

Environmental Assessment

Cedar Springs-Deer Run-Mustang Ridge Campgrounds

Fuels Reduction Project

U.S. Forest Service
Ashley National Forest
Flaming Gorge Ranger District

Daggett County, Utah

March 20, 2009

General Location

The Cedar Springs-Deer Run-Mustang Ridge Campgrounds project area is located approximately three miles west of Dutch John, Utah within: T2N, R22E, Sec. 8, 9, 16, 17 and 21, SLM.

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CHAPTER 1 PURPOSE AND NEED

Purpose and Need for Action...The purpose of this project is to reduce hazardous fuels within the Wildland Urban Interface (WUI) of the Cedar Springs, Deer Run and Mustang Ridge Campgrounds and marina areas.

The 2002 Mustang Fire showed that under extreme weather and fuel conditions fire could, and did become severe and fast moving, causing significant damage to public property and putting the public at risk of injury. This fire spread rapidly through the dense and continuous crowns of pinyon-juniper trees similar to those around the Cedar Springs, Deer Run and Mustang Ridge Campgrounds and boat launch areas (Gamble 2007). Once fire gets into pinyon-juniper crowns and begins to spread, the fire becomes more intense, moves faster and becomes unmanageable. This kind of a fire puts the public, firefighters, and public and private property at most risk.

Reducing the amount of pinyon-juniper fuels and their continuity would reduce the potential for crown dominated fires. Resulting ground fires, while still a very serious threat to public and firefighter safety and to loss of property, are less intense and may move slower, allowing for an increased opportunity for suppression and evacuations if necessary. Consequently, reducing the amount of pinyon-juniper fuels and their continuity around these campgrounds would reduce the potential for a severe and fast moving crown fire to cause physical injury or property damage. It would also allow more time for visitors to evacuate the campgrounds and marinas, more time for fire suppression activities and it may allow for additional suppression tactics to be utilized.

During the analysis in July of 2008 pinyon Engraver beetles or *Ips* beetles (*Ips confusus*) were discovered within a small pocket of pinyon pines just east of the Mustang Campground and within individual pines scattered throughout the Mustang Campground area (Webb 2009). This infestation caused the mortality of the small pocket of pinyon trees. The dead and dying trees were immediately removed to prevent the *Ips* beetle from spreading and causing additional pinyon tree mortality. Additional pockets of *Ips* beetle mortality were also discovered later in 2008 approximately two miles to the northeast and northwest of this area (Ashley National Forest, 2008 Aerial Detection Survey Map), indicating that susceptible stands of pinyon trees are present within and adjacent to the project area (Webb 2009). Infestations of *Ips* beetles can kill their host pinyon pine trees if attacked in mass as was the case with these infestations.

Ips beetles use the host trees to create additional life cycles (3-4 per year) that attack adjacent pinyon trees, also potentially causing their mortality. If enough *Ips* beetles attack then mortality can occur to single trees or to numerous trees over the entire landscape, especially if pinyon trees are weakened by biotic stresses caused by other insects and/or disease, and/or abiotic factors such as extended periods of drought which is currently the case. Higher stand densities similar to those that exist within the project

area can also contribute to between-tree competition as trees compete for available moisture, light and other nutrients. This can result in additional stress on individual trees and also weakens the tree's defenses to *Ips* beetle attacks.

Any *Ips* beetle mortality, especially that which may occur over an entire landscape, increases hazardous fuels and the potential for crown dominated fires. Scenic and recreational values of the project area would also be diminished. Consequently, improving forest health by reducing the potential for *Ips* beetle caused pinyon mortality would help to reduce fuels and the potential for crown dominated fires. It would also help to maintain the existing recreational and scenic values of the Cedar Springs, Deer Run and Mustang Ridge Campgrounds and the Cedar Springs Marina.

Proposed Action... Reduce the density and continuity of pinyon-juniper fuels by removing a portion of the trees on approximately 345 acres within and adjacent to the Cedar Springs and Deer Run Campgrounds and 199 acres within the Mustang Ridge Campground areas. Three separate levels of treatment would be used; 1) reducing the density and continuity of pinyon-juniper fuels, 2) removing all regenerating trees within existing wildlife browse areas, and 3) removing dead and dying trees. These treatments are described in more detail beginning on page 9 and the maps on the following pages.

The implementation of the proposed action is also expected to improve forest health through the initial selection for removal of pinyon trees weakened by biotic stresses caused by other insects and/or disease and those where higher stand densities contribute to between-tree competition. This would especially be the case within the primary treatment units described on page 9. Within "all other areas" (refer to page 10) only dead and dying trees are proposed for removal unless *Ips* beetle caused pinyon pine mortality becomes evident. At that point in time additional measures would be taken to suppress existing populations of *Ips* beetles and reduce tree and stand characteristics associated with population increases. This would include the removal of pinyon trees weakened by biotic stresses caused by other insects and/or disease and those where higher stand densities contribute to between-tree competition.

Treatments may begin in 2009.

Forest Plan and Other Legal Direction... The project area lies within the Flaming Gorge National Recreation Area; therefore activities must comply with Public Law 90-540. This legislation directs the Secretary of Agriculture to "administer, protect, and develop the FGNRA in a manner to best provide for (1) public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and (3) such management, utilization, and disposal of natural resources as in his judgment will promote or are compatible with, and do not significantly impair the purpose for which the recreation area is established".

