area. The area above the diversion tunnel is withdrawn from mineral entry.

There are no special use authorizations in the area. The mine site is within the boundaries of the Lake Basin grazing allotment, which was changed from sheep to cattle use in 1992. Part of the haul route is within the Blind Stream grazing allotment, which

has been a cattle allotment since 1981. The two allotments are administered together and are currently under analysis for future grazing.

3.6 Hydrology/Water Quality and Air Quality

3.6.a Hydrology

The proposed activity is located in the headwaters of the Blind Stream drainage, which is an intermittent tributary to the Duchesne River. On June 18, 2002, Blind Stream was dry above the Forest boundary except for stagnant pools; the channel was about 3 feet wide. Blind Stream itself does not extend as a stream channel as high in elevation as indicated on Forest Service maps; instead it turns into a series of karst depressions both above and below the Honeycomb Mine project area. None of the streams or water bodies in this area are on *Utah's 2002 303(d) List of Waters* for impaired water bodies (Utah 2002). Seven attempts to monitor water quality in Blind Stream during 2001 and 2002 were unsuccessful because there was no flow during the sample months of August through November.

There are no lakes or ponds, nor perennial, intermittent or ephemeral stream channels within the project area or immediately adjacent to it. Field reconnaissance on June 18, 2002, identified collection draws that would collect snowmelt or heavy rains. These draws are common karst-related features in the area (refer to soils section 3.10 and karst section 3.12 discussions). Water collecting here would be transported into adjacent karst depressions, where it would percolate into the soils and underlying karst drainage systems. One example of the effective subsurface drainage is a meadow adjacent to the current operations area, where parking has occurred. Although this meadow represents a closed depression, and might be expected to be wet at certain times, no vehicle ruts are evident.

Vegetation within the karst depressions includes no wetland obligate species as defined for the Intermountain Region by the U.S. Fish and Wildlife Service's National Wetlands Inventory. Vegetation observed in June 2002 included wheatgrasses (*Agrypron or Elytrigia* spp.), yarrow (*Achillea millefolium)*, cudweed sagewort (*Artemisia ludoviciana*), Kentucky bluegrass (*Poa pratensis*), strawberry (*Fragaria*), mustard, "Gooseberry currant" (*Ribes montageneum*), *Penstemon*, lupine (*Lupinus* spp.), sedge (*Carex haydeniana*), *Ranunculus* spp., *Lewisia pygmaea*, meadow rue (*Thalictrum* spp.), and *Phacelia* spp. Vegetation is sometimes influenced by rodent-induced soil disturbance or where long-residing snowbanks occur. Vegetation on the hillslopes included *Penstemon* spp., *Phlox* spp., *Castilleja* spp. (red paintbrush), *Lomatium graviolens*, buckwheat (*Eriogonum* spp.), *Potentilla* spp. (herbaceous), and larkspur (*Delphinium* spp.), mulesear (*Wyethia* spp.), plus unknown Compositae and other forbs.

3.6.b Air Quality

The mine site is at an elevation of approximately 10,600 feet where air quality is generally very good. Some long-distance haze exists, as has been documented through

more than a decade of air quality photography of the High Uintas Wilderness (Ashley National Forest data through Air Resources Specialists, Inc., Ft. Collins, Colorado). To date, some noise and emissions from heavy equipment have been generated from authorized activities at the Honeycomb mine. The area receives use by recreationists whose vehicles also provide some noise and emissions.

3.7 Access and Public Safety

The proposal would use Forest designated roads, county roads, and a State highway in their access and hauling operations. This includes roads described in Table 3-1.

Table 3-1

Facilities Associated with the Shamrock Associate's Proposed Project

Road	Location	Description
State Highway 35	From Hanna to County Road	4 miles – State highway standard
County Road	From SR 35 to Forest Boundary	5 miles – moderate standard, native surface, single lane road.
FS 10135	From Forest Boundary to intersection with FS 10140	4 miles – moderate standard, native surface, single lane road.
FS 10140	From FS 10135 to intersection with FS10121	2 miles – low standard, native surface, single lane road.
FS 10121	From FS 10140 to mine site	1 mile – low standard, native surface, single lane road.

3.8 Wildlife

This section discusses affected habitats and populations of terrestrial wildlife species federally listed or proposed as threatened or endangered, species the Forest Service has identified as sensitive, and species listed in the Forest Plan as management indicator species (See Appendix C, Items 2 & 3). Additional information and references on threatened, endangered, and sensitive species can be found in Appendix C (Items 1, 2, & 3) of this EA, the Biological Evaluation, and the Biological Assessment prepared for this project (on file at the Roosevelt Ranger District Office).

3.8.a Federally Threatened, Endangered, Candidate, and Proposed Species

Refer to Appendix C, Items 1 and 3 for a list of threatened, endangered and proposed species and their habitat pertinent to the Ashley National Forest.

Canada lynx –

In the United States, lynx inhabit conifer and conifer-hardwood habitats that support their primary prey, snowshoe hares. Lynx habitat in the Southern Rockies is likely found within the subalpine and upper montane forest zones, typically between 2,450 – 3,650 meters (8,000 – 12,000 ft) in elevation. (Ruediger et al. 2000)

Snowshoe hares are the primary prey of lynx, comprising 35-97% of the diet throughout the range of the lynx. Southern populations of lynx may prey on a wider diversity of species than northern populations because of lower average hare densities and differences in small mammal communities. Other prey species include red squirrel, grouse, flying squirrel, ground squirrel, porcupine, beaver, mice, voles, shrews, fish, and ungulates as carrion or occasionally as prey. (Ruediger, et al. 2000)

There are 10 specimens of lynx that have been reliably traced to the Uinta Mountains, with collection dates ranging from 1916 to 1972 (McKay 1991). According to a completed biological assessment, lynx occur rarely, if at all in the Uintas (McKay 1991). Forest Service track surveys (Ashley National Forest Unpub data) have not documented any lynx tracks in the Uintas. The Ashley National Forest began hair snare surveys in the fall of 1999 as part of the National Lynx Detection Protocol (McKelvey et al. 1999). In 1999, several hair samples were collected and results from the Rocky Mountain Research lab indicated no positive Canada lynx hair samples (Ashley NF unpub data). Hair samples from the 2000 and 2001 field seasons also resulted in no positive Canada lynx hair samples (Ashley NF unpub data). The last definitive occurrence of a lynx in the Uinta Mountains was in 1972 (McKay 1991). Although no positive Canada lynx hair samples were collected, there is lynx habitat on the Forest, and lynx habitat is within the project area.

A Lynx Analysis Unit, or LAU, is a subwatershed that approximates a female's home range. The mine site and most of the access roads are within primary lynx habitat as delineated by the Canada Lynx Conservation Assessment and Strategy (PG 4-10, 4-11) and is within Lynx Analysis Unit (LAU) 4. This LAU contains 9,854 acres of suitable lynx habitat. Standards and guidelines from the Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et al. 2000) that apply to mining are listed below.

Project planning – guidelines

1. Develop a reclamation plan (e.g., road reclamation and vegetation rehabilitation) for abandoned well sites and closed mines to restore suitable habitat for lynx.
2. Close newly constructed roads (built to access mines or leases) in lynx habitat to public access during the project activities. Upon completion, reclaim or obliterate these roads.
3. Minimize snow compaction when authorizing and monitoring developments.

Project planning – standards

1. On projects where over-snow access is required, restrict use to designated routes.

Bald Eagle –

Bald eagles are known to occur on the Ashley National Forest, primarily near Flaming Gorge Reservoir and the Green River corridor during the winter months (Ashley NF unpub. data). Occasionally they are near other waters until freeze-up. Bald eagles are considered to be a winter visitant to the state of Utah and rare in the summer (Behle 1985). However, one bald eagle nest was found near Flaming Gorge Reservoir (near the

Forests NRA) in April of 2004 (Maxfield, UDWR, 2004, pers. com.). There are four other active bald eagle nests in the state (two near Moab, one near Orangeville, and one near the west desert) and they are all more than 100 miles away from the project area (Romin, USF&WS, 2004, pers. com.). The majority of wintering bald eagles are found near open water, where they feed on fish and waterfowl. Winter habitat must contain an abundant available food supply, with one or more night roost sites (Behle 1981). Due to the heavy snow cover, low availability of food, and lack of expansive open water, winter and summer habitat does not exist in or near the project area. Therefore, the bald eagle would not be affected by the proposed project.

Mexican spotted owl –
The Mexican spotted owl uses mixed conifer forests dominated by Douglas fir and white fir and may also be found in ponderosa pine and limber pine. Understory usually contains broad-leaved species. In the northern portion of their range owls primarily occur in steep-walled, rocky canyons. They often nest and roost in large trees in closed-canopy forests, or in caves and cliff ledges in steep-walled, rocky canyons. Forests used for nesting and roosting are often mature and old growth stands with a complex structure. In Utah, which is in the Colorado Plateau Recovery Unit, nests are typically found in deep steep walled canyons, and hanging canyons. They forage on rodents, bats, birds, reptiles, and arthropods. Foraging is usually done at night from a perch or in the air, in closed forests, and in open forests with a shrubby or grassy understory. (USDI Fish & Wildlife Service 1995) In Utah they are known to forage along mesa tops, usually within a ½ mile of cliff edges, with woodrats being their primary prey (Nature Serve 2003).

According to the Mexican spotted owl (MSO) 1997 and 2000 models, the mine site does not occur within Mexican spotted owl habitat. The 2000 MSO model does not depict any MSO habitat near the project area or the access road, but the 1997 MSO model does show part of access roads FR135 and FR140 passing through Mexican spotted owl habitat. However, ground-truthing of the model by US Forest Service Biologists on June 22nd, 2004 determined that this area does not meet the habitat requirements for the Mexican spotted owl (MSO Habitat Evaluation Form 2004, USDI Fish & Wildlife Service 1995, 2002, and 2004). Therefore, the Mexican spotted owl would not be affected by this project. Furthermore, there have been no sightings of the Mexican spotted owl within the Forest.

3.8.b Forest Sensitive Species
Forest sensitive species are identified by the Forest Service Regional Forester as 'those … for which population viability is a concern, as evidenced by … current or predicted downward trends in habitat capability that would reduce a species' existing distribution' (FSM 2670.5). Refer to Appendix C (Items 1 & 2) for a list of species recognized as sensitive by the Regional Forester that occur or have habitat that occurs on the Ashley National Forest.

Northern Goshawk –
This species inhabits coniferous, deciduous, and mixed forests in North America and prefers to forage in closed canopy forests with moderate tree densities as compared to

young forests (Graham et al 1999). A goshawk's home range may be up to 6,000 acres and has three main habitat component needs (nesting, post fledgling area, and foraging area) within this home range (Reynolds 1992). Nesting areas are typically 30 acres in size and may include more than one nest (Reynolds 1992). The post-fledgling area (PFA) is 420 acres in size and surrounds the nest area (Reynolds 1992). The post-fledgling area typically includes a variety of forest types and conditions, but it should contain patches of dense trees as well as developed herbaceous areas and shrubby understory, snags, downed logs and small openings (Reynolds 1992). These attributes are needed to provide the necessary habitats for hunting, security and prey species (Reynolds 1992). The foraging area is approximately 5,400 acres and surrounds the post-fledgling area (Reynolds 1992).

In Utah, most of the 421 known nests located during project level surveys occur in mid-elevation (6,000 ft) to high-elevation (10,000 ft) sites, which are currently occupied by mature quaking aspen or coniferous forests (Graham et al 1999). Many of the documented goshawk territories on the Ashley National Forest are associated with lodgepole and aspen cover types (Ashley NF unpub. data). However, some nests in Utah have been documented in the spruce/fir type (Graham et al 1999). Nest areas are occupied from early March until late September, when fledglings are no longer dependent upon the post fledgling area PFA (Reynolds et. al. 1993). The Goshawk Amendment to the Ashley National Forest plan also considers the nesting period to be this same period. According to Ashley National Forest monitoring data, young usually fledge from early July to early August (approx. 43 days of age) and are dependent upon the PFA until approximately 65 days of age (August – mid September), at which time the fledglings venture further away from the PFA (Dewey 1998 and 1999). Between 1996 and 1999, 33 adult goshawks on the Ashley NF had radio-tags and were followed (Paulin 1998 Memo; Dewey, March 1999 Memo; Stephens 2001). Some of the goshawks that breed on the Ashley National Forest are yearlong residents and some migrate short distances (Paulin 1998 Memo).

The Ashley National Forest annually monitors known goshawk territories on the Forest (Ashley NF unpub. data). There are no known goshawk territories or sightings within or near the project area (the closest known goshawk nest is 9 air miles away from the project area) (Ashley NF unpub. data), however goshawk habitat is present along access roads 140 and 135.

Three-toed woodpecker –

The three-toed woodpecker ranges from Alaska across northern Canada to Newfoundland, and south and southeast through the Rocky Mountains to Arizona and New Mexico (DeGraaf et. al. 1991). In Utah, this woodpecker nests and winters in coniferous forests, generally above 8,000 ft. in elevation (Parrish et. al. 2002). They stay on their territories year-round, though insect outbreaks, such as spruce bark beetle infestations, may cause irregular movements (Parrish et. al. 2002). Nesting for three-toed woodpeckers occur in May and June and young can be found in the nest into July (Nature Serve 2003). In Montana, they have been known to fledge later, in early August (Nature Serve 2003). Because the three-toed woodpecker requires snags for feeding, perching,

nesting, and roosting, it is threatened by activities such as logging and fire suppression, which remove or eliminate snags (Parrish et. al. 2002). Feeding consists mainly of wood boring insects (Parrish et. al. 20022).

This woodpecker has been found in lodgepole, Douglas fir, spruce/fir and mixed conifer on the Ashley National Forest (Ashley NF unpub. data), and these habitats are present within the project area. Woodpecker surveys have been conducted across the Forest documenting three-toed woodpecker occurrence on the Forest (Ashley NF unpub. data). In 2002 woodpecker surveys were conducted in the South Fork of Rock Creek, the next drainage to the east, and one three-toed woodpecker was detected (Ashley NF unpub. data). The mine site is composed of spruce/fir patches, and some evidence of woodpecker activity was seen in the area in June of 2003 (site visit wildlife notes in project record).

Boreal owl –
The boreal owl occurs throughout the holarctic in boreal climactic zones (Hayward 1994). Within North America, boreal owls occur in a continuous band concurrent with the boreal forests of Alaska and Canada (Hayward 1994). South of this continuous band, populations are restricted to subalpine forests with the southern most records in the mountains of northwestern New Mexico (Hayward 1994). In the southern portions of their range in North America, they are documented in subalpine forests characterized largely by subalpine fir and Engelmann spruce (Hayward 1994).

Boreal owls nest in cavities excavated by woodpeckers in mixed coniferous, aspen, Douglas-fir, and spruce-fir habitat types (Hayward 1994). Nests are usually initiated by mid April to the first of June, and young have usually fledged (28 – 36 day nestling period) by early July (Hayward 1994). Foraging habitat has been documented in mature and older spruce/fir forests (Hayward 1994). Prey consists of voles (particularly red-backed vole), lemmings, mice, shrews, pocket gophers, squirrels, chipmunks, small birds, and insects (Hayward 1994).

Spring calling surveys on the Forest have detected five boreal owls. In 2000 and 2001, owl surveys were conducted in Rock Creek, the next drainage to the east of the project area, and no boreal owls responded (Ashley NF unpub. data). No boreal owls have been detected within or near the project area, however habitat for the boreal owl is present along the access roads (access roads 121, 140, and 135).

Great gray owl –
The great gray owl ranges from the boreal forests of Alaska, northwestern Wyoming, western Montana, Idaho, and through the Sierra Nevadas of California (Duncan and Hayward 1994). In the southern portion of their range, great gray owls nest in relatively dry coniferous or mixed deciduous/coniferous forests, especially Douglas fir, lodgepole pine, and aspen (Duncan and Hayward 1994). Detections on the Ashley National Forest show they will also use mixed conifer forests (Ashley NF unpub. data). Eggs are usually laid by the first of May, and young have usually fledged in 3 –4 weeks (first of June) and ready to fly one to two weeks later (mid June) (Duncan and Hayward 1994). Foraging

habitat consists of relatively open grassy areas, or timber stands with low canopy closure and grassy understorys (Duncan and Hayward 1994). Availability of prey and nest sites (typically old hawk or raven stick nests or natural depressions in broken-topped snags) is believed to be the primary factors limiting distribution of this species (Duncan and Hayward 1994).