Cedar Springs Area map

Mustang Ridge Area map

The project area contains the following Forest Plan Management Areas and direction:

The Cedar Springs and Deer Run Campgrounds, the Cedar Springs Marina and the Cedar Springs Boat Launch areas lie primarily within the Forest Plan Management Area “r” Wildlife. This Management Area consists of those lands identified as having special or critical wildlife capabilities in the Flaming Gorge NRA. Objective is to maintain or increase wildlife species diversity and numbers while meeting the direction for protection of recreation and visual resource in Public Law 90-540. A portion of the project area also lies within Management Area “n1”.

The Mustang Ridge Campground and boat launch area lie entirely within Management Area “n1”. This Management Area is described as “...lands in the NRA that have the existing low prescription applied. Activities and practices recognize and emphasize the recreation and wildlife values within the NRA. Standards and guidelines are modified to comply with Public Law 90-540”. Some vegetative manipulation by prescribed fire where it is in keeping with scenic, wildlife, and recreation purposes as required by NRA legislation. Prescription based on protection of facilities, wildlife, VQOs (Visual Quality Objectives), and fuels abatement.

The pertinent Forest Plan Goals, Objectives and Standards and Guidelines that apply to this project are listed below:

- Maintain a fire management program to protect investments. Consider effectiveness of pre-suppression, fuel reduction, and treatment areas (S&G, page IV-54).
- Implement and manage for adopted visual quality objectives (Objective, page IV-19).
- Provide appropriate aquatic and terrestrial habitat analysis input to all resource management activities (S&G, page IV-29).
- Manage pinyon-juniper to provide for maximum wildlife habitat and esthetics. Sage-grass browse and openings of various sizes and shapes should be maintained and expanded where slopes, watershed conditions, soils, and esthetics considerations permit (FGNRA Supplemental Direction, page A-5).
- Manipulate vegetative cover where appropriate to improve ground cover, preserve natural beauty, increase diversity, and reduce fire hazard (FGNRA Supplemental Direction, page A-5).
- Provide for public safety in the location, design, construction, maintenance, and administration of all facilities and improvements (FGNRA Supplemental Direction, A-9).
- Manage for forest stands that will maintain or improve the recreational and scenic values (Forest Plan page A-5).
- Maintain and/or establish special safety precautions and measures where people concentrate or where unusually hazardous conditions exist (Forest Plan page A-9).
- Strive to restore scenic values in areas where they have been deteriorated or destroyed, by vegetative manipulation, planting, additional cutting to blend corridors, etc. (Forest Plan A-9).

- Consider using Forest Service crews for tree removal as a method to minimize damage to the recreational and scenic values on timber sales near roads or other places receiving close public scrutiny (Forest Plan page A-10).
- Manage for well-stocked forest stands that will maintain or improve the recreational and scenic values (Forest Plan page A-10).
- Fire protection programs will be geared to keep pace with the higher risks and hazards and important recreation values. Areas of heavy public use, the canyon lands, and areas of scenic beauty will need special protection (Forest Plan page A-10).
- Promptly investigate and, where appropriate, minimize insect, disease, and other damage (Forest Plan page A-21).
- Combine silvicultural treatments with direct hand treatment of insect infested stands to minimize insect damage (Forest Plan page A-21).
- Encourage vegetation manipulations or other management practices which foster biological diversity in preference to artificial methods of insect and disease control having only short-term benefits (Forest Plan page A-21).

Public Involvement...The Cedar Springs-Deer Run-Mustang Ridge Campgrounds Fuels Reduction Project has been listed on the Forest Schedule of Proposed Actions since April, 2007. On April 13, 2007 a scoping letter was sent to over 100 potentially interested persons and organizations providing an opportunity for comments (Schramm 2007). A 30 day comment period was initiated with publication of a legal notice in the Vernal Express on April 18, 2007. The scoping letter for this project stated that “At this point in time I believe that this project, as defined by the specific actions listed above, may be appropriately excluded from documentation in an EA or EIS as described in Category 10 of FSH 1909.15, Chapter 31.2. Category 10 projects are “Hazardous fuels reduction activities using prescribed fire, not to exceed 4,500 acres, and mechanical methods for crushing, piling, thinning, pruning, cutting, chipping, mulching, and mowing, not to exceed 1,000 acres. However, determination of the appropriate level of analysis and documentation will be made only after a review of specialist reports, biological evaluations/assessments, public comments, and other pertinent information and analyses”.

However, on December 5, 2007 the U.S. Ninth Circuit Court of Appeals declared that the use of Category 10 of FSH 1909.15, Chapter 31.2 was invalid. Subsequently on December 19, 2007 the Forest Service issued direction to “refrain from issuing any new decisions approving hazardous fuel reduction projects that rely on this category (Category 10) (Kimbell 2007). Consequently the analysis for this project will be documented in this Environmental Assessment.

A public meeting concerning this project was also held in Dutch John, Utah on July 12, 2007.

A total of 16 comments were received from the following individuals and organizations; Uintah County, Kevin Wright, Rebecca Hedrick, Carl Stout, Gene and Renee Gautieri, Brian Kapalaski, Stacey Linville, Steve and Judy Raridan, Doug Burton, Linda Linville, Lynn and Jeanette Nelson, Bob Linville, John Rauch, Frances Harding, Utah Environmental Congress and Mark Brown.

All comments were considered in the analysis for this project. Specific comments and the Forest Service response to those comments are documented in the project records Response to Public Comments.