Behle (1981) described this species as "casual or possibly a rare resident" of northeastern Utah. A statewide bird distribution study (UDWR 1983) was less optimistic, listing the great gray owl as an "accidental" species (meaning it was considered outside its normal range) in extreme northern and northeastern Utah. However, three great gray owls have been detected during calling surveys in the Uinta Mountains (Ashley National Forest unpub. data). In 1996 owl surveys detected two great gray owls near Chepeta Lake (Vernal District). Another great gray owl was detected near Pole Creek Lake (Roosevelt District) (Ashley NF unpub. data). In 2000 and 2001, owl surveys were conducted in Rock Creek, the next drainage to the east of the project area, and no great gray owls responded (Ashley NF unpub. data). There have been no great gray owls detected within or near the project area, however habitat for the great gray owl is present along the access roads (access roads 121, 140, and 135).

Flammulated owl –
The flammulated owl breeds from British Columbia, through the western U.S. to Central America (McCallum 1994). This owl is found in mid-level open conifer forests that have a dominant yellow pine component (McCallum 1994). Limited maneuverability may be a factor in this species preference for foraging in open forests (McCallum 1994). Their preference for yellow pine and/or Douglas fir has been linked to prey (invertebrates) availability (McCallum 1994). Recent studies in Utah (Oleyar 2000) suggest that flammulated owls are not as specialized as first considered and will successfully breed in aspen dominated forests. This species is a secondary cavity nester, therefore the presence of cavities is a requirement for successful nesting (McCallum 1994). Nests are usually initiated by mid May with a clutch of 2-4 eggs (McCallum 1994). The nesting and fledging period for the flammulated owl is typically over by the end of July (McCallum 1994). In 2000 and 2001, owl surveys were conducted in Rock Creek, the next drainage to the east of the project area, and no flammulated owls responded (Ashley NF unpub. data). There have been no flammulated owls detected within or near the project area, however habitat is present along access road 135.

3.8.c Management Indicator Species
Elk and mule deer –
Elk and mule deer are native ungulates that occur within the project area. Both species are hunted, provide an important recreational activity on the Ashley National Forest, and bring in considerable economic activity to local communities. Both elk and mule deer are listed as a MIS because of their economic importance as hunted species. Elk are primarily grazers, eating grasses, sedges, and forbs during summer, but in winter they also browse on the leaves, twigs, and bark of shrubs and deciduous trees (Nature Serve 2003). Mule deer also graze on herbaceous plants during the spring and summer, and browse current year's growth of leaves and stems of shrub species during the fall and

winter (UDWR Statewide Management Plan for Mule Deer 2003). Elk and mule deer habitat within the project area is fall and summer range. There is no critical habitat (winter range) within the project area, but some fawning and calving habitat is present (UDWR elk and mule deer habitat mapping).

The Ashley National Forest occurs within five of the states wildlife management subunits (North Slope, Daggett (elk population objective is 1,300 and population estimate is 1,400); South Slope, Vernal (elk population objective is 2,500 and population estimate is 2,600); South Slope, Yellowstone (elk population objective is 5,500 and population estimate is 5,300); Nine Mile, Anthro (elk population objective is 700 and population estimate is 810); and Wasatch Mountains, Avintaquin (elk population objective is 1,000 and population estimate is 1,250) (UDWR 2004). Since there are portions of these subunits that are off the Forest, not all of these animals would occur on the Forest. With the exception of the Yellowstone subunit, the elk population on each of these subunits appears to be on a stable to slightly increasing trend. The Yellowstone subunit (the project area is within this subunit) has nearly met the population objective and has been relatively stable for the past three years (Thacker, UDWR, 2003, pers. com.). Before that time, elk numbers in this subunit were on an increasing trend (Thacker, UDWR, 2003, pers. com.). Since the Forest constitutes a large portion of these subunits and population objectives have been exceeded or nearly met, it appears that the elk population across the Forest is stable. Based on the available data, it is also believed that the Forest is providing well-distributed habitat that supports a viable population of elk.

Mule deer population objectives and population estimates for the five wildlife management subunits in which the Ashley National Forest occurs are as follows: South Slope, Vernal population objective is 13,000 and the population estimate is 11,600; South Slope, Yellowstone population objective is 12,000 and the population estimate is 10,400; Wasatch Mountains, Avintaquin population objective is 3,000 and the population estimate is 1600; North Slope Unit (Daggett is a subunit within this unit) population objective is 5,300 and population estimate is 4,500; and Nine Mile Unit (Anthro is a subunit within this unit) population objective is 8,500 and the population estimate is 3,400. (UDWR 2004)

The estimated deer population is below the population objectives in all of the subunits discussed above. There was a sharp decline of mule deer populations in the state of Utah in the winter of 1992-'93. This decline has been attributed to several years of drought followed by an unusually hard winter. The years following the decline, the deer population rebounded slowly. However, due to the current drought, the deer population has again taken a downward trend since 2000. (UDWR Statewide Management Plan for Mule Deer 2003)

Thacker states that data from recent deer classifications indicate that deer numbers in the Yellowstone subunit (the allotments are within this subunit) continue to be down (Thacker, UDWR, 2003, pers. com.). From the data above and since the Forest constitutes a large portion of the discussed subunits, it appears that the overall deer population on the Forest is currently in this same downward trend. However the data also

suggest that the Forest is providing well-distributed habitat that supports a viable population of mule deer.

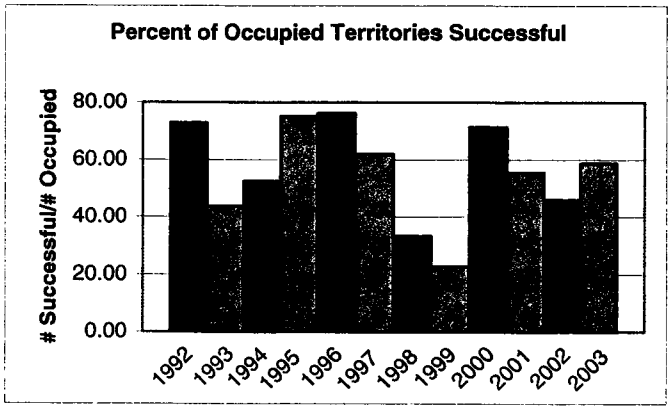
Northern goshawk –
The northern goshawk is the MIS for mature and old forest habitats on the Ashley National Forest. It is also a Forest Service sensitive species, and was discussed under the "Forest Service Sensitive Species" heading earlier in this section.

This species inhabits coniferous, deciduous, and mixed forests in North America and prefers to forage in closed canopy forests with moderate tree densities as compared to young forests (Graham et al 1999). A goshawk's home range may be up to 6,000 acres and has three main habitat component needs (nesting, post fledgling area, and foraging area) within this home range (Reynolds 1992). Nesting areas are typically 30 acres in size and may include more than one nest (Reynolds 1992). The post-fledgling area (PFA) is 420 acres in size and surrounds the nest area (Reynolds 1992). The post-fledgling area typically includes a variety of forest types and conditions, but it should contain patches of dense trees as well as developed herbaceous areas and shrubby understory, snags, downed logs and small openings (Reynolds 1992). These attributes are needed to provide the necessary habitats for hunting, security and prey species (Reynolds 1992). The foraging area is approximately 5,400 acres and surrounds the post-fledgling area (Reynolds 1992).

In Utah, most of the 421 known nests located during project level surveys occur in mid-elevation (6,000 ft) to high-elevation (10,000 ft) sites, which are currently occupied by mature quaking aspen or coniferous forests (Graham et al 1999). Many of the documented goshawk territories on the Ashley National Forest are associated with lodgepole and aspen cover types (Ashley NF unpub. data). However, some nests in Utah have been documented in the spruce/fir type (Graham et al 1999). Nest areas are occupied from early March until late September, when fledglings are no longer dependent upon the post fledgling area (Reynolds et. al. 1993). The Goshawk Amendment to the Ashley National Forest plan also considers the nesting period to be this same period. According to Ashley National Forest monitoring data, young usually fledge from early July to early August (approx. 43 days of age) and are dependent upon the PFA until approximately 65 days of age (August – mid September), at which time the fledglings venture further away from the PFA (Dewey 1998 and 1999). Between 1996 and 1999, 33 adult goshawks on the Ashley NF had radio-tags and were followed (Paulin 1998 Memo; Dewey, March 1999 Memo; Stephens 2001). Some of the goshawks that breed on the Ashley National Forest are yearlong residents and some migrate short distances (Paulin 1998 Memo).

The Ashley National Forest has been monitoring northern goshawks since 1991 (Ashley NF unpub. data, USDA Forest Service 2003). There are no known goshawk territories or sightings within or near the project area (the closest known goshawk nest is 9 air miles away from the project area) (Ashley NF unpub. data), however goshawk habitat is present along access roads 140 and 135. Of the 13-year total of 236 active nests on the Ashley NF, 162 (69%) fledged young (USDA Forest Service 2003). The occupancy rate

of known territories has fluctuated since data collection began, with an average of 46.9% (USDA Forest Service 2003). Several variables may influence occupancy rate. These variables can, however, be offset by strict observance of monitoring protocol which uses both known and random territories and establishes occupancy based on a minimum of three visits (1999 memo by Sarah Dewey). The Ashley National Forest adheres to this recommended protocol. The graph below depicts the percent of occupied northern goshawk traditional territories that were successful on the Ashley National Forest, between 1992-2003 (USDA Forest Service 2003).



Statistical analysis of autumn migratory raptor counts in the Wellsville Mountains of Utah from 1977-1979 and 1987-2001, showed a decline in counts of northern goshawks. This analysis also suggests that northern goshawk productivity has dropped substantially in portions of northern Utah. (Hoffman and Smith 2002) Hoffman and Smith further suggest that the severe drought may be depressing raptor populations, range wide, in the interior west.

A paper by Patricia Kennedy in 1997 evaluated goshawk populations across the west, including the goshawk population on the Ashley National Forest (Kennedy 1997). Kennedy found no statistical evidence of a decline in the goshawk population on the Forest (Kennedy 1997). Ashley National Forest data further suggest that territory occupancy was consistent between 1992 and 2000, and then declined in the last three years. The recent decrease in occupancy may be related to long-term drought (1999-2003) or other weather parameters. Although the data suggest a decline in the last 3 years, it is not statistically evident and therefore the trend across the Forest is basically stable (USDA Forest Service 2003, Ashley NF unpub. data). It also appears that the Forest supports a viable goshawk population and continues to provide well-distributed habitat across the Forest for this species.

White-tailed ptarmigan –
The white-tailed ptarmigan is an indicator for high alpine meadows with a willow complex (FEIS Ashley NF LRMP 1986). This habitat does not occur within or near the project area, therefore the white-tailed ptarmigan would not be affected by the proposed project.

Red-naped sapsucker and warbling vireo –
The red-naped sapsucker was formerly considered the same species as the yellow-bellied sapsucker (Nature Serve 2003). The red-naped sapsucker and warbling vireo are management indicators for deciduous woodlands, primarily aspen and riparian cottonwood, which is located along part of the access road to the mine site. In the Northern Rockies, the red-naped sapsucker is most abundant in cottonwood and aspen forests, but also observed in other riparian cover types (Nature Serve 2003). This sapsucker is a primary cavity nester, excavates a nest hole in a snag or a living tree with a dead or rotten interior, and shows a strong preference for aspen (Nature Serve 2003). The sapsucker drills rows of small holes in broad-leaved trees and drinks the sap that flows from these holes (Nature Serve 2003). They may also feed on insects caught in the sap (Nature Serve 2003). Red-naped sapsucker young fledge by mid July and warbling vireo young leave the nest at the end of June (Nature Serve 2003).

The warbling vireo is most abundant in open deciduous and mixed deciduous-coniferous woodland, riparian forest and thickets, pine-oak association, orchards, and parks. Usually nests at end of branch in a deciduous tree, 9-18 m above ground, or 1-3.5 m above ground, in shrub or orchard tree. This vireo usually forages in trees on caterpillars, beetles, grasshoppers, ants, spiders, and some berries. (Nature Serve 2003)

Habitat for the red-naped sapsucker and warbling vireo occurs along access road 135. Forest Service point count transects and Breeding Bird Surveys along aspen habitats in the Rock Creek drainage (main drainage to the east of the project) detected warbling vireos and red-naped sapsuckers (Ashley NF unpub. data). It is therefore likely that these species are present in similar habitat along access road 135.

On the Ashley National Forest, displacement of aspen by coniferous species remains a major trend, although timber harvest and fire has somewhat reversed this trend. A decline in persistent aspen stands has been minor and limited to a few isolated stands in the mountain big sagebrush belt. This decline may be more influenced by climate than by management activities. Some of these isolated stands have successfully regenerated. This indicates genetic difference in clones could be a strong factor in the status and trend of these stands (Goodrich 2004).

The North American Breeding Bird Survey found warbling vireo populations in the state of Utah to have an increasing trend and red-naped sapsucker populations to have a decreasing trend (Sauer et. al.). Two of the Breeding Bird Survey (BBS) routes occur on the Ashley National Forest. These are the Moon Lake (which is near the proposed project) and the Grizzly Ridge routes (Sauer et. al.). There appears to be an increasing trend in warbling vireo occurrences on the Grizzly Ridge route and a slightly decreasing trend on the Moon Lake route, according to analyses from the North American Breeding Bird Survey (Sauer et. al.). Four other BBS routes (Soapstone, Wasatch, Matt Warner Res, and Flaming Gorge routes) are in similar habitats that occur on the Ashley National Forest and are in close proximity to the Forest (Sauer et. al.). These routes indicate a stable to increasing trend of warbling vireo occurrences (Sauer et. al.). Nature Conservancy data show warbling vireo populations in Utah to be "apparently secure"

(Nature Serve 2003). The Forest ran 13 transects (in a variety of habitats, with the majority of transects and warbling vireo occurrences being in aspen and riparian types) in 1994 and detected 222 warbling vireos; 17 transects (in same habitat types as 1994) in 1995 detected 117; one transect in 1996 (in ponderosa pine) detected one warbling vireo; one transect in 1998 and two transects in 1999 (all in sage brush) with 2 and 6 warbling vireos detected respectively (Ashley NF unpub. data.). Other recorded sightings of warbling vireos on the Forest appear to be well distributed across the Forest (Ashley NF unpub. data.).

Nature Conservancy data show red-naped sapsucker populations in Utah to be "vulnerable" (Nature Serve 2003). There were five red-naped sapsuckers counted on the BBS Moon Lake route in 2002 and two in 2003 (Sauer et. al.). The Grizzly Ridge route had one red-naped sapucker occurrence in 2000 and three in 2001 (Sauer et. al.). The Flaming Gorge route does not have any red-naped sapsucker occurrences, but the Soapstone, Wasatch, and Matt Warner Res. routes appear to have stable to slightly increasing occurrences of red-naped sapsuckers (Sauer et. al.). The Forest ran 13 transects (in a variety of habitats, with the majority of transects and red-naped sapsucker occurrences being in aspen and riparian types) in 1994 and detected 17 red-naped sapsuckers; 17 transects (in same habitat types as 1994) in 1995 detected 5; one transect in 1996 (in ponderosa pine), one transect (sage brush) in 1998, and two transects (sage brush) in 1999 did not detect any red-naped sapsuckers (Ashley NF unpub. data.). Other recorded sightings of red-naped sapsuckers on the Forest appear to be well distributed across the Forest (Ashley NF unpub. data.).

Based on the available data for the Ashley National Forest and for Utah (Nature Conservancy data, BBS state wide data, BBS data on the Forest and surrounding the Forest, Ashley NF bird transects and sighting records), it is believed that the warbling vireo population on the Forest is viable and stable. Based on this same data it is believed that the red-naped sapsucker population on the Forest is stable to slightly decreasing, but viable. The Ashley National Forest provides warbling vireo and red-naped sapsucker habitat that is well distributed across the Forest and is sufficient to sustain viable populations of these species (FEIS Ashley NF LRMP 1986).

Sage grouse –

This species is closely allied with sagebrush (Connelly et. al. 2000) and is an indicator for sagebrush steppe (FEIS Ashley NF LRMP 1986). There is one small isolated patch of sagebrush (less than five acres in size and is surrounded by expansive conifer and aspen stands) adjacent to access road 135. Because of its small size and isolated location, this patch of sagebrush is not considered sage grouse habitat (UDWR sage grouse habitat mapping, Connelly et. al. 2000). Furthermore, this patch is more than 6 miles away from sage grouse habitat mapped by the Utah Division of Wildlife (UDWR sage grouse habitat mapping). Because there is no sage grouse habitat within or near the project area, the sage grouse would not be affected by the proposed project.

Golden eagle –

The golden eagle is primarily a cliff nester and is an indicator species for cliffs (FEIS Ashley NF LRMP 1986). There are no cliffs associated with the project area, therefore the golden eagle would not be affected by the proposed project.