Issues...The following issues were identified as issues to consider in this analysis.

1. Potential affects to recreation, visual quality and roadless/potential wilderness
2. Potential affects to wildlife
3. Potential affects to hydrology, watershed and soils
4. Potential affects to fisheries and other aquatic species
5. Potential affects to cultural resources
6. Potential affects to forest health

CHAPTER 2 ALTERNATIVES

Alternatives considered but not carried forward for detailed analysis...In a response to public comments, primarily from those who operate and manage the Cedar Springs Marina, including some who frequently use the Cedar Springs Campground and Marina, the original scope of the project was reduced to treat the minimal amount of area that would meet project objectives and provide for an increased level of public safety. Consequently, the consideration of the originally proposed treatment, the entire project area being designated as a Primary Treatment Unit (refer to treatment definition on following page), was not carried forward in this analysis.

Another alternative or administrative action that was not carried forth in the analysis was to rely only upon the existing, or an increased level, of fire suppression forces, equipment and training to suppress or manage fires within the project area. To date, fire suppression efforts, both by agency and/or local forces have successfully extinguished fires within the project area before they became property and life threatening. This effort is expected to continue as an effective tool that is necessary to reduce the risk of large fires. Key to this action is to have sufficient equipment and properly trained personnel close by to suppress fires before they cause damage or injury, especially during periods of severe weather and/or dry fuel conditions. The administrative action of positioning initial attack fire fighting forces where they are most needed, securing the necessary equipment and maintaining it in good working order and the training of federal fire suppression forces will continue by the Forest Service. Since this is an administrative action it will not be carried forth in the analysis.

The use of insecticides or other chemical measures to prevent *Ips* beetle caused pinyon pine mortality was not considered in this analysis since it does not meet the purpose of this project which is to reduce hazardous fuels within the Wildland Urban Interface (WUI) of the Cedar Springs, Deer Run and Mustang Ridge Campgrounds and marina areas. Any use of insecticides or other chemicals to protect individual pinyon pines would need to be considered in a separate analysis.

Alternatives considered ...

Alternative 1...No Action Alternative.

Under the no action alternative there would be no fuels reduction work within the project area. The potential for severe and fast moving fires to cause public injury and property damage would remain the same in the short term (tree vegetation density remains high with a Stand Density Index (SDI) of 197 or 47% of maximum on the Cedar/Deer area and a SDI of 251 or 60% of maximum in the Mustang area (Webb 2007)) and increase over time as pinyon juniper density increases. This would also increase the potential for insect and disease damage or mortality. This alternative would not change the existing situation within the Cedar Springs-Deer Run-Mustang Ridge Campgrounds project area.

Alternative 2...Proposed Action.

Under Alternative 2 hazardous fuels within and around these campgrounds and marinas would be reduced to reduce the risk of severe and fast moving fires to cause public injury and property damage. The following specific actions and/or mitigation measures would be implemented:

1. Reduce the density and continuity of pinyon-juniper fuels by removing a portion of the trees within approximately 345 acres near the Cedar Springs and Deer Run Campgrounds and approximately 199 acres near the Mustang Ridge Campground areas (refer to maps on pages 3 and 4). Trees would be removed or cut down by chainsaw or mechanical methods using heavy equipment (snipper/buncher, track hoe bucket and thumb, mulching or shredding heads, etc.) on slopes less than 35% (Oprandy 2007). Treatments may begin in 2009 and would be timed to reduce *Ips* beetle breeding habitat (Webb 2007) and to minimize effects to campground/marina visitors and wildlife. Three separate levels of treatment would be used. The treatments are mapped on pages 4 and 5 of this EA and are described below:
 - **Primary Treatment units...** trees would be removed to create a mosaic of tree densities and patterns... reducing pinyon-juniper tree density to a five to 30 foot spacing (tree canopy to tree canopy), creating openings of various sizes, and leaving untreated areas. A minimum tree spacing of five feet, along with creating a mosaic of treated and untreated areas would be used to maintain visual objectives. A larger spacing of up to 30 feet would be used to reduce the amount and continuity of fuels. Pinyon trees with visible signs of stress from insect, disease, high density or other damage would be removed to achieve both a reduction in the amount and continuity of fuels and to reduce the risk of increased incidence of the *Ips* beetle. The strategic location of these units would also provide a fuels break for fires approaching campground areas. This treatment would occur on approximately 96 acres (Units 1-4) within the Cedar Springs-Deer Run area and 51 acres (Units 5 and 6) within the Mustang Ridge area.

- **Pinyon Juniper (P/J) regeneration units...**Areas where pinyon-juniper trees have been previously removed to promote wildlife habitat values may have all or most regenerating (young) pinyon juniper trees removed. This treatment would occur on approximately 35 acres (Units 7-10) within the Cedar Springs-Deer Run area and 5 acres (Units 11-13) within the Mustang Ridge area (refer to maps on pages 4 and 5). These treatments would help to maintain wildlife habitat and forage values and would also continue to be effective as a fuels break for fire approaching campground areas.
 - **All other areas...**Within the remainder of the project area (approximately 357 acres), including the campgrounds themselves, dead and dying trees would be removed with the exception of dead trees retained for wildlife. Some adjacent live trees may also be removed so that any slash burning does not scorch adjacent trees. There would be no slash piling or burning within the campgrounds. The amount of dead and dying trees currently on site is minor but this could change if *Ips* beetle caused pinyon pine mortality is experienced. If *Ips* beetles become established additional measures would be taken to prevent any substantial pinyon pine mortality from occurring. This would include, in addition to the removal of dead and dying trees, the removal of pinyon trees weakened by biotic stresses caused by insects and/or disease and the removal of pinyon trees where higher stand densities contribute to between-tree competition or stressed trees...resulting in the removal of up to 17 pinyon trees per acre in the overstory of the Cedar-Deer Run area and 30 pinyon trees in the overstory of the Mustang area, an approximate 12-20% removal of the overstory.
2. Reduce the risk of increased incidence of *Ips* beetle by limiting any pinyon pine slash generation to after August 1 of each year with a slash treatment prior to the next spring before beetles fly.
 3. No tree cutting, piling or burning would occur on weekends or holidays. For chain saw cutting in Unit 3 where it is adjacent to the Deer Run Campground an additional restriction of only working from 8:00 AM through 6:00PM would be implemented.
 4. On going surveys are being conducted for the Northern Goshawk. If goshawks are located in the project area, the guidelines of the Goshawk Strategy and the Forest Plan Amendment for the Utah Northern Goshawk Project would be implemented (refer to page 32).
 5. Where possible, treatments should be conducted in fall after the breeding season for migratory birds.
 6. Where possible, retain large trees, standing dead trees, and trees containing cavities, especially near the edges of clearings.

7. Maintain and promote the esthetic and wildlife values associated with Ponderosa pine within the area by removing pinyon-juniper from up to 30 feet around individual Ponderosa pine trees or stands. Ponderosa pine is currently scarce within the project area.
8. Seed disturbed areas immediately following tree removal as necessary to protect the soil and to prevent cheatgrass or other invasive plant species from becoming established or expanding. Reseed burn pile sites where slash has been piled and subsequently burned. In both cases the seed mix would contain a mixture of both natives and non-natives to best ensure seed germination, soil protection and competition to cheat grass and other invasive species (Goodrich 2007a).
9. Approximately five tons/acre of slash (remaining coarse woody debris of ≥ 3 " and vegetative materials following cutting) would be left following treatments to promote soil productivity, improve seed germination and for soil retention (Gamble 2007; Webb 2007; Oprandy 2007). Preferred slash species would be juniper to reduce potential of *Ips* infestation. Amounts in excess of that would be treated within the time frame identified in #2 above to mitigate *Ips* beetle population increases. Specific slash treatments may include:
 - piled and burned on site within created openings on as flat of terrain as possible and/or removed and disposed of elsewhere (may be used for other projects, and/or transported to a location near the Cedar Springs Sewage Lagoons and burned),
 - juniper slash, or sufficiently dried pinyon slash, made available for use as campground firewood (cut small enough to fit in campground fire pits),
 - juniper slash chipped and spread on site to promote soil productivity and improve seed germination, and/or
 - juniper slash left as wildlife habitat.

However, slash piling and burning would be the primary treatment. Slash piles containing pinyon would be burned within the time frame identified in #2 above. Slash piles containing only juniper or pinyon slash unsuitable for propagating *Ips* beetles may be left on site to dry for approximately one year or less before they are burned (and if necessary, re-piled and burned again to get a desired level of slash consumption). Any remaining slash would be mechanically spread out and the pile site prepared for seeding (disked or roughened to improve seed germination). All burning would be conducted during the winter or spring and meet Utah Smoke Management Plan direction.

10. Protect Cultural Resources within the project area. Cultural Resource surveys of the project areas indicate that approximately 55.2 acres need special protection (Elliott 2007). Where these resources fall within areas where only dead and dying trees would be removed, no treatments would

occur. Where cultural resources fall within the Primary Treatment or P/J regeneration units only hand treatments using chainsaws or brush cutters would occur (no mechanical removal using heavy equipment, no slash dragging and no slash piling). If *Ips* beetle infestations occur within the 55.2 acres needing special protection then Ashley Heritage personnel will determine on a case by case basis how best to protect cultural resources and still minimize the potential for further *Ips* beetle caused tree damage or mortality. If additional cultural resources are identified during project implementation these resources would also be protected.

11. Exclude heavy equipment from the immediate vicinity of Cedar Springs and within 50 feet of the project area's three intermittent/ephemeral watercourses and within 300 feet of the reservoir (Conroy/Plunkett 2007).
12. Reduce fuels from around FS permanent structures (restrooms, fish cleaning stations, visitor booths, pavilion, etc.) (Gamble 2007). Require Special Use permittees to also remove fuels from around special use facilities and structures. Trees may be limbed from the ground four feet up to achieve this effect. Continue to upgrade permanent facilities to reduce their ignition potential.
13. Improve existing escape routes within campground and marina areas in case of fire (Gamble 2007). Routes should be designated and understood by Forest Service and concessionaire/campground host personnel.
14. Thinning prescriptions should maintain scenic values and should appear natural after slash disposal or burning and site revegetation (Hanchett 2006). This is expected to take approximately three to five years. Stumps should be flush cut and smooth within 300' of campground roads to prevent public injury and to reduce stump visibility. Elsewhere, stumps should cut to minimize visibility. Openings should be blended into forested areas with irregular edges; straight edges along previous openings or utility corridors should be modified by eliminating straight edges where possible. A Recreational Specialist should be on site to direct thinning operations near developed recreation sites to minimize visual impacts. Thinning around campgrounds should be minimal to maintain privacy and a noise buffer, especially in areas between campgrounds and roads (Highfill 2007).