Lincoln's sparrow & song sparrow–
Lincoln's sparrow and song sparrow are indicators of riparian shrubs. These species are generally found along streams, wet meadows, riparian thickets, and brushy forest edges (Nature Serve 2003). They forage on insects and seeds, and nest on the ground in concealing vegetation (Nature Serve 2003). Home range for both species is approximately 0.4 hectares (1 acre, or 208ft X 208ft.) (Nature Serve 2003). Lincoln's sparrows occasionally have two broods a year and song sparrows have two broods and sometimes three a year (Nature Serve 2003).

Habitat for Lincoln's and song sparrows occurs along access road 135. Forest Service point count transects and Breeding Bird Surveys in riparian shrub habitats along the Rock Creek drainage (main drainage to the east of the project) detected Lincoln's sparrows and song sparrows (Ashley NF unpub. data). It is therefore likely that Lincoln's sparrows and song sparrows are present in similar habitat along access road 135.

A recent review of wood riparian vegetation (including willows and other riparian shrubs) on the Ashley National Forest showed mostly stable levels of woody plants in riparian areas (Goodrich 2004). Nature Conservancy data shows Lincoln's sparrow populations in Utah to be "vulnerable" (Nature Serve 2003). According to data compiled from surveys (including two routes on the Forest) from 1966 to 2002, the North American Breeding Bird Survey (BBS) (Sauer et. al.) shows Lincoln's sparrow populations in the state of Utah to have a positive trend. Data from the Grizzly Ridge route (occurs on the Vernal RD) appear to indicate that Lincoln's sparrow populations are slightly increasing (Sauer et. al.). There have been no detections of Lincoln's sparrows on the Moon Lake route (occurs on the Roosevelt/Duchesne RD) (Sauer et. al.). Four other BBS routes (Soapstone, Wasatch, Matt Warner Res, and Flaming Gorge routes) are in similar habitats that occur on the Ashley National Forest and are in close proximity to the Forest (Sauer et. al.). The Flaming Gorge and Matt Warner routes did not have any Lincoln's sparrow occurrences, but the Soapstone and Wasatch routes indicate a stable to increasing trend of occurrences of this species (Sauer et. al.). The Forest ran three transects in the riparian canyon type in 1994 and 1995 and detected no Lincoln's sparrows and seven Lincoln's sparrows respectively (Ashley NF unpub. data). Other recorded sightings of Lincoln's sparrows on the Forest appear to be distributed across the Forest (Ashley NF unpub. data).

Nature Conservancy data shows song sparrow populations in the state to be "apparently secure" (Nature Serve 2003). According to data compiled from surveys (including two routes on the Forest) from 1966 to 2002, the North American Breeding Bird Survey (Sauer et. al.) shows song sparrow populations in the state of Utah to have a positive trend. Data from the Grizzly Ridge and Moon Lake routes appear to indicate a stable to slightly decreasing trend in song sparrow populations (Sauer et. al.). The Flaming Gorge and Wasatch routes did not have any song sparrow occurrences, but the Soapstone and

Matt Warner routes indicate a stable to increasing trend of occurrences of this species (Sauer et. al.). The Forest ran three transects in the riparian canyon type in 1994 and 1995 and detected 120 song sparrows and 47 song sparrows respectively (Ashley NF unpub. data). Other recorded sightings of song sparrows on the Forest appear to be well distributed across the Forest (Ashley NF unpub. data).

Based on the available data for the Ashley National Forest and for Utah (Nature Conservancy data, BBS state wide data, BBS data on the Forest and surrounding the Forest, Ashley NF bird transects and sighting records), it is believed that the Lincoln's sparrow population on the Forest is stable to increasing and the song sparrow population is stable. It is also believed that the Ashley National Forest provides ample riparian shrub habitat (20,700 acres) that is well distributed across the Forest, and sustains viable populations of Lincoln's and song sparrows (USDA Forest Service 1986).

3.8.d Birds of Conservation Concern (Migratory Birds) and Utah Partners in Flight Priority Species.

The draft Memorandum of Understanding of December 9, 2002 between the USDA Forest Service, USDI Bureau of Land Management, and USDI Fish and Wildlife Service to promote the conservation of migratory birds, provides direction for managing migratory birds. This direction includes identifying species listed in the Fish and Wildlife Service Birds of Conservation Concern that are likely to be present in the area of the proposed action, and to utilize best available demographic, population, or habitat association data in the assessment of impacts to these species.

The Utah Partners in Flight (PIF) working group recently completed a statewide avian conservation strategy (Parrish, Howe and Norvell 2002). The strategy identifies "priority species" for conservation due to declining abundance or distribution, or vulnerability to various local and/or range-wide risk factors. This list of priority bird species is intended to be used as a tool by federal and state agencies in prioritizing bird species that should be considered for conservation action" (Parrish, Howe and Norvell 2002). One application of the strategy and priority list is to give these birds specific consideration when analyzing effects of proposed management actions, and to implement the recommended conservation measures where appropriate.

A complete list of birds from both these lists that are known to occur or are suspected to occur on the Ashley National Forest can be found in the project record (available upon request). Several species on the Birds of Conservation Concern and Priority Species lists occur or have habitats within the project area. These species are the broad-tailed hummingbird, flammulated owl, three-toed woodpecker, Williamson's sapsucker, and red-naped sapsucker. The Williamson's sapsucker is associated with the conifer forests near the project area and the aspen forests along the access road (Nature Serve 2003). The broad-tailed hummingbird is associated with the riparian habitats (Nature Serve 2003) along the access road. The three-toed woodpecker and flammulated owl were discussed earlier as Forest Service sensitive species, and will be discussed under the "Forest Sensitive Species" heading throughout the remainder of the document. The red-

naped sapsucker was discussed earlier as management indicator species, and will be discussed under the "Management Indicator Species" heading throughout the remainder of the document. The Williamson's sapsucker and broad-tailed hummingbird are discussed below and will be discussed under the "Birds of Conservation Concern (Migratory Birds) and Utah Partners in Flight Priority Species" heading throughout the remainder of the document.

Numerous other species of songbirds are known to occur within the habitats associated with the project. These species include, but are not limited to, three other management indicator species; the Lincoln's sparrow, song sparrow, and warbling vireo. These three species will also be discussed under the "Management Indicator Species" heading throughout the remainder of the document.

Williamson's sapsucker –
Williamson's sapsucker is associated with montane coniferous forest, especially fir and lodgepole pine. In migration and winter they are also found in lowland forest (Nature Serve 2003). Species selection of trees for nesting varies from conifers to aspen, however trees infected with heartrot, or trees that have cavity nests are preferred (DeGraaf et. al. 1991). Nesting occurs in mid May to mid June and young have usually fledged by the end of July (Dobbs et. al. 1997). They feed primarily on sap, cambium, and ants, but also forage on wood-boring larvae, moths, and other insects (Nature Serve 2003). The Ashley National forest is within their breeding range. They arrive in the spring and leave in the fall. Breeding Bird Surveys (BBS) (Sauer et. al.) have been done on the ANF, and have found that the Williamson's sapsucker is present on the Ashley National Forest. One location was in the Rock Creek drainage (the next main drainage to the east of the project area), found during Ashley NF point counts in 1995 (Ashley NF unpub. data). Habitat for this species is present within the project area.

Broad-tailed hummingbird –
Broad-tailed hummingbird prefers streamside areas adjacent to open patches of meadow with wildflowers available (Parrish et. al. 2002). They can be found foraging on small insects and nectar in open woodlands, brushy hillsides, conifer/aspen mix, and montane scrub thickets (Nature Serve 2003). Breeding usually begins in early June and ends by mid August. Breeding broad-tailed hummingbirds in Utah usually nest between 6,000 and 8,000 ft. in elevation and has been confirmed breeding as high as 10,400 ft. (Parrish et. al. 2002). Several broad-tailed hummingbirds have been observed in the Rock Creek drainage (the next main drainage to the east) during Ashley NF point counts and Breeding Bird Surveys (Ashley NF unpub. data, Sauer et. al. 2003). Habitat for this species occurs along access road 135.

3.9 Fisheries
On August 6, 2002 biologists from the Ashley National Forest visited the Honeycomb-Calcite Mine project area. The objective of this trip was to determine the presence or absence of fish or potential fisheries habitat in the project area, and if fisheries were

present, to determine the level of risk involved to those fisheries from the proposed mining activities.

The project area (Blind Stream drainage) is located in an inherently dry section of the Ashley National Forest and sits in a small karst depression at approximately 10,600 feet elevation with vegetation consisting primarily of spruce-fir mix and forbs. Seasonal runoff appears to be short-lived and quickly absorbed by the karst topography and subsurface drainage systems. There was no surface water in Blind Stream during the August 2002 survey, however there was an established riparian/vegetation zone 2-3 miles downstream from the project area. The nearest water source to the project area with enough volume to sustain fish was a small stagnant pond approximately 2 miles to the south. This pond is fed seasonally by Blind Stream. There were a few, small, (unnamed) intermittent dry channels and seeps closer to the project area however these sources had no more than a trickle of water in them during the survey. The nearest viable fishery to the project area is Hades Creek which is located approximately 3 miles to the west, in a different drainage basin. Therefore no habitat is available, near the project area, which could support aquatic species, including Colorado River Cutthroat Trout or macro invertebrates.

3.10 Soils

Soils in the project area range from shallow to deep with shallow soils dominating. Depth to bedrock is variable from 0 inches to greater than 70 inches. Shallow soils and bedrock outcrops occur on ridges, knolls, and upper side slopes, while deeper soils occur in the bottoms of karst depressions. In a representative profile the surface layer is very dark very flaggy silt loam about 13 inches thick. The subsoil is dark yellowish brown, very flaggy, very fine sandy loam about 4 inches thick. The underlying material is fractured limestone bedrock occurring at 17 inches. Reaction is moderately alkaline. Content of coarse and flaggy fragments is about 60 percent.

Down slope and in areas of accumulation soils are deep. In a representative profile the surface layer is dark gray brown silt loam about 56 inches thick. The underlying material is highly weathered limestone. Reaction is neutral. Content of coarse fragments is less than 5 percent.

The mine site is located on an upper side slope where the soils range from very shallow to non-existent.

3.11 Paleontology

The proposed project area is underlain by Mississippian-age limestones, which locally contain abundant fossils. Examination of such fossils, in the vicinity of the Honeycomb Calcite Mine, and in similar limestone exposures elsewhere suggests that these fossils are relatively common and not particularly important. No impacts to significant paleontologic resources are anticipated from this project.

3.12 Karst

The proposed project area is underlain entirely by Mississippian-age limestone, which exhibits a moderate to well-developed karst topography, indicative of predominantly subsurface drainage processes. The karst features within the project area represent only a small portion of a much larger area of karst development, which is referred to as the Blind Stream karst area. Because the limestones are locally of high purity, and outcrop in an area of moderate precipitation and steep groundwater gradients, well-developed karst drainage systems have formed in the subsurface. Examination of the karst features and topography in the general project area suggests that most precipitation sinks into the subsurface drainage systems within a few feet of where it falls. During extreme precipitation events the surface karst may locally be unable to absorb all of the water, resulting in limited surface flow. The lack of distinct channels at the mine site suggests that such conditions have not occurred in the recent past. If overland flow did occur at the mine site, due to extreme precipitation events, it would quickly be trapped and absorbed by adjacent karst depressions, less than a few hundred yards from the mine site.

Field examinations, structural geology, and limited dye tracing within the Blind Stream karst area suggest that this karst system is large, active, and well developed. Dye tracing and structural geology have also established Big Spring, in the North Fork Duchesne River drainage, as the primary discharge point for captured groundwater within the active karst system. Because the system is active and well developed, surface contaminants within the project area could be quickly transported into subsurface karst conduits. Contamination of the subsurface conduits would then rapidly lead to similar contamination of the karst resurgence (or discharge point), at Big Spring. Contamination of the karst aquifer could also seriously impact other cave resources, occurring within the active subsurface drainage conduits.

Because hazardous materials have not been proposed for use at the Honeycomb Calcite Mine, except in small controllable quantities, the likelihood of impacts to water quality in the karst aquifer or at Big Spring is remote. If water quality is not impacted, and explosives are not used, impacts to other karst resources is limited to resources actually encountered within the limits of the open pit. No caves or significant karst resources are known to exist within the limits of the proposed open pit. If significant caves or karst resources are encountered during excavation, they will be evaluated for significance and potential mitigation at that time.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

4.0 Introduction

This chapter describes the environmental consequences of the activities, cumulative effects, mitigation measures, and monitoring guidelines by alternative.

4.1 Recreation

Impacts to recreation are similar in all alternatives. The difference is the amount and duration of impact. In all alternatives the impact is primarily to the dispersed recreation users rather than the developed recreation user because there are no developed recreation sites in the area.

Alternative A – Proposed Action

Under this alternative some impacts to the recreation user would occur during hauling activities. These impacts would be sights and sounds of additional traffic on the roads. The impacts would be for short duration of the hauling activities that would include 6 to 8 round trips per day on weekdays. There would be no hauling on weekends or holidays. Impacts at the mine site would be minimal since there are few recreation visits at the site.

Alternative B – No Action (Continue with present operation)

Under this alternative some impacts would occur during hauling activities. The impact would be for the duration of the hauling activities that would include 2 to 4 round trips per day on weekdays. The impact would be similar but less than for Alternative A, both in duration and frequency. Recreation impacts at the mine site would be minimal since there are few recreation visits at the site.

Alternative C – Base Line Comparison

Under this alternative some of the same impacts would occur during the reclamation activities. This impact would be from additional traffic on the roads. The impact would be for a few weeks during the reclamation activities and would be at its highest when heavy equipment was traveling to and from the site.

Cumulative Effects

Cumulative effects are the same for all alternatives except for the amount and duration of effects. The activities considered for the cumulative impacts on recreation were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. Only minimal effects to recreation are expected due to additional traffic. These impacts can be adequately mitigated.

Mitigation Measures
Shamrock would be required to submit a Safety Plan for approval by the Forest Service. This plan would include installing signs at identified locations during periods when mine traffic is on the road and having headlights turned on while on these roads.

Monitoring Guidelines
None required.

4.2 High Uintas Wilderness

Due to the location of the project in relation to the High Uintas Wilderness, there would be no direct or indirect impacts. The terrain between the mine site and the wilderness obscures direct line of site. This would be the same for all alternatives.

Cumulative Effects
The activities considered for the cumulative impacts to the High Uintas Wilderness were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. Other than recreation, all of these activities occur outside of the wilderness. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. The mine area and proposed activities are outside the High Uintas Wilderness, are not visible from the wilderness, and will have no cumulative effects to the wilderness.

Mitigation Measures
None required.

Monitoring Guidelines
None required.

4.3 Visual Resources

Alternative A – Proposed Action
This alternative would have minor effects on the scenery. Effects would only be seen directly at the mine site. Using concurrent reclamation methods and native plants, the effects can be held to a minimum. Under this alternative the minor impacts would last for the duration of the mining operation and until the area was fully reclaimed.

Alternative B – No Action (Continue with present operation)
This alternative would not change or improve the scenery from the proposed action. Effects would be the same as Alternative A.

Alternative C – Baseline Comparison
Under this alternative the effects would be similar to Alternative A for a few years until the reclamation was complete. After vegetation became fully established, there would be no further impacts.

Cumulative Effects
The activities considered for the cumulative impacts on visuals were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. The activities under the proposed action and alternatives, along with past, present, and proposed activities would not change the existing visual resource values and ratings.

Mitigation Measures
None proposed

Monitoring Guidelines
None Proposed

4.4 Inventoried Roadless Areas

Under all alternatives, users traveling into the area would occasionally see haul trucks and excavation equipment and hear equipment noise during various daylight hours throughout the work period. Refer to Chapter Three for descriptions of the following roadless area attributes and current conditions. All impacts to these attributes would occur during the operating period. The existing access road, mine area and all mine operations are outside of the inventoried roadless area.

The impacts to roadless areas are generally the same for all alternatives. The differences are in the duration of the impacts. Some of the roadless area attributes would be affected during the operation period, and would return to existing conditions upon termination and completion of project work at the mine area and along the Forest Service access road. The impacts to the roadless attributes include:

Natural Integrity –
Natural integrity of the inventoried roadless area adjacent to the mine site and access road would remain intact and operating. There would be no additional impacts to natural integrity from operations in any of the alternatives. Impacts from other human activities including past wood utilization, livestock use and recreation uses would not change.

Apparent Naturalness –
The apparent naturalness of the inventoried roadless area adjacent to the access road and mine site would not be physically affected by the proposed action in any of the

alternatives. Evidence of livestock activities, past wood utilization activities and recreation uses would not change and would still occasionally be visible in the area.

Remoteness –
The feeling of remoteness in the inventoried roadless area adjacent to the mine site and access route would be impacted by activities in all alternatives. The impacts of sight and sound would require traveling a greater distance from the operation to find the same degree of remoteness. Natural vegetative screening and topography of the area would provide some moderation of effects. The feeling of remoteness would be impacted during periods of activity, such as excavation, hauling and site rehabilitation work for the duration of the project. Impacts from other human activities including livestock use and recreation uses would not change.

Solitude –
The feeling of solitude in the inventoried roadless area adjacent to the mine site and access route would be impacted by all alternatives. The impacts of sights and sounds would require traveling a greater distance from the operation to find the same degree of solitude. Natural vegetative screening and topography of the area would provide some moderation of effects. The feeling of solitude would be impacted during periods of activity, such as excavation, hauling and site rehabilitation work for the duration of the project. Impacts from other human activities including livestock use and recreation uses would not change.

Opportunities for Primitive Recreation –
Opportunities for primitive recreation in the inventoried roadless area adjacent to the mine site and access route would be impacted by all alternatives. The impacts of sights and sounds would require traveling a greater distance from the operation to find the same opportunities. Natural vegetative screening and topography of the area would provide some moderation of effects. Opportunities for primitive recreation would be impacted during periods of activity, such as excavation, hauling and site rehabilitation work for the duration of the project. Impacts from other human activities including livestock use and recreation uses would not change.

Special Features –
There are no special features identified within the adjacent inventoried roadless area.

Manageability/Boundaries –
None of the alternatives would affect the ability to manage and maintain the boundary of the adjacent inventoried roadless area at the mine area and along the access road.

Alternative A – Proposed Action (Current Plan of Operations)
Alternative A analyzes the proposed mining actions and applies the appropriate mitigation measures. Under this alternative the roadless area attributes could be impacted typically between June 1 and October 31 each year for up to 25 years. Impacts would be from sights and sounds of the operation and two trucks hauling up to 6 to 8 loads per day on weekdays.

Alternative B – No Action (Continue with existing operation)
Alternative B would allow Shamrock to continue mining as previously approved. Under this alternative the roadless attributes could be impacted typically between June 1 and October 31 each year for up to 25 years. Impacts would be from sights and sounds of the operation and two trucks hauling up to 2 to 4 loads per day on weekdays.

Alternative C – Baseline Comparison
Alternative C assumes the existing operations are ended and new exploration and development activities do not occur. For baseline comparisons, the alternative describes and displays the results of full and complete rehabilitation of all disturbed areas at the mine site, including re-establishment of vegetative cover where possible, and implementation of erosion control measures and follow up monitoring.

Under this alternative the roadless attributes would be impacted for a 30 to 60 day period during the first field season for reclamation work to be accomplished. Similar impacts might occur for up to a two-week period during the second or third field season if additional reclamation work was deemed necessary. Impacts would be from sights and sounds of equipment accomplishing reclamation work and hauling equipment in and out on the access road. Activities would only occur during weekdays.

Cumulative Effects
The activities considered for the cumulative impacts on the inventoried roadless area adjacent to the project area were past, present and future timber and firewood cutting, mineral activities, recreation uses, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area at this time. The area is not presently open for firewood cutting.

Mitigation Measures
Project activities would not be allowed on weekends, holidays or during the general rifle hunts to mitigate the inventoried roadless area attributes during periods of highest public use.

Monitoring Guidelines
None required.

4.5 Land Status and Land Uses

Part of the Bonneville Unit Central Utah Project known as Hades Diversion Tunnel is located approximately one half mile southeast of the project area. The area directly above the diversion tunnel is withdrawn from mineral entry. The proposed project will not have any effect on the Hades Diversion Tunnel. There are no special use

authorizations in the area that would effect or be affected by the proposed activities. This would be the same for all alternatives.

Cumulative Effects
Cumulative effects are the same for all alternatives except for the amount and duration of effects. The activities considered for the cumulative impacts to Land status and land uses were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. The activities under the proposed action and alternatives, along with past, present, and proposed activities would not change the existing land status or land uses.

Mitigation Measures
None required.

Monitoring Guidelines
None proposed

4.6 Hydrology/Water Quality and Air Quality

4.6a. Hydrology/Water Quality

Alternative A – Proposed Action

Water and Watershed
No water is used during the mineral operations and no use of surface or ground water is proposed. In addition, no surface waters will be diverted or impacted, as none are present at the site. The proposal indicates that the local rock contains no sulfides which could cause acid mine drainage from the waste pile or pit area, and no chemicals will be used to process the mined materials on-site. Surface and ground water quality would remain similar to current conditions. Any increase in depression storage from mining activities is considered small in the context of the drainage area.

At the mineral extraction site, the proposal would remove portions of two rocky hillslopes at elevations of about 10,800 feet. Because the Plan of Operations specifies that the previous years' excavation work area will be reclaimed concurrently with ongoing operations, disturbance at any one time is expected to be larger but of similar character to the current situation (i.e., stable). Little disturbed soil would result from hillslope excavation due to the high rock content and thin topsoil. Disturbed soil would result if excavation of the deeper soils in karst depressions, or travel on these depressions, occurs. Some rock waste material may be placed on the haul route, where it crosses such depressions, to prevent rutting and protect watershed resources. Sediment generated

would not reach waterways, as the karst depressions are surface drainage into themselves, and would intercept sediment generated within or outside of them.

Shamrock has identified that topsoil will be stockpiled separately from waste rock and reapplied during concurrent reclamation, and that reseeding would occur annually. It will be piled approximately 2 feet high and seeded. The pile height, seeding measures, and short (1-year) storage period are all conducive to retention of soil microorganisms and of the soil itself and thus conducive to successful revegetation and restoration of watershed conditions. However, the natural hillslopes have a very high rock content, so little topsoil will be available for stockpiling or use in reclamation from the slopes. Reclamation with waste rock would be similar to the natural rock materials in the hillslopes and would function similarly regarding hydrologic processes.

Closeout rehabilitations will be similar to current annual closeout, with final rehabilitation similar to Alternative C. This approach maintains watershed function and water quality.

Sanitation

The Plan of Operations specifies that Shamrock will have a trailer (approximately 25 feet) or a portable toilet on the site, and that trash will be removed daily. Uncontained waste materials from the mineral extraction site would not enter surface stream courses due to the distance from surface drainages. Unless such materials enter subsurface drainage systems and are carried by the groundwater, no contamination would occur.

Hazardous Materials

The rock being mined does not contain elevated quantities of heavy metals or other contaminants, and no chemicals will be used to process the materials. Hazardous materials at the site are associated with the heavy equipment used to mine and haul the rock. These materials would include fuel, stored in a 50-gallon portable metal fuel tank on a pickup truck, and lubricant grease guns. The truck with the fuel tank will be on-site daily, but not stored on-site, while the grease guns would be stored on equipment or in a shed. Additional supplies would be brought to the site in a pickup truck and contained within vehicles or equipment. Risk of contamination to water sources is low since the volume of hazardous materials is low, and since there is no direct link to surface water drainages from the mine site. Potential for groundwater contamination would be from a spill directly into the karst system, where it could be transported off-site by groundwater. However, this risk is low due to: (1) mitigation to notify the Forest Service if a karst fissure is exposed; (2) supplies on-site being stored in small quantities and generally not positioned directly over an open karst conduit; and (3) spill prevention addressed through containment with absorbent material and removal, with notification to Forest Service and any other agencies to which such incidents must legally be communicated.

Alternative B – Existing Operation Continues

Impacts from this alternative would be similar to impacts occurring under Alternative A. The method of mining, the type of equipment, including haul trucks, and the frequency of

hauls on a day would be about the same or less, compared to Alternative A. The primary difference from Alternative A is that less time would be required for active mining each year, as the amount of material to be removed each year would only be 10-20% of the volume removed under Alternative A. This would require only a few weeks of active mining per year, compared to several months active mining per year under Alternative A.

No roadwork would be needed because weight on trucks would be similar to that hauled in the past, and substantial ruts would not be expected. Some rock may be added to haul routes to improve the road surface and provide greater watershed protection.

No long-term effects to water quality or water resources are expected since off-site soil movement would be negligible due to the intermittent karst-depression topography, and no chemical processing occurs on-site. Risk of contamination from human sanitation or hazardous materials is low due to minimal work needed and its short duration, as well as distance to water resources as in Alternative A.

Alternative C – Baseline Comparison
This alternative would increase heavy equipment disturbance for a short period during closeout rehabilitation at the mine site and along the access road, after which levels would return to those currently experienced when mining operations are not in progress. Conditions would be similar to Alternative A, which has no changes in quality of ground or surface water. Following short-term rehabilitation activities, there would be no hazardous materials transported to or from the site.

Cumulative Effects

Cumulative Effects - Alternative A – Proposed Action
The area of cumulative effects analysis for water is the drainage area from the Blind Stream headwaters to the confluence with the Duchesne River. Below this point, dilution or influences from other drainages would mask any effects from the alternatives. The activities considered for the cumulative impacts to hydrology, and water and air quality, were the same as listed in section 4.4

No 303(d) water bodies are listed within the cumulative effects analysis area (Utah 2002) and no contributions to listed water bodies would occur. No sediment or other pollutant is expected to reach stream courses due to the distance from the project site to such conduits; therefore, no cumulative effects would be detectable. Sediment does already exist in the Blind Stream system from sources such as historic gullies, and these would continue to be evident.

The Blind Stream access road links to Rock Creek and the popular Stillwater Dam reservoir via a steep but accessible switchback road. Recreation use occurs during the proposed period of mining operations (around June 1 to October 31) and would create some dust and road/trail sediment. Some vehicle off-road tracks are occurring in the upper Blind Stream drainage basin, as observed in June 2002. The hillslope area influenced is not highly erosive, as the rock content is high and slopes are not very steep;

however, bottom areas are composed of finer soil materials. The cumulative effects of this alternative on water quality, including sediment, would be negligible; final roadwork may improve potential sediment input into the stream system.

Cumulative Effects - Alternative B – Existing Operation Continues
Cumulative effects from mining activity are essentially the same as for Alternative A. A difference from Alternative A is that at the end of 25 years, there would still be considerable mineral material available for removal, so it is reasonably foreseeable that Shamrock would request removal of the remaining mineral material at some time in the future (the request might come prior to the end of the 25 years). Thus, mining activity could extend longer than in Alternative A.

No sediment or other pollutant would reach stream courses due to the distance from the project site to such conduits; therefore, no cumulative effects would be detectable. Sediment does already exist in the Blind Stream system from sources such as historic gullies, and these would continue to be evident.

Cumulative Effects – Alternative C – Mining Closeout
Other activities in the area include recreation access by vehicle and livestock. The mine area itself is within the Lake Basin allotment, which changed from sheep to cattle in 1992. The cumulative effects analysis area also includes the Blind Stream allotment, which has been a cattle allotment since 1981. The allotments extend to the Forest boundary but not below. The two allotments are administered together and are currently under analysis for future grazing management. Road erosion during spring and fall in the West Slope of Blind Stream (Lake Basin allotment) may be contributing sediment in some years. However, past stream channel gullies are healing, as evidenced by monitoring between 1973 and the 1990's; vegetation has established in the channel bottoms and headcutting is not apparent (Ashley National Forest Study 35-17). A silver sagebrush study area in the Blind Stream drainage (Study 35-10) also shows improvement, with an increased ground cover under moderate (and occasionally heavy) cattle grazing. Thus, watershed conditions are improving in the Blind Stream area generally.

Mitigation Measures
1. During reclamation, Shamrock would coordinate with the Forest Service regarding shaping of the mine area to desired angles (considering opportunities to mimic natural processes), a seed mix to be applied and timing of application, and other aspects of restoration. Revegetation seeding would be monitored and treatment repeated by Shamrock, if necessary, to generate success. Seeding success would only be expected where topsoil is applied or otherwise available, as the waste rock is not suitable growth medium. The Forest Service may identify slope gradients, fill, or compaction needs.

2. If Shamrock's mining activities intersect an open cave or karst feature, activity would stop and the Forest Service would be contacted as soon as possible. The Forest Service would examine the karst features for possible hazards or unique or important aspects, and

provide Shamrock with an assessment and possible mitigation measures before mining operations would continue.

3. Sanitation would be addressed through a Forest-Service approved system, and following Best Management Practice #11.13, Forest Service Handbook 2509.22. If the portable self-contained trailer is placed then it is to have toilet facilities or a porta-potty. If access is not conducive to a porta-potty system, the Forest Service will identify latrine requirements for control of human waste and associated pathogens. Any storage system is to be kept pumped out at recommended levels. Any "gray water" (dish/hand washing waste water) will be hauled to an established dump station and not disposed of on-site.

4. Hazardous materials will not be left on-site during inactive periods (e.g., October 31-start of operations). The 50-gallon tank on the pickup truck will be securely mounted. Dump trucks will refuel in off-site gas stations. A spill management plan will be approved by the Forest Service prior to initiation of any work under this Plan of Operations. The plan will include that any spills will be reported to the Forest Service immediately and Forest Service instructions will be followed.

5. Shamrock will be responsible for treatment of noxious weeds during the life to the project and for 3-5 years (5 maximum) following termination until infestations are controlled or the Forest Service resumes responsibility.

Monitoring Guidelines
Monitoring would be conducted through normal administration by the Forest Service.

4.6b Air Quality

Alternative A – Proposed Action

Air quality effects would be evident only in close proximity to the mining activities (mineral extraction and haul trucks) over 5 summer-fall months per year, for up to 25 years. There would be no dust abatement on roads unless required by the Forest Service. Noise and emissions would occur during the authorized activity and rehabilitation, and would return to conditions experienced before and between mining activities. Shamrock has identified that no burning will be done on site and truck traffic would be 3-4 trips per day for 2 trucks (total of 6 to 8 round trips per day, while operating). Past experience also indicates that noise and emissions have not been detectable until Forest visitors are very close to the active operations. However, mitigation in Appendix B enables the Forest Service to require dust abatement should the need arise.

The duration of activity each year would be longer than under Alternative B since the amount of material removed each year would be 5-10 times that of the volume removed under Alternative B. The type of equipment, including haul trucks, and the frequency of hauls on a day would be about the same as in Alternative B. Activity is greater than in Alternative B by up to 4 months, and greater than in Alternative C, up to 5 months. Since

the amount of equipment and haul trips on a given day would be comparable to past activity, noise and emissions would still not be noticeable until visitors were in close geographical proximity. However, these would be noticeable on more days of the year than in Alternative B or C, or than have been in the past.

Alternative B – Existing Operation Continues

Effects are the same as Alternative A, but last a few weeks each year, instead of 5 months each year. Mineral extraction may continue beyond 25 years so effects may last longer than Alternative A. Noise and emissions would occur during the authorized activity and rehabilitation, would only be noticeable to visitors very close to the active operations as per past operations, and then would return to conditions experienced before and between mining events. Past experience indicates that noise and emissions have not been detectable until Forest visitors are very close to operations. The duration of activity would be shorter than in Alternative A since the amount of material removed each year would be 10-20% of the volume removed in Alternative A. The type of equipment, including haul trucks, and the frequency of hauls on a day would be about the same as in Alternative A. Activity is greater than in Alternative C, probably by a few weeks' duration.

Alternative C – Baseline Comparison

There would be some noise and dust emissions for a few weeks during the reclamation period. This alternative would increase noise and emissions from heavy equipment for a short period during closeout rehabilitation, after which levels would return to those currently experienced when mining operations are not in progress.

Cumulative Effects

Cumulative Effects - Alternative A – Proposed Action

The area of cumulative effects analysis for air is also the drainage area from the Blind Stream headwaters to the confluence with the Duchesne River. This is considered to be an area of noise and emissions comparison since recreation is the principal user affected and the Blind Stream road is the principal access; a secondary road accesses the lower Forest Service area from below the Forest boundary. Past operations have shown that air effects are noticeable only locally; dissipation and influences from other drainages mask any effects at the cumulative effects scale; Alternative A activity levels are similar to past operations. The activities considered for the cumulative impacts to hydrology, and water and air quality, were the same as listed in section 4.4.

There is greater potential for other users to experience negative air quality (noise or emissions from hauling or operations) than in Alternatives A or B if they are in the immediate vicinity. This might be most likely during hunting season. Effects could be experienced from trucks on the haul route or from operations at the mine site. Vehicle noise and emissions would be noticeable to recreationists in the immediate vicinity for a few minutes while driving through the area; however, the mine extraction site is not located near any popular recreation destination. The emissions are expected to create

visual or air quality impairments in the immediate vicinity of the work but are not expected to cause any impairments within the cumulative analysis area as a whole nor for any period longer than when equipment is actually in use. No effect on the High Uintas Wilderness would be detected.