CHAPTER 3 ENVIRONMENTAL CONSEQUENCES

Recreation, Roadless and Visual Quality

Affected Environment Recreation, Roadless and Visual Quality

Recreation... The project area lies within and adjacent to Cedar Springs Campground, Cedar Springs Marina, Cedar Springs Boat Launch area, Deer Run Campground and the Mustang Ridge Campground and Boat Launch area. Special Use permittee facilities are

also located near the Cedar Springs Marina. These facilities include a house, a trailer for seasonal employees and related facilities. These campgrounds and marinas are generally the only locations that provide vehicular access to the reservoir on the eastern end of Flaming Gorge Reservoir and are extensively used by water-oriented recreationists. Visitors to this area are seeking shade, a scenic view, cooler temperatures, and a forested atmosphere along with their water-oriented activities. All types of water and land based recreational activities occur in this area. Highway 191 is part of the Flaming Gorge-Uintas National Scenic Byway which runs through the area, with several scenic overlooks from which portions of the project areas can be seen.

Cedar Springs is a highly developed recreation complex located on the south shore of Flaming Gorge Reservoir about 1.5 miles upstream from Flaming Gorge Dam. Facilities include a 60 foot wide concrete boat ramp, three paved parking areas, staging area, two campgrounds Cedar Springs (16 units) and Deer Run (19 units), a marina (115 slips), marina employee residence, fish cleaning station, flush toilets, vault toilet and a trailer dump station. Both campgrounds are generally open from mid-April through mid-October. Both campgrounds are popular because of their close proximity to the Cedar Springs Boat Launch area and the cover provided by pinyon and juniper trees. The green pinyon-juniper trees within the campgrounds provide noise and visual buffers between developed sites. Thus, improvements have been constructed close together and still remain screened from each other. The marina permittee proposes an expansion with tentative plans calling for construction of a boat storage/parking area, store, and restaurant. The Cedar Springs Marina is operated by Robert L. Linville under a Special Use Permit. This operation provides full service slip rentals, boat rentals, guided fishing and lake tours, boat gas and supplies, and minor groceries.

The Deer Run Campground is popular for the same reasons, in addition to being one of only four campgrounds in the NRA with showers.

Situated on the north shore of the reservoir directly across from Cedar Springs, is the Mustang Ridge Recreation Complex. Development consists of a 60 foot wide concrete boat ramp, paved parking area, adjoining 70 unit campground and a developed lakeshore day use area, Sunny Cove. The project area does not encompass the Sunny Cove area. Mustang Ridge is a popular campground due to its proximity to the reservoir and recent renovations which include showers and popular group sites. It has the third highest campground occupancy rate in the NRA. Shoreline camping and water oriented activities are popular north east of Mustang Ridge Campground in the vicinity of Canyon Glen. Mustang Ridge is in the same type of pinyon-juniper vegetation as Cedar Springs. Much of the pinyon-juniper vegetation north of the Mustang Ridge Recreation Complex was burned during the Mustang Fire in 2002. The project area comes down to the shoreline around and east of the Mustang Ridge Boat Launch. This area is visible to boaters as well as travelers on the Scenic Byway and visitors to the Flaming Gorge Dam.

These campgrounds, marina and boat launch areas represent a substantial investment in public and private funding. All of these campgrounds are currently operated by American Land and Leisure under a Campground Concession Permit.

Inventoried Roadless Areas and Potential Wilderness...None of the Cedar Springs – Deer Run Campgrounds and Marina project area contains inventoried roadless areas.

Approximately 36 acres of the Mustang Campground area consist of inventoried roadless areas (Catron 2007). These areas were inventoried in 2001. These lands were also inventoried as potential wilderness in 2005. These areas are located on the west and north end of the project area, in areas primarily proposed for the removal of dead and dying trees and with seven acres proposed as a primary treatment unit (refer to map on next page). All of these areas lie near the Mustang Campground and Marina along or near Forest Road 184. This is a paved road accessing both the campground and the marina.

Inventoried Roadless Areas are lands identified during past Forest Service roadless planning efforts, the most recent of which was the Roadless Area Conservation Rule (RACR) of 2001. Roadless Area attributes were also identified during the Roadless Area Review and Evaluation (RARE) II. These attributes include: Natural Integrity, Apparent Naturalness, Remoteness or Solitude, Opportunities for Primitive Recreation, Special Features, and Manageability (RARE II Wilderness Attribute Rating System 1977). Additionally, the 2001 RACR identified specific characteristics for inventoried roadless areas. Potential adverse effects to an area's roadless character can be described using nine roadless area characteristics found in the RACR Final Environmental Impact Statement. These include: (1) soil, water, and air resources; (2) sources of public drinking water; (3) diversity of plant and animal communities; (4) habitat for TES and species dependent on large undisturbed areas of land; (5) primitive and semi-primitive classes of recreation; (6) reference landscapes for research study or interpretation; (7) landscape character; (8) traditional cultural properties and sacred sites; and (9) other locally unique characteristics.

The following describes wilderness and roadless area attributes associated with the Inventoried Roadless Areas within this project area.

Wilderness Attributes

Natural Integrity...Natural integrity is the extent to which long-term ecological processes of an area 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 human activity in the area.