Cumulative Effects - Alternative B – Existing Operation Continues
There is greater potential for other users to experience negative air quality (noise or emissions from hauling or operations) than in Alternative C but less than Alternative A; the potential exists if visitors are in the immediate vicinity of the activity. The level of risk is based on the duration of the mining activity (see direct and indirect effects discussed above). Effects would be observed mostly during hunting season when more Forest visitors are in the area (if the mine were active at that time). Effects could be experienced from trucks on the haul route or from operations at the mine site. Emissions would be noticeable to recreationists in the immediate vicinity for a few minutes while driving through the area; however, the mine extraction site is not located near any popular recreation destination. Based on the same operations in the past, the emissions are expected to create short-term visual or air quality impairments in the immediate vicinity of the work but are not expected to cause any impairments within the cumulative analysis area as a whole nor for any period longer than when equipment is actually in use. No effect on the High Uintas Wilderness would be detected.

Cumulative Effects – Alternative C – Mining Closeout
Noise or emissions in the area are primarily from recreation vehicles. This alternative would increase noise, emissions, and the presence of heavy equipment for a short period during closeout rehabilitation, after which levels would return to those currently experienced from other uses.

Mitigation Measures
1. Dust abatement with a Forest Service-approved material may be required.

2. To reduce noise and emission type recreation conflicts, as well as for safety, truck hauling may not occur during legal holidays, during weekends adjacent to a Friday or Monday holiday, or during opening weekends of the general hunting seasons. Shamrock will sign major vehicle routes for safety (to advise recreationists of noise and truck traffic) in Forest Service-approved location(s).

Monitoring Guidelines
Monitoring would be conducted through normal administration by the Forest Service.

4.7 Access and Public Safety

Impacts to access and public safety would be from the additional traffic on the road system. This would be in the form of standard vehicles traveling to the work site, larger trucks hauling material from the mine to the processing site, and occasionally heavy equipment being hauled to and from the site. The impacts would be the same for all alternatives; with the difference being the

frequencies in hauling. The impact would be greatest on Road 10135 since this road would have the most non-mine related traffic. Average daily traffic counts for this road are not available.

Alternative A – Proposed Action
Under this alternative hauling activities that would include 6 to 8 round trips per day on weekdays. There would be no hauling on weekends or holidays.

Alternative B – No Action (Continue with present operation)
Under this alternative hauling activities that would include 2 to 4 round trips per day on weekdays. There would be no hauling on weekends or holidays.

Alternative C – Base Line Comparison
Under this alternative some of the same impacts would occur during the reclamation activities. The impacts would be for a few weeks during the reclamation activities and would be at its highest when heavy equipment was traveling to and from the mine site.

Cumulative Effects
The activities considered for the cumulative impacts to access and public safety were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. Cumulative effects would be similar for all alternatives. There are no other known activities planned in this area that would add more traffic to the present road system.

Mitigation Measures
Mitigation activities would be the same for all alternatives. Shamrock would be required to submit a Safety Plan for approval by the Forest Service. This plan would include installing signs at identified locations during periods when mine traffic is on the road and having headlights turned on while on these roads.

Monitoring Guidelines
None required.

4.8 Terrestrial Wildlife

Direct and indirect effects analyzed in this section are based upon Alternative A (Proposed Action) - Proposed Plan of Operations; Alternative B (No Action) – Continue Existing Operation; and Alternative C (Baseline Comparison) – End Mining and Rehabilitate Site. The Blind Stream drainage, from the headwaters of Blind Stream to the Forest Boundary, is used for analysis of cumulative impacts on all wildlife species discussed in this document, except the Canada lynx. This area was selected as the cumulative effects area, because the area is large enough to capture effects that may cumulatively affect wildlife in and near the project area. A Lynx Analysis Unit, or LAU, is a subwatershed that approximates a female's home range and is used for analysis of

cumulative impacts upon the Canada lynx from proposed projects. Since the proposed project occurs within LAU 4, this LAU is selected as the cumulative effects area for the proposed project as it relates to Canada lynx.

4.8.a Federally Threatened, Endangered and Proposed Species

Canada lynx -
Alternative A
Direct and indirect effects
As addressed in the Lynx Conservation Assessment and Strategy (LCAS), mining activities affect lynx habitat by changing or eliminating native vegetation, and contributing to fragmentation (Reudiger 2000). Under this alternative there would be approximately 4 acres of surface disturbance. This is far less than one percent of the total lynx habitat (9,854 acres) within LAU 4. Proposed mining activities would remove a few young spruce/fir trees adjacent to the mine site along with some grass and forbs. The spruce/fir are in small patches over the landscape and do not provide lynx denning habitat or quality snowshoe hare habitat (Reudiger 2000). Because of the small amount lynx habitat disturbed (less than one percent of the LAU) and the low quality of snowshoe hare/lynx habitat in the area, the surface disturbance proposed under this alternative would not adversely affect the lynx.

Winter travel and snow plowing of roads associated with mining results in snow compaction, and can increase coyote and other predator accessibility into higher elevational lynx habitats (Reudiger 2000). This increases competition for prey in lynx habitat during the winter (Reudiger 2000). There would be no new roads constructed under this alternative and access along existing roads would be during the summer and fall. Therefore, there would be no snow compacting activities or risk of increased foraging competition to the lynx related to this proposal.

Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. However, the area at the mine site is not quality lynx habitat and noise from mining activities is therefore unlikely to cause disturbance to lynx. This alternative would increase the amount of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the Canada lynx. The additional four round trips per day along access roads 140 and 121 would slightly increase disturbance to lynx habitat along these roads. However, these haul trips would occur during summer/fall and would

avoid the more stressful periods (denning and winter foraging periods) for lynx (Reudiger 2000). Also, the current use of these roads has likely caused avoidance of the area by lynx. Therefore the additional four trips per day along the access roads (FR140, FR121, and FR135) would not further affect the Canada lynx.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within the LAU in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not alter any habitat, and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the lynx.

Based on the above analysis (refer to the rationale above), this alternative would meet the standards and guidelines outlined in the LCAS.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to lynx and lynx habitat under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance at the mine site and along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. The amount of surface disturbance (4 acres, far less than one percent of the total lynx habitat (9,854 acres) within LAU 4) would be the same, but the rate at which the ore is mined would be slower (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Because of the small amount lynx habitat disturbed (less than one percent of the LAU) and the low quality of snowshoe hare/lynx habitat at the mine site, the surface disturbance (including reclamation), and the associated noise disturbance, under this alternative would not adversely affect the lynx. Shortening the duration of noise disturbances at the mine site during each operational season would not affect lynx for the same reasons. Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the Canada lynx. Four round trips per day along access roads 140 and 121 would continue to cause some disturbance to lynx habitat along these roads. However, these haul trips occur during summer/fall and avoid the more stressful periods (denning and winter foraging periods) for lynx (Reudiger 2000). Also, the current use of these roads has likely caused avoidance of the area by lynx. Therefore four trips per day along the access roads (FR140, FR121, and FR135) would not further affect the Canada lynx.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period that lynx would avoid the area. However, due to the low quality of lynx habitat within the project area and the current use and disturbance along the access roads, lynx would likely avoid the area regardless of activities associated with the mine. Therefore, this extended period of disturbance is not likely to adversely affect the Canada lynx.

The effects to lynx from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative would meet the standards and guidelines outlined in the LCAS.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, no additional lynx habitat would be changed to unsuitable. The 0.34 acres of current surface disturbance at the mine site would be reclaimed. Noise disturbance in the area would only occur during the period of reclamation. The Canada lynx is not likely to be affected by this alternative due to the reclamation period being a short period and due to the low quality of lynx habitat within the project area. There would be no hauling of ore, therefore disturbance along the access roads under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative would meet the standards and guidelines outlined in the LCAS.

Mitigation Measures: No mitigation measures are required.

Cumulative Effects (Alternatives A, B, & C)

A Lynx Analysis Unit, or LAU, is a subwatershed that approximates a female's home range and is used for analysis of cumulative impacts upon the Canada lynx from proposed projects. Since the proposed project occurs within LAU 4, this LAU is selected as the cumulative effects area for the proposed project as it relates to Canada lynx.

Cumulative impacts to the Canada lynx within LAU 4 include past timber harvest, firewood gathering, grazing, roads, off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, noxious weeds, backcountry skiing, and snowmobile use.

Alternative C would end mining and reclaim the surface disturbance at the mine site. Reclamation activities would be for a short duration and there would be no additional surface disturbance. There would be no adverse effects to the Canada lynx when combined with the above cumulative effects, because there would be no additional

disturbance under this alternative. Cumulative effects to the Canada lynx in Alternatives A & B are analyzed below.

The total acreage of lynx habitat within LAU 4 is 9,854 acres. According to the Lynx Conservation Assessment and Strategy (LCAS), management actions (timber sales, salvage sales, etc) cannot change more than 15% of lynx habitat within a LAU to an unsuitable condition within a 10-year period (Reudiger 2000). Currently in LAU 4, the Shamrock Honeycomb Calcite Mine (0.34 acres) has changed potential suitable lynx habitat to unsuitable within the last 10 years. Firewood gathering in this LAU may have altered a generous estimate of 470 acres of lynx habitat in the last 10 years and may affect an additional estimate of 235 acres in the next 5 years (these estimated acreages assume all firewood gathering on the District has and would occur within this LAU, which is very unlikely). The total of these acreages represent 7.16% of the total suitable lynx habitat in LAU 4. Under Alternatives A and B, another 3.6 acres of lynx habitat would be changed to unsuitable, which would increase the percentage of lynx habitat changed to unsuitable within the LAU to 7.19%. This increase (0.03%) is a very small percentage of lynx habitat within the LAU and therefore is not likely to affect the Canada lynx.

Timber harvest can directly affect lynx habitat by removing lynx habitat and prey species (snowshoe hare, red squirrel, etc.) habitat (Ruediger et al. 2000). However, regenerating stands can provide high quality snowshoe hare habitat (Ruediger et al. 2000). Timber harvest has occurred within LAU 4, but none has occurred within the last 10 years. Currently some of these timber harvests are now providing high quality snowshoe hare habitat, and thus are now providing quality lynx habitat. Therefore the effects to the Canada lynx from these past timber harvests coupled with the proposed project under Alternatives A & B would be negligible.

The proposed project occurs within the Blind Stream grazing allotment and part of the access road occurs within the Lake Basin grazing allotment. According to the Lynx Conservation Assessment and Strategy (LCAS), grazing may reduce forage resources available to snowshoe hares and other lynx prey species, and can have a direct effect on these species habitat if it alters the structure and composition of native plant communities (Ruediger et al. 2000). Range studies indicate that range conditions on these allotments are meeting or moving towards desired conditions (Blind Stream & Lake Basin Allotment range studies). Therefore the effects to the Canada lynx from grazing coupled with the proposed project under Alternatives A & B would be negligible.

Fire initially reduces snowshoe hare habitat, which reduces snowshoe hare populations, and thus reduces prey availability for lynx for the short term (Ruediger et al. 2000). As trees and shrubs regenerate, snowshoe hare populations increase, and lynx habitat is improved (Ruediger et al. 2000). Therefore the effects to the Canada lynx from future wildfires coupled with the proposed project under Alternatives A & B would not be measurable in the long term.

Firewood gathering does remove woody debris that may be used as lynx denning habitat. For analysis of firewood gathering on lynx habitat, refer to the calculations of "total conversion of suitable acres of lynx habitat to unsuitable" above.

Cumulative impacts to lynx such as off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing contribute disturbance to lynx and their prey species within LAU 4. None of these activities would remove lynx habitat. These activities occur during the summer and fall and avoid the more stressful periods (denning and winter foraging periods) for lynx (Reudiger 2000). Since these activities occur during the summer and fall, and do not change suitable lynx habitat to unsuitable, the effects to lynx from these activities coupled with the proposed project would be negligible under Alternatives A & B.

Roads fragment habitat and provide access for snowmobiles and backcountry skiers. These snow compacting activities allow competing carnivores such as coyotes and mountain lions access into lynx habitat (Ruediger et al. 2000). These activities do not occur during the same period the proposed project (summer/fall), therefore the effects to Canada lynx from winter activities coupled with the proposed project would not be measurable under Alternatives A & B.

Noxious weeds have the potential to alter habitats at both the local and ecosystem scale (Ruediger et al. 2000). This would, over time, affect habitat for lynx prey species. The Integrated Pest Management Program on the Forest addresses and implements a plan to eradicate or control noxious weeds. Therefore the effects to the Canada lynx from noxious weeds in LAU 4 coupled with the proposed project would be negligible under Alternatives A & B.

Since the effects to the Canada lynx from these cumulative impacts (individually) are negligible, the combined effect of these cumulative impacts to lynx would also be negligible under Alternatives A & B.

4.8.b Forest Service Sensitive Species

Northern goshawk –
<u>Alternative A</u>
<u>Direct and indirect effects</u>
Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. There are no known goshawk nests, PFA's, or territories within or near the project area. The mine site and access road 121 do not occur within goshawk habitat (trees in the area (spruce/fir) are in small patches across the landscape), but some habitat does exist near access roads 135 and 140. Because the mine and access road 121 are not located within goshawk habitat, there would be no impacts to the northern goshawk from activities associated with the mine and access road 121, regardless of the amount of ore extracted, hauling, or time taken to extract it. This alternative would increase the amount

of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the northern goshawk. The additional four round trips per day along access road 140 would slightly increase disturbance to goshawk habitat along this road. However, since this road currently receives vehicle use from the public and from the miners, the slight increase of use along this road under this alternative may displace individual goshawks from the immediate area around the road, but would not cause a trend toward their federal listing.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance to goshawk habitat along access roads 140 and 135 in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not be located within goshawk habitat (at the mine site), and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the goshawk.

Based on the above analysis (refer to the rationale above), this alternative is consistent with the standards and guidelines outlined in the Goshawk Amendment to the Ashley Forest Plan (USDA Forest Service, Ashley Forest Plan Amendment, 2000). Therefore, this alternative may impact individual goshawks, but would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the northern goshawk under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. Since the mine site and access road 121 are not located within goshawk habitat, activities associated with the mine in these areas would not affect the goshawk. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the goshawk. Since public use of access road 140 is lower than access road 135 (refer to Sections 3.1 and 4.7 of this EA), the four round trips per day along this access road would have a greater chance of affecting goshawk habitat. However, the current level of use on road 140 includes these four round trips of hauling, and goshawks in the area would likely be habituated to this level of use. Goshawks would also likely be habituated to the current level of disturbance on access road 135. Therefore the current four trips per day along these access roads (under this alternative) would not have further affects to the goshawk.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along access roads 140 and 135. However, as stated above, goshawks in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to the goshawk.

The effects to goshawks from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative is consistent with the standards and guidelines outlined in the Goshawk Amendment to the Ashley Forest Plan (USDA Forest Service, Ashley Forest Plan Amendment, 2000). Therefore, this alternative may impact individual goshawks, but would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. Goshawk habitat does not occur at the mine site and the area of reclamation, therefore, there would be no adverse affects to the goshawk in these areas. There would be no hauling of ore, therefore disturbance to goshawk habitat along the access roads under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative would have no impact to the northern goshawk and would be consistent with the standards and guidelines outlined in the Goshawk Amendment to the Ashley Forest Plan (USDA Forest Service, Ashley Forest Plan Amendment, 2000).

Mitigation Measures: No mitigation measures are required.

Three-toed woodpecker –

Alternative A

Direct and indirect effects

Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. There would be approximately 4 acres of surface disturbance at the mine site that would remove a few young spruce/fir trees adjacent to the mine site. Since these trees are young and small in diameter, they would not be used for nesting by the three-toed woodpecker. Disturbance in the area from mining activities may displace some individuals. However, there is ample nesting and foraging habitat within the watershed for dispersal of displaced individuals.

This alternative would increase the amount of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the three-toed woodpecker. The additional four round trips per day along access roads 140 and 121 would slightly increase disturbance to three-toed woodpecker habitat. However, since these roads currently receive vehicle use from the public and from the miners, the slight increase of use along these roads under this alternative may displace individual three-toed woodpeckers from the immediate area around the road, but would not cause a trend toward their federal listing. Furthermore, there is ample nesting and foraging habitat within the watershed for dispersal of displaced individuals.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within three-toed woodpecker habitat in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season) and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the three-toed woodpecker.

Based on the above analysis (refer to the rationale above), this alternative may impact individual three-toed woodpeckers, but would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the three-toed woodpecker under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

The amount of time required for each operational season at the mine site to extract the ore would be shorter than in Alternative A. This would reduce the amount of time three-toed woodpecker habitat in the area would experience noise disturbance from activities associated with the extraction of ore under Alternative A. Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the three-toed woodpecker. Since public use of access roads 121 and 140 is lower than access road 135 (refer to Sections 3.1 and 4.7 of this EA), the four round trips per day along these access roads (access roads 121 and 140) would have a greater chance of affecting three-toed woodpecker habitat. However, the current level of use on roads 121 and 140 includes these four round trips of hauling, and three-toed woodpeckers in the area would likely be habituated to this level of use. Likewise, the three-toed woodpecker would likely be habituated to the current level of disturbance on access road 135. Therefore the current four round trips per day along these access roads (under this alternative) would not have further affects to the three-toed woodpecker.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access roads. However, as stated above, three-toed woodpeckers in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to the three-toed woodpecker.

The effects to the three-toed woodpecker from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative may impact individual three-toed woodpeckers, but would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Alternative C
Direct and indirect effects
Under this alternative, mining would cease and the mine site would be reclaimed. There would be no removal of three-toed woodpecker habitat. Noise disturbance in the area would be for a short period and only occur during the period of reclamation. Individual three-toed woodpeckers may be temporarily displaced during reclamation. However, there is ample nesting and foraging habitat within the watershed for dispersal of displaced individuals. There would be no hauling of ore, therefore disturbance to three-toed woodpecker habitat along the access roads under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative may impact three-toed woodpecker, but would not cause a trend toward its federal listing.

Mitigation Measures: No mitigation measures are required.

Boreal owl, flammulated owl, and great gray owl –
Alternative A
Direct and indirect effects
Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. The mine site does not occur within boreal owl, great gray owl, or flammulated owl habitat. Trees in the area (spruce/fir) are in small patches across the landscape instead of the contiguous forested vegetation types associated with boreal owl and great gray owl habitat (Hayward 1994, Duncan and Hayward 1994).. Great gray owl habitat is associated with open meadows, but the needs of the great gray owl require these meadows need to be associated with a contiguous forest (Duncan and Hayward 1994). There is no yellow pine forests or aspen forests located in the area of the mine site, which is typical of flammulated owl habitat (McCallum 1994). Because the mine site is not located within these owls habitats, there would be no impacts to these owls from activities at the mine site, regardless of the amount of ore extracted, hauling, or time taken to extract it.

This alternative would increase the amount of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect boreal owls, great gray owls, or flammulated owls. Flammulated owl habitat does not exist along access roads 140 and 121, and therefore would not be affected by hauling of ore along these roads. The

additional four round trips per day along access roads 140 and 121 would slightly increase disturbance to the boreal owl and great gray owl habitat. However, since these roads currently receive vehicle use from the public and from the miners, the slight increase of use along these roads under this alternative may displace individual boreal owls and great gray owls from the immediate area around the roads, but would not cause a trend toward their federal listing.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within these three owl species habitats in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not be located within boreal owl, great gray owl, or flammulated owl habitat (at the mine site), and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect these three owl species.

Based on the above analysis (refer to the rationale above), this alternative may impact individual boreal owls, great gray owls, and flammulated owls, but would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the boreal owl, great gray owl, and flammulated owl under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. Since the mine site is not located within these species habitat, activities associated with the mine in these areas would not affect these species. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect these three owl species. Since public use of access roads 121 and 140 is lower than access road 135 (refer to Sections 3.1 and 4.7 of this EA), the four round trips per day along this access road would have a greater chance of affecting boreal owl and great gray owl habitat. However, the current level of use on roads 121 and 140 includes these four round trips of hauling, and owls in the area would likely be habituated to this level of use. Likewise, all three of these owls would likely be habituated to the current level of disturbance on access road

135. Therefore the current four round trips per day along these access roads (under this alternative) would not have further affects to these owl species.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access roads. However, as stated above, these three owl species in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to the these owl species.

The effects to these three owl species from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative may impact individual boreal owls, great gray owls, and flammulated owls, but would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. Boreal owl, great gray owl, and flammulated owl habitat does not occur at the mine site and the area of reclamation, therefore, there would be no adverse affects to these three owl species in these areas. There would be no hauling of ore, therefore disturbance to these three species habitat along the access roads under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative would have no impact to the boreal owl, great gray owl, or flammulated owl, and would not cause a trend toward their federal listing.

Mitigation Measures: No mitigation measures are required.

Cumulative Effects (Alternatives A, B, & C)

The Blind Stream drainage, from the headwaters of Blind Stream to the Forest Boundary, is used for analysis of cumulative impacts on all Forest Service sensitive species discussed in this document (northern goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl). This area was selected as the cumulative effects area, because the area is large enough to capture effects that may cumulatively affect wildlife in and near the project area.

Cumulative impacts to sensitive species include past timber harvest, firewood gathering, grazing, roads, off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, noxious weeds, backcountry skiing, and snowmobile use.

Alternative C would end mining and reclaim the surface disturbance at the mine site. Reclamation activities would be for a short duration and there would be no additional surface disturbance. There would be no adverse effects to sensitive species when combined with the above cumulative effects, because there would be no additional disturbance under this alternative. Cumulative effects to sensitive species in Alternatives A & B are analyzed below.

Timber harvest can directly affect goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl habitat by removing trees and other vegetation that these species and their prey rely on. However, regenerating stands can provide quality habitat for these species. Timber harvest has occurred within the cumulative effects area, but none has occurred within the last 10 years. Currently some of these timber harvests are now providing habitat for these species and/or their prey. Therefore the effects to the above sensitive species from these past timber harvests coupled with the proposed project under Alternatives A & B would be negligible.

The proposed project occurs within the Blind Stream grazing allotment and part of the access road occurs within the Lake Basin grazing allotment. Grazing may reduce forage resources available to prey species of the northern goshawk, great gray owl, and flammulated owl. Grazing can also affect these species habitat and their prey species habitat if it alters the structure and composition of native plant communities. Range studies indicate that range conditions on these allotments are meeting or moving towards desired conditions (Blind Stream and Lake Basin Allotments range studies) . Therefore the effects to the northern goshawk, great gray owl, and flammulated owl from grazing coupled with the proposed project under Alternatives A & B would be negligible. Since the boreal owl and three-toed woodpecker do not utilize areas that are affected by grazing or forage on prey species that are affected by grazing, there would be no effect to these species from grazing coupled with the proposed project under Alternatives A & B.

Fire initially reduces habitat for the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl. As trees and shrubs regenerate and their habitats are improved. Therefore the effects to the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl from future wildfires coupled with the proposed project under Alternatives A & B would not be measurable in the long term.

Firewood gathering removes snags and down woody debris that provide habitat for the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, flammulated owl and/or their prey species. Cavity nesters like the three-toed woodpecker, boreal owl, and flammulated owl would lose some nesting trees and/or foraging habitat. Some habitat for goshawk and great gray owl prey species would also be lost. However, firewood gathering areas are restricted to certain areas of the District and within 300 feet of a road, and the amount of snags and down woody debris that would be gathered is negligible in comparison to surrounding habitat in these areas (District Firewood Cutting Plan). Therefore the effects to these species from firewood gathering coupled with the proposed project would be negligible under Alternatives A & B..

Cumulative impacts such as off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing contribute disturbance to the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl. These activities may displace individuals from the immediate area of disturbance. However, there is ample habitat in the watershed for displaced individuals to disperse. Therefore, the effects to these species from these activities coupled with the proposed project would be negligible under Alternatives A & B.

Roads fragment habitat and provide access for snowmobiles and backcountry skiers. These activities do not occur during the same season (summer/fall) as the proposed project, therefore the effects to the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl from winter activities coupled with the proposed project would not be measurable under Alternatives A & B.

Noxious weeds have the potential to alter habitats at both the local and ecosystem scale (Ruediger et al. 2000). This would, over time, affect habitat for the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, flammulated owl and/or their prey species. The Integrated Pest Management Program on the Forest addresses and implements a plan to eradicate or control noxious weeds. Therefore the effects to these species from noxious weeds coupled with the proposed project would be negligible under Alternatives A & B.

Since the effects to the northern goshawk, three-toed woodpecker, boreal owl, great gray owl, and flammulated owl from these cumulative impacts (individually) are negligible, the combined effect of these cumulative impacts to these species would also be negligible under Alternatives A & B.

4.8.c Management Indicator Species

Elk and mule deer –
Alternative A
Direct and indirect effects
Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. There would be approximately 4 acres of surface disturbance at the mine site that would remove a few young spruce/fir trees adjacent to the mine site. Since these trees are few and adjacent to the mine, it is unlikely that deer and elk would use them for hiding cover. Disturbance in the area from mining activities may displace some individuals. However, there is ample elk and deer habitat within the watershed for dispersal of displaced individuals.

This alternative would increase the amount of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not

available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect elk and deer. The additional four round trips per day along access roads 140 and 121 would slightly increase disturbance to elk and deer habitat. Since these roads currently receive vehicle use from the public and from the miners, the slight increase of use along these roads under this alternative may displace individual elk and deer from the immediate area around the road. However, given the small scale of the proposed project and the large landscape elk and deer use, this would not affect the viability of elk and deer populations. The access roads pass through calving and fawning habitat. However, female elk and deer seek seclusion and cover during the calving and fawning period (UDWR Statewide Management Plan for Mule Deer 2003, Chapman et. al. 1982), and would likely avoid these access roads. The calving and fawning period is usually over by late May and early June (UDWR Statewide Management Plan for Mule Deer 2003; and Nature Serve 2003). Activities associated with the mine would not start until June. Considering these facts, use of the access roads is not likely to affect calving elk and fawning deer.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within elk and deer habitat in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season) and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect elk and deer.

Based on the above analysis (refer to the rationale above), this alternative may displace some individual elk and deer, but would not affect the viability or trend in these populations on the Forest or impair the ability of the Forest to provide well-distributed habitat for elk and deer.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to elk an deer under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

The amount of time required for each operational season at the mine site to extract the ore would be shorter than in Alternative A. This would reduce the amount of time elk and deer habitat in the area would experience noise disturbance from activities associated with the extraction. Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect elk and deer. Since public use of access roads 121 and 140 is lower than access road 135 (refer to Sections 3.1 and 4.7 of this EA), the four round trips per day along these access roads (access roads 121 and 140) would have a greater chance of affecting elk and deer habitat. However, the current level of use on roads 121 and 140 includes these four round trips of hauling, and elk and deer in the area would likely be habituated to this level of use. Likewise, elk and deer would likely be habituated to the current level of disturbance on access road 135. Therefore the current four round trips per day along these access roads (under this alternative) would not have further affects to elk and deer.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access roads. However, as stated above, elk and deer in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to elk and deer.

The effects to elk and deer from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative may displace some individual elk and deer, but would not affect the viability or trend in these populations on the Forest or impair the ability of the Forest to provide well-distributed habitat for elk and deer.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. There would be no additional surface disturbance. Noise disturbance in the area would be for a short period and only occur during the period reclamation. Individual elk and deer may be temporarily displaced during reclamation. However, there is ample elk and deer habitat within the watershed for dispersal of displaced individuals. There would be no hauling of ore, therefore disturbance to elk and deer habitat along the access roads under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative may temporarily displace some individual elk and deer, but would not affect the viability or trend in these populations on the Forest or impair the ability of the Forest to provide well-distributed habitat for elk and deer.

Mitigation Measures: No mitigation measures are required.

Northern goshawk –
Alternative A
Direct and indirect effects
Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. There are no known goshawk nests, PFA's, or territories within or near the project area. The mine site and access road 121 do not occur within goshawk habitat (trees in the area (spruce/fir) are in small patches across the landscape), but some habitat does exist near access roads 135 and 140. Because the mine and access road 121 are not located within goshawk habitat, there would be no impacts to the northern goshawk from activities associated with the mine and access road 121, regardless of the amount of ore extracted, hauling, or time taken to extract it. This alternative would increase the amount of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the northern goshawk. The additional four round trips per day along access road 140 would slightly increase disturbance to goshawk habitat along this road. However, since this road currently receives vehicle use from the public and from the miners, the slight increase of use along this road under this alternative may displace individual goshawks from the immediate area around the road, but would not cause a trend toward their federal listing.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance to goshawk habitat along access roads 140 and 135 in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not be located within goshawk habitat (at the mine site), and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the goshawk.

Based on the above analysis (refer to the rationale above), this alternative is consistent with the standards and guidelines outlined in the Goshawk Amendment to the Ashley Forest Plan (USDA Forest Service, Ashley Forest Plan Amendment, 2000). Based on

this same analysis, this alternative may displace some individual goshawks, but would not affect the viability or trend in the goshawk population on the Forest, or impair the ability of the Forest to provide well-distributed habitat for the northern goshawk.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the northern goshawk under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. Since the mine site and access road 121 are not located within goshawk habitat, activities associated with the mine in these areas would not affect the goshawk. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the goshawk. Since public use of access road 140 is lower than access road 135 (refer to Sections 3.1 and 4.7 of this EA), the four round trips per day along this access road would have a greater chance of affecting goshawk habitat. However, the current level of use on road 140 includes these four round trips of hauling, and goshawks in the area would likely be habituated to this level of use. Goshawks would also likely be habituated to the current level of disturbance on access road 135. Therefore the current four trips per day along these access roads (under this alternative) would not have further affects to the goshawk.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along access roads 140 and 135. However, as stated above, goshawks in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to the goshawk.

The effects to goshawks from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative is consistent with the standards and guidelines outlined in the Goshawk Amendment to the Ashley Forest Plan (USDA Forest Service, Ashley Forest Plan Amendment, 2000). Based on this same analysis, this alternative may displace some individual goshawks, but would not affect the viability or trend in the goshawk population on the Forest, or impair the ability of the Forest to provide well-distributed habitat for the northern goshawk.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. Goshawk habitat does not occur at the mine site and the area of reclamation, therefore, there would be no adverse affects to the goshawk in these areas. There would be no hauling of ore, therefore disturbance to goshawk habitat along the access roads under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative would have no impact to the northern goshawk and would be consistent with the standards and guidelines outlined in the Goshawk Amendment to the Ashley Forest Plan (USDA Forest Service, Ashley Forest Plan Amendment, 2000). Based on this same analysis, this alternative would not affect the viability or trend in the goshawk population on the Forest, or impair the ability of the Forest to provide well-distributed habitat for the northern goshawk.

Mitigation Measures: No mitigation measures are required.

Red-naped sapsucker and warbling vireo –

Alternative A

Direct and indirect effects

Because the mine site and access roads 140 and 121 are not located within red-naped sapsucker and warbling vireo habitat, there would be no effects to these species from activities at the mine site and along these access roads (access roads 140 and 121), regardless of the amount of ore extracted, hauled, or time taken to extract and haul it.

This alternative would increase the amount of hauling of ore on access road 135 from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads is not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the red-naped sapsucker and warbling vireo.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within red-naped sapsucker and warbling vireo habitat in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not be located within these species habitat (at the mine site), and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the red-naped sapsucker and warbling vireo.

Based on the above analysis (refer to the rationale above), this alternative would not affect the viability or trend in red-naped sapsucker and warbling vireo populations on the Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the red-naped sapsucker and warbling vireo under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along access road 135 would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along this road. Since the mine site and access roads 140 and 121 are not located within these species habitat, activities associated with the mine and access roads 140 and 121 would not affect these species. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the red-naped sapsucker and warbling vireo. Furthermore, the current level of use on road 135 includes these four round trips of hauling, and individual red-naped sapsuckers and warbling vireos in the area would likely be habituated to this level of use. Therefore the current four round trips per day along these access roads (under this alternative) would not have further affects to these species.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access road 135. However, as stated above, individuals of these species in the area would likely be habituated to this level of use. Therefore, the extended period of use of this access road by mining trucks (hauling of ore) in the long term would not have further affects to the red-naped sapsucker and warbling vireo.

The effects to these species from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative would not affect the viability or trend in red-naped sapsucker and warbling vireo populations on the

Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. Red-napes sapsucker and warbling vireo habitat does not occur at the mine site and the area of reclamation, therefore, there would be no adverse affects to these species in these areas. There would be no hauling of ore, therefore disturbance to these species habitat along access road 135 under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative would not affect the viability or trend in red-naped sapsucker and warbling vireo populations on the Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

Mitigation Measures: No mitigation measures are required.

Lincoln's sparrow and song sparrow –

Alternative A

Direct and indirect effects

Because the mine site and access roads 140 and 121 are not located within Lincoln's sparrow and song sparrow habitat, there would be no effects to these species from activities at the mine site and along these access roads (access roads 140 and 121), regardless of the amount of ore extracted, hauled, or time taken to extract and haul it.