While the long-term ecological processes within these IRA lands are generally in place, their close proximity to a major campground and highway access, as well as evidence of prior tree cutting indicate that the natural integrity of the area is low. There is a high level of human presence and activities. The area is also defined as a Condition Class 2 with a Fire Regime 5. This indicates that the area has missed one or more fire return intervals (Gamble 2007).

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 perception of human impacts and modifications to the area.

Roadless Map

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 effected only by forces of nature. For most visitors the apparent naturalness of the project area is modified by the campground and the Mustang Road (Forest Road 184). Areas beyond the road foreground have a higher level of apparent naturalness, but with evidence of tree cutting and removal.

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 humans, and difficulty of travel all contribute to remoteness.

To most visitors the project area would have a low degree of remoteness due to its close proximity to Forest Road 184 and the Mustang Campground.

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 spirit of adventure.

The solitude of this area is low, again due to its close proximity to the Mustang Campground and highway access.

Opportunities for Primitive Recreation...Opportunities for Primitive Recreation is a measure of experiences available for isolation from the evidence of man, to feel a part of nature, to have a vastness of scale, and a high degree of challenge and risk while using outdoor skills. Primitive-type activities include hiking, backpacking, horseback riding, fishing, hunting, cross-country skiing, winter camping, and nature study. These activities are non-motorized and do not require improvements or facilities for comfort or convenience. The activities are characterized by meeting nature on its own terms.

The IRA within the project area has few opportunities for recreation. Hiking from the campground or highway would be the extent of these opportunities. Forest Road 184 provides motorized access to the area limiting primitive recreation.

Special Features...Special Features is an attribute that recognizes that wilderness may contain other values of ecological, geological, scenic, or historical or cultural significance.

The IRA area does contain areas of cultural resources. These areas would not be treated. Other special features noted above are not expected to be found within these IRAs.

Manageability/Boundaries...Manageability/Boundaries is a measure of the ability to manage an area to meet the size criteria (5,000 plus acres), the resulting configuration of the potential wilderness, and the interaction of the other wilderness attributes listed above.

The IRA within the project area has a low value associated with this attribute.

Roadless Characteristics

Soil, Water, and Air Resources and Sources of Public Drinking Water ...Soil, Water, and Air Resources are the foundation upon which other resource values and outputs depend. Healthy watersheds provide clean water for domestic, agricultural, and industrial uses; help maintain abundant and healthy fish and wildlife populations; and are the basis for many forms of outdoor recreation.

These characteristics are discussed in the Hydrology, Watershed and Soils section of this EA.

Diversity of Plant and Animal Communities... Inventoried roadless areas conserve native biodiversity, by providing areas where nonnative invasive species are rare, uncommon, or absent.

These characteristics are discussed in both the Wildlife and Fisheries and other Aquatic Species sections of this EA.

Habitat for TES and Species Dependent on Large Undisturbed Areas of Land...Inventoried roadless areas function as biological strongholds and refuges for many species. Of the nation's species currently listed as threatened, endangered, or proposed for listing under the Endangered Species Act, approximately 25% of animal species and 15% of plant species are likely to have habitat within inventoried roadless areas on National Forest System lands.

Wildlife and plant species listed as TES are not expected to be present within the Inventoried Roadless Areas of the project area (Goodrich 2007). While peregrine falcon habitat can be found on the cliffs on the reservoir edge near the project area, the project is not expected to alter peregrine falcon primary habitat or effect prey availability in the area (Probasco 2007).

Primitive and Semi-primitive Classes of Recreation...Primitive and Semi-primitive Classes of Recreation are well suited to Inventoried Roadless Areas. There are few, if any, opportunities for primitive and semi-primitive recreation within the project area and those IRA lands within the project area. Motorized and developed recreational activities are the dominant recreational activities that occur with the project area.

Reference Landscapes for Research Study or Interpretation...The body of knowledge about the effects of management activities over long periods of time and on large landscapes is very limited. Reference landscapes can provide comparison areas for evaluation and monitoring. These areas provide a natural setting that may be useful as a comparison to study the effects of more intensely managed areas.

The value of this characteristic is considered low due to the presence of past tree cuttings and removal.

Landscape Character and Integrity...High quality scenery, especially scenery with natural-appearing landscapes, is a primary reason that people choose to recreate.

The project area provides has a natural appearing landscape outside of the campground, road and marina area. The Mustang Fire adds to this appearance. However, it is not the primary reason that people choose to recreate or visit the Mustang area. This feature is the reservoir.

Traditional Cultural Properties and Sacred Sites...Traditional Cultural Properties are places, sites, structures, art, or objects that have played an important role in the cultural history of a group. Sacred sites are places that have special religious significance to a group.

Cultural resources within the inventoried roadless areas of the project area have been mapped and where they are located are considered to be an important characteristic.

Other Locally Unique Characteristics...Inventoried roadless areas may offer unique characteristics and values that are not covered by the other characteristics. Examples include uncommon geological formations, which are valued for their scientific and scenic qualities, or unique wetland complexes. Unique social, cultural, or historical characteristics may also be dependent on the roadless character of the landscape. Examples include ceremonial sites, places for local events, areas prized for collection of non-timber forest products, or exceptional hunting and fishing opportunities.

These characteristics are not present with the inventoried roadless areas of the project area.