This alternative would increase the amount of hauling of ore on access road 135 from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads is not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the Lincoln's sparrow or song sparrow.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within Lincoln's sparrow and song sparrow habitat in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not be located within these species habitat (at the mine site), and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the Lincoln's sparrow or song sparrow.

Based on the above analysis (refer to the rationale above), this alternative would not affect the viability or trend in Lincoln's sparrow and song sparrow populations on the Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the Lincoln's sparrow and song sparrow under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along access road 135 would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along this road. Since the mine site and access roads 140 and 121 are not located within these species habitat, activities associated with the mine and access roads 140 and 121 would not affect these species. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the Lincoln's sparrow or song sparrow. Furthermore, the current level of use on road 135 includes these four round trips of hauling, and individual Lincoln's sparrows and song sparrows in the area would likely be habituated to this level of use. Therefore the current four round trips per day along this access road (under this alternative) would not have further affects to these species.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access road 135. However, as stated above, individuals of these species in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to the Lincoln's sparrow and song sparrow.

The effects to these species from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis (refer to the rationale above), this alternative would not affect the viability or trend in Lincoln's sparrow and song sparrow populations on the

Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. Lincoln's sparrow and song sparrow habitat does not occur at the mine site and the area of reclamation, therefore, there would be no adverse affects to these species in these areas. There would be no hauling of ore, therefore disturbance to these species habitat along access road 135 under this alternative would be negligible.

Based on the above analysis (refer to the rationale above), this alternative would not affect the viability or trend in Lincoln's sparrow and song sparrow populations on the Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

Mitigation Measures: No mitigation measures are required.

Cumulative Effects (Alternatives A, B, & C)

The Blind Stream drainage, from the headwaters of Blind Stream to the Forest Boundary, is used for analysis of cumulative impacts on all management indicator species (MIS) discussed in this document (elk and mule deer, northern goshawk, red-naped sapsucker and warbling vireo, Lincoln's sparrow and song sparrow). This area was selected as the cumulative effects area, because the area is large enough to capture effects that may cumulatively affect wildlife in and near the project area.

Cumulative impacts to management indicator species include past timber harvest, firewood gathering, grazing, roads, off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, noxious weeds, backcountry skiing, and snowmobile use.

Alternative C would end mining and reclaim the surface disturbance at the mine site. Reclamation activities would be for a short duration and there would be no additional surface disturbance. There would be no adverse effects to management indicator species when combined with the above cumulative effects, because there would be no additional disturbance under this alternative. Therefore, cumulative impacts under this alternative would not affect the viability or trend in northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow populations on the Forest, or impair the ability of the Forest to provide well-distributed habitat for these species. Cumulative effects to these species in Alternatives A & B are analyzed below.

Timber harvest can directly affect goshawk, elk, deer, red-naped sapsucker and warbling vireo habitat by removing trees and other vegetation that these species rely on. However, regenerating stands can provide quality habitat for these species. Timber harvest has

occurred within the cumulative effects area, but none has occurred within the last 10 years. Currently some of these timber harvests are now providing quality habitat for these species. Therefore the effects to the above MIS from these past timber harvests coupled with the proposed project under Alternatives A & B would be negligible. Since the Lincoln's sparrow and song sparrow are not associated with areas that are affected by timber harvest, there would be no effect to these species from grazing coupled with the proposed project under Alternatives A & B.

The proposed project occurs within the Blind Stream grazing allotment and part of the access road occurs within the Lake Basin grazing allotment. Grazing may reduce forage and cover resources available to the goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow. Grazing can also affect these species habitat by altering the structure and composition of native plant communities. Range studies indicate that range conditions on these allotments are meeting or moving towards desired conditions (Blind Stream & Lake Basin Allotments range studies). Therefore the effects to the goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow owl from grazing coupled with the proposed project under Alternatives A & B would be negligible.

Fire initially reduces habitat for the northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow. As trees and shrubs regenerate and their habitats are improved. Therefore the effects to the goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow from future wildfires coupled with the proposed project under Alternatives A & B would not be measurable in the long term.

Firewood gathering removes snags and down woody debris that provide habitat for the northern goshawk, and red-naped sapsucker warbling vireo. Cavity nesters like the red-naped sapsucker would lose some nesting trees and/or foraging habitat. Some habitat for goshawk prey species would also be lost. However, firewood gathering areas are restricted to certain areas of the District and within 300 feet of a road, and the amount of snags and down woody debris that would be gathered is negligible in comparison to surrounding habitat in these areas (District Firewood Cutting Plan). Therefore the effects to these species from firewood gathering coupled with the proposed project would be negligible under Alternatives A & B.

Cumulative impacts such as off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing contribute disturbance to the northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow. These activities may displace individuals from the immediate area of disturbance. However, there is ample habitat in the watershed for displaced individuals to disperse. Therefore, the effects to these species from these activities coupled with the proposed project would be negligible under Alternatives A & B.

Roads fragment habitat and provide access for snowmobiles and backcountry skiers. These activities do not occur during the same season (summer/fall) as the proposed project, therefore the effects to the northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow from winter activities coupled with the proposed project would not be measurable under Alternatives A & B.

Noxious weeds have the potential to alter habitats at both the local and ecosystem scale (Ruediger et al. 2000). This would, over time, affect habitat for the northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow. The Integrated Pest Management Program on the Forest addresses and implements a plan to eradicate or control noxious weeds. Therefore the effects to these species from noxious weeds coupled with the proposed project would be negligible under Alternatives A & B.

Since the effects to the northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow from these cumulative impacts (individually) are negligible, the combined effect of these cumulative impacts to these species would also be negligible under Alternatives A & B.

Based on the above rationale (refer to the rationale above), this alternative would not affect the viability or trend in northern goshawk, elk, deer, red-naped sapsucker, warbling vireo, Lincoln's sparrow, and song sparrow populations on the Forest, or impair the ability of the Forest to provide well-distributed habitat for these species.

4.8.d Birds of Conservation Concern (Migratory Birds) and Utah Partners in Flight Priority Species –

Williamson's sapsucker –

Alternative A

Direct and indirect effects

Under this alternative there would be an increase of mining activities (including activities associated with reclamation) at the mine site and an increase of ore hauling. This alternative would also increase the duration of noise disturbance in the area during each year. There would be approximately 4 acres of surface disturbance at the mine site that would remove a few young spruce/fir trees adjacent to the mine site. Since these trees are young and small in diameter, they would not be used for nesting by the Williamson's sapsucker. Disturbance in the area from mining activities may displace some individuals. However, there is ample nesting and foraging habitat within the watershed for dispersal of displaced individuals.

This alternative would increase the amount of hauling of ore from a maximum four round trips per day (under the current plan of operations, Alternative B) to a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads are not available (refer to Section 4.7 of this EA), public use along the access roads is estimated

to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the Williamson's sapsucker. The additional four round trips per day along access roads 140 and 121 would slightly increase disturbance to Williamson's sapsucker habitat. However, since these roads currently receive vehicle use from the public and from the miners, the slight increase of use along these roads under this alternative may displace individual Williamson's sapsuckers from the immediate area around the roads. However, there is ample nesting and foraging habitat within the watershed for dispersal of displaced individuals.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within Williamson's sapsucker habitat in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season) and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the Williamson's sapsucker.

Based on the above analysis, this alternative may displace individual Williamson's sapsuckers, but would not adversely affect this species (refer to the rationale above).

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the Williamson's sapsucker under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along the access roads would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along the access roads. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

The amount of time required for each operational season at the mine site to extract the ore would be shorter than in Alternative A. This would reduce the amount of time Williamson's sapsucker habitat in the area would experience noise disturbance from activities associated with the extraction of ore under Alternative A. Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the Williamson's sapsucker. Since public use of access roads 121 and 140 is lower than access road 135 (refer to Sections 3.1 and 4.7 of this EA), the four round trips per day along these access roads (access roads 121 and 140) would have a greater chance of affecting Williamson's sapsucker habitat. However,

the current level of use on roads 121 and 140 includes these four round trips of hauling, and Williamson's sapsuckers in the area would likely be habituated to this level of use. Likewise, the Williamson's sapsucker would likely be habituated to the current level of disturbance on access road 135. Therefore the current four round trips per day along these access roads (under this alternative) would not have further affects to the Williamson's sapsucker.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access roads. However, as stated above, Williamson's sapsuckers in the area would likely be habituated to this level of use. Therefore, the extended period of use of these access roads by mining trucks (hauling of ore) in the long term would not have further affects to the Williamson's sapsucker.

The effects to the Williamson's sapsucker from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis, this alternative may displace individual Williamson's sapsuckers, but would not adversely affect this species.

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. There would be no removal of Williamson's sapsucker habitat. Noise disturbance in the area would be for a short period and only occur during the period of reclamation. Individual Williamson's sapsuckers may be temporarily displaced during reclamation. However, there is ample nesting and foraging habitat within the watershed for dispersal of displaced individuals. There would be no hauling of ore, therefore disturbance to Williamson's sapsucker habitat along the access roads under this alternative would be negligible. Therefore, this alternative would not adversely affect the Williamson's sapsucker.

Mitigation Measures: No mitigation measures are required.

Broad-tailed hummingbird –

Alternative A

Direct and indirect effects

Because the mine site and access roads 140 and 121 are not located within broad-tailed hummingbird habitat, there would be no effects to this species from activities at the mine site or along these access roads (access roads 140 and 121), regardless of the amount of ore extracted, hauled, or time taken to extract and haul it.

This alternative would increase the amount of hauling of ore on access road 135 from a maximum four round trips per day (under the current plan of operations, Alternative B) to

a maximum of eight round trips per day (refer to Section 2.0 of this EA), and would increase the number of days needed for hauling. Though actual vehicle counts along the access roads is not available (refer to Section 4.7 of this EA), public use along the access roads is estimated to be low to moderate (refer to Section 3.1 of this EA), with access road 135 receiving the most non-mine related traffic (refer to Section 4.7 of this EA). The additional four round trips per day on access road 135 is a small amount in relation to the current public use and current use from mining traffic. Therefore, increasing the level of noise disturbance along access road 135 would not adversely affect the broad-tailed hummingbird.

Under this alternative mining is proposed to continue for up to 25 years. The current rate of mining (under Alternative B) will remove less ore per year and thus take a longer period (greater than 25 years) to remove the ore. Therefore under this alternative, the duration of mining in the long term would be shortened and would reduce disturbance within broad-tailed hummingbird habitat in the long term.

The mobile trailer and camping equipment, under this alternative would be temporary in duration (removed at the end of every season), would not be located within this species habitat (at the mine site), and would leave no permanent structures. Therefore, the use of this equipment would not adversely affect the broad-tailed hummingbird.

Based on the above analysis, this alternative would not adversely affect the broad-tailed hummingbird (refer to the rationale above).

Mitigation Measures: No mitigation measures are required.

Alternative B

Direct and indirect effects

This alternative is the existing plan of operations. The effects to the broad-tailed hummingbird under this alternative would be similar to those discussed in Alternative A, but on a smaller scale. Noise disturbance along access road 135 would occur for a shorter period of time during each year and there would be only four round trips per day of hauling along this road. Since the mine site and access roads 140 and 121 are not located within this species habitat, activities associated with the mine and access roads 140 and 121 would not affect this species. The rate at which the ore is mined would be slower under this alternative (600 tons a year instead of 3,000 to 6,000 tons per year), and thus take a longer period than the 25 years in Alternative A to remove the ore.

Four round trips of hauling ore per day on access road 135 is a small amount in relation to the current public use (refer to Section 3.1 and 4.7 of this EA). Therefore, four round trips per day along access road 135 would not adversely affect the broad-tailed hummingbird. Furthermore, the current level of use on road 135 includes these four round trips of hauling, and individual broad-tailed hummingbirds in the area would likely be habituated to this level of use. Therefore the current four round trips per day along this access road (under this alternative) would not have further affects to this species.

In the long term, disturbance to the area under this alternative would occur for a longer period (more than the 25 years in Alternative A). This would extend the period of disturbance from the mining trucks along the access road 135. However, as stated above, individual broad-tailed hummingbirds that are in the area would likely be habituated to this level of use. Therefore, the extended period of use of this access road by mining trucks (hauling of ore) in the long term would not have further affects to the broad-tailed hummingbird.

The effects to this species from the mobile trailer and camping equipment would be the same as those discussed in Alternative A.

Based on the above analysis, this alternative would not adversely affect the broad-tailed hummingbird (refer to the rationale above).

Mitigation Measures: No mitigation measures are required.

Alternative C

Direct and indirect effects

Under this alternative, mining would cease and the mine site would be reclaimed. Broad-tailed hummingbird habitat does not occur at the mine site or in the area of reclamation, therefore, there would be no adverse affects to this species in these areas. There would be no hauling of ore, therefore disturbance to this species habitat along access road 135 under this alternative would be negligible. Therefore, this alternative would not adversely affect the broad-tailed hummingbird.

Mitigation Measures: No mitigation measures are required.

Cumulative Effects (Alternatives A, B, & C)

The Blind Stream drainage, from the headwaters of Blind Stream to the Forest Boundary, is used for analysis of cumulative impacts on the Williamson's sapsucker and broad-tailed hummingbird. This area was selected as the cumulative effects area, because the area is large enough to capture effects that may cumulatively affect wildlife in and near the project area.

Cumulative impacts to the Williamson's sapsucker and broad-tailed hummingbird include past timber harvest, firewood gathering, grazing, roads, off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, noxious weeds, backcountry skiing, and snowmobile use.

Alternative C would end mining and reclaim the surface disturbance at the mine site. Reclamation activities would be for a short duration and there would be no additional surface disturbance. There would be no adverse effects to the Williamson's sapsucker and broad-tailed hummingbird when combined with the above cumulative effects, because there would be no additional disturbance under this alternative. Cumulative effects to these species in Alternatives A & B are analyzed below.

Timber harvest can directly affect Williamson's sapsucker and broad-tailed hummingbird habitat by removing trees and other vegetation that these species rely on. However, regenerating stands can provide quality habitat for these species. Timber harvest has occurred within the cumulative effects area, but none has occurred within the last 10 years. Currently some of these timber harvests are now providing habitat for these species. Therefore the effects to these species from these past timber harvests coupled with the proposed project under Alternatives A & B would be negligible.

The proposed project occurs within the Blind Stream grazing allotment and part of the access road occurs within the Lake Basin grazing allotment. Grazing may reduce forage resources and cover available to Williamson's sapsucker and broad-tailed hummingbird. Range studies indicate that range conditions on these allotments are meeting or moving towards desired conditions (Blind Stream & Lake Basin Allotments range studies). Therefore the effects to the Williamson's sapsucker and broad-tailed hummingbird from grazing coupled with the proposed project under Alternatives A & B would be negligible.

Fire initially reduces habitat for the Williamson's sapsucker and broad-tailed hummingbird. As trees and shrubs regenerate and their habitats are improved. Therefore the effects to these species from future wildfires coupled with the proposed project under Alternatives A & B would not be measurable in the long term.

Firewood gathering removes snags and down woody debris that provide habitat for the Williamson's sapsucker and its prey species. The Williamson's sapsucker also uses snags for nesting. However, firewood gathering areas are restricted to certain areas of the District and within 300 feet of a road, and the amount of snags and down woody debris that would be gathered is negligible in comparison to surrounding habitat in these areas (District Firewood Cutting Plan). Therefore the effects to Williamson's sapsucker from firewood gathering coupled with the proposed project would be negligible under Alternatives A & B. The broad-tailed hummingbird is not associated with snags and down woody debris and therefore is not affected by firewood gathering.

Cumulative impacts such as off-highway vehicle use, prospecting, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing contribute disturbance to the Williamson's sapsucker and broad-tailed hummingbird. These activities may displace individuals from the immediate area of disturbance. However, there is ample habitat in the watershed for displaced individuals to disperse. Therefore, the effects to these species from these activities coupled with the proposed project would be negligible under Alternatives A & B.

Roads fragment habitat and provide access for snowmobiles and backcountry skiers. These activities do not occur during the same season (summer/fall) as the proposed project, therefore the effects to the Williamson's sapsucker and broad-tailed hummingbird from winter activities coupled with the proposed project would not be measurable under Alternatives A & B.

Noxious weeds have the potential to alter habitats at both the local and ecosystem scale (Ruediger et al. 2000). This would, over time, affect habitat for the Williamson's sapsucker and broad-tailed hummingbird. The Integrated Pest Management Program on the Forest addresses and implements a plan to eradicate or control noxious weeds. Therefore the effects to these species from noxious weeds coupled with the proposed project would be negligible under Alternatives A & B.

Since the effects to the Williamson's sapsucker and broad-tailed hummingbird from these cumulative impacts (individually) are negligible, the combined effect of these cumulative impacts to these species would also be negligible under Alternatives A & B.

4.9 Fisheries

Alternatives A, B, And C - Direct And Indirect Effects
There will be no direct or indirect effects to fisheries from any of the alternatives for the proposed mining activities because there are no fisheries resources within the project or surrounding area. The nearest viable fishery to the project area is Hades Creek which is located approximately 3 miles to the west, in a different drainage basin. Therefore no habitat is available, near the project area, which could support aquatic species, including Colorado River Cutthroat Trout or macro invertebrates.

Cumulative Effects
The activities considered for the cumulative impacts to fisheries were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. There would be no cumulative effects to fisheries from any of the alternatives. Additionally, there are no fisheries at risk between the project area and the transportation route to the highway.

Mitigation Measures
None required.

Monitoring Guidelines
None required.

4.10 Soils

Alternatives A, B, and C – Direct and Indirect Effects
There will be little or no direct and indirect effects under any of the alternatives. The surface area to be affected is predominantly exposed bedrock or very shallow soils. Because of the nature of the topography, little surface erosion and no offsite sedimentation will occur. There are no external drainages and all affects will be of a very

local nature. The exposed bedrock and shallow soils provide limited opportunities for topsoil to be segregated and used for reclamation and rehabilitation.

Cumulative Effects
The activities considered for the cumulative impacts to soils were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. Because of the limited area of use, and the confinement of potential impacts to a very localized area, there are no identified cumulative effects to soils from any of the alternatives.

Mitigation Measures
None required.

Monitoring Guidelines
None required

4.11 Paleontology

Alternatives A, B, and C – Direct and Indirect Effects
The limestone formations in the area have the potential to contain fossils. However, site investigations have shown these fossils to be common variety, and not of great scientific importance. Significant fossils are not likely to be encountered by the proposed project. This would be the same for all alternatives.

Cumulative Effects
The activities considered for the cumulative impacts to fossils were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. Because none of the proposed alternatives will have any impact to significant fossils, there are no identified cumulative effects.

Mitigation Measures
None required.

Monitoring Guidelines
None required.

4.12 Cave and Karst Resources

Alternatives A, B, and C – Direct and Indirect Effects

The limestone bedrock within and around the project area exhibits surface karst features, suggesting that the subsurface contains a large and efficient subsurface drainage system. Examination of the site, however, did not reveal any significant karst resources that would be negatively impacted by the proposed project. The karst system would be impacted if contaminants were able to enter the subsurface. Since fuels, waste products, and other potentially hazardous material, would be carefully controlled at the site, and will occur only in small volumes, the risk of contamination is low and the impacts to karst resources would not be significant. This would be the same for all alternatives.

Cumulative Effects

The activities considered for the cumulative impacts to cave and karst resources were past, present and future timber and firewood cutting, mineral activities, recreation activities, special uses, and livestock grazing. No future recreation developments, trails, special uses, or timber sales are planned at this time. Present livestock grazing activities are expected to remain the same. No additional mineral activities are proposed in this area. The area is not presently open for firewood cutting. As none of the alternatives are expected to have any impact on cave and karst resources, and any effects would likely be local, there are no identified cumulative effects to cave and karts resources.

Mitigations Measures

None required at present. If open caves or other significant karst resources are encountered during excavation, then excavations should stop until the Forest Service can visit the site and assess the risk to such resources. If additional karst resources are discovered at the site, then mitigation measures may be imposed to protect those resources.

Monitoring Guidelines

The Forest Geologist will examine the mine area, at least yearly, to verify that mining has not intersected or exposed any new or significant karst resources.

CHAPTER 5

LIST OF PREPARERS

The following individuals participated in the formulation and analysis of the alternatives and the subsequent preparation of the Environmental Assessment.

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APPENDIX B - RECOMMENDED MITIGATION

If this project is approved, the Interdisciplinary Team recommends these mitigation measures be made part of that approval.

1. During reclamation, Shamrock would coordinate with the Forest Service regarding shaping of the mine area to desired angles (considering opportunities to mimic natural processes), a seed mix to be applied and timing of application, and other aspects of restoration. Revegetation seeding would be monitored and treatment repeated by Shamrock if necessary to generate success. Seeding success would only be expected where topsoil is applied or otherwise available, as the waste rock is not suitable growing material. The Forest Service may identify slope gradients, fill, or compaction needs.

2. If Shamrock's mining activities intersect an open cave or karst feature, activity would stop and the Forest Service would be contacted as soon as possible. The Forest Service would examine the karst features for possible hazards or unique or important aspects, and provide Shamrock with an assessment and possible mitigation measures before mining operations would continue.

3. Sanitation would be addressed through a Forest-Service approved system, and following Best Management Practice #11.13, Forest Service Handbook 2509.22. If the portable self-contained trailer is placed then it is to have toilet facilities or a porta-potty. If access is not conducive to a porta-potty system, the Forest Service will identify latrine requirements for control of human waste and associated pathogens. Any storage system is to be kept pumped out at recommended levels. Any "gray water" (dish/hand washing waste water) will be hauled to an established dump station and not disposed of on-site.

4. Hazardous materials will not be left on-site during inactive periods (e.g., October 31-start of operations). The 50-gallon tank on the pickup truck will be securely mounted. Dump trucks will refuel in off-site gas stations. A spill management plan will be approved by the Forest Service prior to initiation of any work under this Plan of Operations. The plan will include that any spills will be reported to the Forest Service immediately and Forest Service instructions will be followed.

5. Shamrock will be responsible for treatment of noxious weeds during the life to the project and for 3-5 years (5 maximum) following termination until infestations are controlled or the Forest Service resumes responsibility.

6. Dust abatement with a Forest Service-approved material may be required.

7. To reduce noise and emission type recreation conflicts, as well as for safety, truck hauling may not occur during legal holidays, during weekends adjacent to a Friday or Monday holiday, or during opening weekends of the general hunting seasons.

8. Shamrock will be required to submit a Safety Plan for approval by the Forest Service. This plan would include installing signs at identified locations during periods when mine traffic is on the road and having headlights turned on while on these roads.

APPENDIX C – ITEM 1
Threatened, Endangered and Sensitive Wildlife Species

Federally threatened (T), endangered (E), and proposed (P) species occurring in Duchesne County, UT (USFWS May 2004), and Forest Service sensitive (S) and management indicator (MI) species occurring on the Ashley National Forest (Ashley National Forest unpub. data; USFS 1986) and their status in the project area.

Species	Status	Occurrence in Project Area	Basis for occurrence determination
Canada lynx	T	Present	Project is within lynx habitat (LAU 4).
Bald eagle	T	Absent	Preferred winter or summer habitat is not present.
Mexican spotted owl	T	Absent	No suitable habitat present.
Black-footed ferret	E	Absent	No suitable habitat present.
Western yellow-billed cuckoo	C	Absent	No suitable habitat present.
Northern goshawk	S, MI	Present	No known goshawk territories are in the project area, but habitat is present.
Townsend's big-eared bat	S	Absent	No suitable habitat present. Known caves near the mine site are above the elevation limit (8,851 ft.) in Utah (Oliver 2000).
Spotted bat	S	Absent	No suitable habitat present. Known caves near the mine site are above the elevation limit (9,200 ft.) in Utah (Oliver 2000).
Peregrine falcon	S	Absent	No suitable habitat present.
Boreal owl	S	Present	Habitat exists within the project area.
Great gray owl	S	Present	Habitat exists within the project area.
Flammulated owl	S	Present	Habitat exists within the project area.
Three-toed woodpecker	S	Present	Habitat exists within the project area.
Wolverine	S	Absent	Lack of sightings and detections indicates local extirpation of this species is likely.
Common loon	S	Absent	Only Ashley occurrences are on Flaming Gorge Reservoir and along Green River corridor (outside project area).
Trumpeter swan	S	Absent	Only observed on Flaming Gorge.
Greater sage grouse	S, MI	Absent	No suitable habitat present.
Pygmy rabbit	S	Absent	No habitat is present.
Elk and mule deer	MI	Present	Observed within project area.
Lincoln's and song sparrow	MI	Present	Habitat exists within the project area.
Red-naped sapsucker and warbling vireo	MI	Present	Habitat exists within the project area.
White-tailed ptarmigan	MI	Absent	No suitable habitat present.
Golden eagle	MI	Absent	No suitable habitat present.

APPENDIX C – ITEM 2
Sensitive (S) wildlife species of the Ashley National Forest

Species	Status	Habitat Use and Local Distribution	References
Peregrine falcon	S	Known to nest on cliffs along Flaming Gorge Reservoir; sightings and one confirmed nest in canyons in the Stream Canyon and Glacial Canyon Landtype Associations. Usually found where rivers, marshes or other wet habitats are associated with cliffs, so the canyon landtype associations are the most likely sites outside of Flaming Gorge Reservoir.	Ashley NF wildlife surveys/sighting records
Spotted bat	S	Various habitats and elevations, but most often collected in dry, rough desert terrain. Distribution thought to be limited by availability of roosts (primarily under loose rock or in crevices in rock cliffs). On the south slope of the Uintas, they have been located near steep-walled stream canyons such as Ashley Creek, Black Canyon and Brush Creek. They have also been located on the South Unit in pinyon/juniperper/sage at 7400'. Utah elevational range is 2,700-9,200 ft.	Lengas 1994 Oliver 2000 Perkins 2001 and 2002
Townsend's big-eared bat	S	Various habitats and elevations, but in Utah primarily found in shrub steppe and pinon/juniper habitats. Needs caves or mines for hibernation and maternity roosts; occasionally uses old buildings. Sensitive to disturbance at these roosts. Utah elevational range is 3,300-8,851 ft. Have been located in two caves on the Ashley. Limestone Hills, Limestone Plateau and various canyon landtype associations contain most of the suitable habitat on the Ashley, since they have rock formations that are likely to contain caves.	Ashley NF cave survey data Perkins 2001 and 2002 Oliver 2000
Boreal owl	S	Spruce/fir or mixed conifer forest*; may use aspen if suitable conifer is nearby. Possible but less likely in pure lodgepole. Secondary cavity nester; needs large (13"+) diameter trees for nesting. Availability of suitable nest sites can limit population size. Five boreal owls have been located on the Ashley, all in spruce/fir or mixed conifer.	Hayward 1994 Ashley NF survey data
Great gray owl	S	Conifer or conifer/hardwood forests. Two (possibly 3) recent locations and one historic record on Ashley, all in mixed conifer. Uses old stick nests constructed by other species, depressions in broken tops of trees, etc. for nesting. Uinta Mountains are at or just beyond southern limit of normal range; species is considered casual or irregular in Utah.	Behle 1981, Behle et al. 1985 Duncan and Hayward 1994 Ashley NF survey data
Flammulated owl	S	Ponderosa pine or Douglas fir forests. Has been located in both of these forest types throughout the Ashley; has not been found in lodgepole or mixed conifer. Stream Pediment, Stream Canyon, Glacial Canyon, Limestone Plateau and Limestone Hills Landtype Associations contain nearly all the suitable habitat on the south slope of the Uintas. Secondary cavity nester.	McCallum 1994 Ashley NF survey data
Wolverine	S	Tundra, boreal forests, coniferous forests of western mountains. Needs a diversity of habitats to support its prey base, especially large mammals (scavenged ungulate carrion is an important food source). Habitat may be better defined as large, sparsely inhabited areas with adequate food than by topography or vegetation. Appears to be sensitive to habitat fragmentation and human disturbance; consequently often restricted high elevation, remote portions of mountain ranges. Uinta Mountains, especially the High Uinta Wilderness, appear to contain suitable habitat; however, the last confirmed record of wolverine occurring anywhere in Utah is from 1924 and it may be extirpated from the the state.	McKay 1991 Banci 1994
Common loon	S	Flaming Gorge Reservoir during migration	Ashley NF wildlife sighting records
Three-toed woodpecker	S	Coniferous forests, or conifer mixed with aspen. Has been found in lodgepole, Douglas fir, spruce/fir and mixed conifer on the Ashley. Excavates a new cavity for nesting each year. Forages by prying off loose, scaly tree bark to find insects. Trees used for both nesting and foraging average 11" dbh or more. Management recommendations include maintenance of some snags greater than 12" dbh, and with some bark still present.	Evans and Conner 1979; Thomas et al. 1979; Parrish 2002; Goggans et al. 1988 Ashley NF survey data
Northern goshawk	S	Most forest types. Uses a wide variety of forest types on the Ashley, but majority of our known breeding territories are in lodgepole or mixed conifer stands, especially in the Trout Slope LTA. Home ranges include a variety of stand ages and structures, but older-age stands with a high density of large trees, relatively high canopy closure and high basal area are preferred for nesting. Stands with large trees and relatively open understories are preferred for foraging. Sensitive to disturbance during the nesting season.	Graham et al. 1999 Rodriguez et al. 1998 Reynolds et al. 1992 Ashley NF survey data
Trumpeter swan	S	Swans from Wyoming transplant programs have been seen on the Flaming Gorge NRA during the winters of 2000 and 2001. Preferred winter habitats provide ice-free waters with slow currents, extensive beds of aquatic plants. Also in areas of geothermal activity, springs, and dam outflows.	Personal communication with S. Patla, Wyoming Game and Fish; Nature Serve 2003
Greater sage grouse	S	Sage grouse populations are allied closely with sagebrush habitats. Sagebrush habitats are important for the survival of nesting and wintering sage grouse.	Connelly et. al. 2000
Pygmy rabbit	S	Typically in dense stands of big saagebrush growing in deep loose soils. In southwestern Wyoming pygmy rabbits selectively used dense and structurally diverse stands of sagebrush that accumulated a relatively large amount of snow. May be present on the Flaming Gorge Ranger District	Natureserve. 2003 http://www.natureserve.org. Accessed:Feb 19, 2004

*Mixed conifer defined as Engelmann spruce, subalpine fir and lodgepole pine on the Ashley.

APPENDIX C, ITEM 3

Listed, proposed, and candidate threatened and endangered wildlife of Duchesne County, Utah*

Species	Status	Habitat Use and Local Distribution	References
Western Yellow-billed Cuckoo	C	Nests in lowland riparian habitats (typically in cottonwood/willow habitats) with dense understory vegetation, usually within 100m of water. In Utah, nesting habitat is thought to occur between 2500-6000' elevation. There are no records of occurrence on the Ashley, but suitable habitat may exist in the low elevation portions of stream and glacial canyons where cottonwood trees are found in combination with conifers and aspen.	Parrish et al. 2002
Bald Eagle	T	Usually occurs near Flaming Gorge Reservoir and Green River corridor during winter; occasionally near other waters until freeze-up. A new nest was discovered spring of 2004 near Flaming Gorge.	Ashley NF wildlife sighting records, Maxifield 2004 pers. com.
Mexican spotted owl	T	Historic range exists in the BLM-managed Tavaputs Plateau south of the Uintah Basin. One individual heard on nearby Dinosaur National Monument in summer 1996; also located in Desolation Canyon on at least two occasions. Typical habitat on the Colorado Plateau (Utah) and southern Rocky Mountains (Colorado) is steep-sided canyons containing pockets of usually coniferous overstory trees mixed with smaller Gambel oak and box elder trees. In So. UT owls have not been found above 7200' (cutoff for suitable habitat considered 8000'). Suitable habitat may exist in the Stream Canyon and possibly Glacial Canyon landtype associations. No locations recorded on the Ashley.	pers. comm. with NPS personnel pers. comm. with UDWR personnel USDI Fish + Wildlife Service 1995
Canada lynx	T	Mesic mid- to high-elevation forests including Engelmann spruce, subalpine fir, lodgepole pine and possibly Douglas fir. Uses aspen when it is mixed with or adjacent to suitable conifer forests. Needs areas of dense understory cover and/or thickets of young trees for foraging, mature forests with large amounts of coarse woody debris for denning. Abundance and population persistence linked to snowshoe hare populations; red squirrels are secondary prey. Last confirmed occurrence in Uinta Mountains was 1972.	Ruediger et al. 2000 McKay 1991 Koehler and Aubry 1994
Black-footed ferret	E	Black-footed ferret distribution is coincident with prairie dog colonies. Habitat is therefore restricted to open or slightly brushy areas at relatively low elevations in the western U.S. An experimental population was recently established in Uintah County southeast of Vernal, UT on lands managed by the BLM; this species does not presently occur anywhere else in Utah. Potential habitat may exist on the Flaming Gorge NRA. No other portions of the Ashley NF appear to be suitable habitat for this species.	Nature Serve 2003 USDI-BLM 1999

* U.S. Fish and Wildlife Service species and habitat list for Duchesne, Uintah, and Daggett Counties of Utah, as of May 2004.