Visual Quality...The area of proposed action is managed for a Retention Visual Quality Objective. This means that management activities are not visually evident. The project area lies within the Roaded Natural category of the Recreation Opportunity Spectrum. This class represents a moderate level of development and moderate social interaction within a modified physical setting that is not dominated by evidence of humans. The environment may be modified but would appear natural. Due to the National Recreation Area and Scenic Byway designations, recreation user visual expectations are high along water and travel routes especially in the foreground and background view distance zones. Middle ground and unseen areas are not as critical (Highfill 2007).

Several existing openings adjacent to the Cedar Springs portion of the project area are visible from US Highway 191. A large portion of these openings were created through Forest Service efforts to improve wildlife habitats by maintaining and creating areas of browse and wildlife forage. These openings were created with heavy equipment and chainsaws. Periodically these openings have also had encroaching conifers removed

through chainsaw cuttings. These openings provide diversity to the visual quality and appear to be natural to most visitors. Similar but older and smaller openings are visible along the road to the Mustang Ridge Boat Ramp. These openings also appear natural to most visitors. The 2002 Mustang Fire removed all conifers along the majority of the road into the Mustang Ridge Campground which is outside but adjacent to the project area. This area is now characterized by standing dead conifers and a substantial amount of grass and herbaceous plants.

There are also a number of power and water line corridor openings that are noticeable by most visitors from a proposed Scenic Byways interpretive site south and above the project area on US Highway 191. These linear features create several noticeable “straight line” contrasts.

Environmental Consequences...Recreation, Roadless and Visual Quality

Alternative 1...No Action Alternative. The risk of fire, as well as the risk of affecting recreation, roadless and visual values, remains the same, with a potential to increase over time, as stands become denser. Recreational and visual quality values remain the same unless there is a wildfire that cannot be suppressed, or *Ips* beetle caused mortality occurs. With fire or *Ips* beetle caused mortality, the potential for change may be substantial depending upon the severity of fire and/or insect/disease mortality. Roadless attributes and characteristics also remain the same unless fire or insect/disease mortality occurs. Any landscape insect/disease effects such as from the *Ips* beetle would substantially diminish the recreational and visual qualities of the area.

Also, with a wildfire aggressive fire fighting strategies would be implemented in light of the potential for public injury or damage to public and private property. These strategies may include the use of heavy equipment that could impair recreational and visual quality values, and may negatively affect roadless attributes and characteristics.

Cumulative Affects (constant for all cumulative discussions contained in the EA)...Other activities that have occurred and/or may be reasonably expected to occur within the project area include various campground facility maintenance and improvement activities such as paving, restroom and campsite improvements, the construction of a new four acre parking area within the Cedar Springs portion of the project, the repair of water system breaks that would possibly require heavy equipment use, the possible addition of more developed marina facilities such as a store or restaurant, the removal of small conifers from existing wildlife openings, the repair of overhead and underground utility lines, the removal of conifers from underneath overhead power lines and road/highway repairs. Activities that have occurred and/or may reasonably be expected to occur near the project area include wildfire(s) and their related suppression activities, including the 2002 Mustang Burn, road construction or maintenance, off-highway vehicle use, camping, hiking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, the establishment and control of new noxious weeds, and increased forest disease or tree mortality such as that caused by the *Ips* beetles.

Together these past and potential activities are generally not expected to have substantial or long-term effects on the recreational, roadless and visual quality of the area with the implementation of this alternative, unless *Ips* beetle caused tree mortality becomes substantial. However, many of them may result in short-term and minor effects that may result in longer-term positive improvements to the recreational values of the area.

Alternative 2...Proposed Action. Protection of recreation investments from risk of fire complies with Public Law 90-540, by protecting public outdoor recreation benefits. Significant and popular recreation facilities exist in the project area: Cedar Springs Marina and Boat Launch, Deer Run and Cedar Springs Campgrounds, and Mustang Ridge Campground and Boat Launch.

Many of those who responded to the public scoping and attended the public meeting for this project are frequent visitors to the Cedar Springs area, or are associated with the management of the Cedar Springs Marina. Almost all of them were opposed to any live fuels reduction activities that would change the forested character or visual quality of specifically the Cedar Springs area and in general the project area as a whole (Response to Public Comments). With that in mind the scope of the project was reduced to treat only the minimum amount of area that would still meet project objectives. Consequently, primary treatment units 1 – 4 (96 acres) are proposed for live fuels reduction within the Cedar Springs forested areas. Primary treatment units 5 – 6 (51 acres) are proposed for treatment within the Mustang area. This is a reduction of approximately 73% of the originally proposed project area.

Fuels reduction activities involving pinyon pine may begin after August 1 to reduce the number of *Ips* beetle generations produced and to allow slash material to dry before adults disperse the following spring. Fuels reduction activities involving juniper may begin during the spring or summer of 2009 to allow slash to sufficiently dry so that, when combined with pinyon slash created after August 1, it would be able to be consumed during slash burning during the winter. Consequently, project implementation would have a short-term, lasting during the actual use of saws or heavy equipment, affect on the recreational use of these areas. To minimize these effects chain saw and/or heavy equipment activities would be limited to week days. No tree cutting, piling or burning would occur on weekends or holidays. For chain saw cutting in Unit 3 where it is adjacent to the Deer Run Campground an additional restriction of only cutting from 8:00 AM through 6:00PM would be utilized. With these restrictions, project implementation is not expected to have a substantial effect on the recreational use of the area.

Additionally, slash pile burning during the fall, winter or early spring would also have a short-term effect that would last during and up to approximately 48 hours following burning. All burning would meet Utah Smoke Management Plan direction to allow for the dispersal of smoke. However, since any burning of slash piles would be conducted during the winter or early spring when recreational use is absent or light, this effect is expected to be minor.

More importantly, in terms of recreation and visual effects, these 147 acres are removed from the close proximity of the Cedar Springs Campground and marina area and the Mustang Ridge Campground to reduce any recreational and/or visual effects to these key

areas. Instead primary treatment units are located well to the south and east of the Cedar Springs Campground and marina facilities, and just south and west of the Deer Run Campground where fuels reduction activities would provide a break in the density and continuity of fuels where the potential for fires moving into the project area is greatest. In this case existing terrain barriers and forested vegetation left in place between the campground and primary treatment unit 3 are expected to maintain the recreational and visual qualities of the Deer Run Campground. Where primary treatment units are located next to a utility corridor with a “straight edge” contrast additional trees may be removed to produce an uneven edge and reduce the visual dominance of the corridor.

The Mustang Recreational Complex would not have any primary treatments within the campground. Treatments proposed for primary treatment units 5 and 6 are not expected to be visible from the Mustang Campground. This is expected to maintain the existing forested character from all view sheds within the campground.

The removal of dead and dying trees outside of the primary treatment units (all other areas) is not expected to result in the loss or reduction of forested character since these areas currently have very few dead and dying trees.

However, in the event of *Ips* beetle infestation and resulting sanitation efforts to minimize the extent of pinyon pine mortality, there would be a reduction in tree cover and a change to the visual and recreational qualities of the area. A negative effect would occur during project implementation as the trees are cut or removed and/or piled. Within approximately five years most evidence of tree removal and slash disposal would not be expected to be evident to most recreationists and the visual quality and recreational values would be similar to those before any treatment.

The extent of the removal of any weakened or stressed trees susceptible to *Ips* beetle attack may be up to approximately 17 pinyon trees per acre (tpa) of the 141 total (50% pinyon, 50% juniper) tpa or 12% of the overstory of the Cedar-Deer Run area. Consequently, removing 17 pinyon pine trees leave approximately 53 pinyon pines per acre. These are trees that have low crown ratios (an indicator of poor health) and include those trees with pitch mass borer and other insect/disease damage (Webb 2009a). For the Mustang area the numbers differ slightly, removal of up to approximately 30 pinyon trees per acre of the 142 total (56% pinyon, 44% juniper) tpa or 21% of the overstory. This would leave 49 pinyon pines per acre. Removal of this amount of stressed pinyon trees would potentially reduce further *Ips* beetle caused tree mortality from occurring within the project area and maintain the visual and recreational values of the area in the long term. Consequently, the long term effects of implementing this alternative are minor.

Since Highway 191 is considered one of the more likely ignition sources a primary treatment unit was located west of the highway to provide a break in density and continuity of fuels between the highway and recreational facilities. Primary treatment unit 4 and portions of area 3, located immediately west of H-191, are expected to be visually evident from H-191 in the short term (less than five years). In the first year following treatment, when slash is piled and allowed to dry through the fall for late fall, winter or early spring burning, treatments would be most visible. Slash piles would dominate the view from the highway in these areas during that period of time. Once

slash piles are burned and the area begins to revegetate then an open, patchy forest would be what most visitors would notice rather than a mostly solid stand of pinyon-juniper. After approximately five years this view shed is expected to appear natural to most visitors. This treatment is not expected to be similar to other previously treated areas along H-191 to promote wildlife browse areas since all trees are not being proposed for removal as was the case for the wildlife openings.

The treatment and results of primary treatment Unit 5, located west of the Mustang Road, are expected to be similar to primary treatment units 3 and 4 as noted above.

It is expected that this would also result in compliance with the Forest Plan (pertinent Forest Plan Goals, Objectives and Standards and Guidelines that apply to this project, page 5) and Visual Quality Objectives noted above.

Treatments within the P/J regeneration units (approximately 40 acres) are not expected to have a substantial effect on the recreation and visual quality of the area.

With treatments recreational values are affected within the primary treatment units during the short term (less than five years). Values not affected for most visitors in the long term (greater than five years). The risk of severe and fast moving wildfires and the potential for human injury or loss of public or private facilities is reduced with this treatment, but not eliminated.

The 36 acres of inventoried roadless areas within the Mustang Campground area are not expected to be substantially affected by implementation of Alternative 2 unless there is a substantial *Ips* beetle infestation. Without any additional *Ips* beetle activity approximately 29 acres of inventoried roadless areas would have only dead and dying trees removed as described in “all other areas” (EA page 10). Where dead and dying trees are located within cultural resource areas no trees would be removed. The removal of dead and dying trees within the inventoried roadless areas is expected to be minor.

However, with any *Ips* beetle infestation the potential for more than dead and dying trees to be removed, even within cultural resource sites, exists with this alternative.

An additional seven acres would be treated as primary treatment units where chainsaws (no heavy equipment) would be used to reduce the density of pinyon juniper trees (refer to page 9, primary treatment units). This is expected to result in a short term affect to the visual quality of the area (less than five years) and is expected to be minor. In these seven acres trees for removal would be selected to maintain a healthy forest stand not susceptible to *Ips* beetle infestation.

The wilderness attributes of Natural Integrity, Apparent Naturalness, Remoteness, Solitude, Opportunities for Primitive Recreation, Special Features and Manageability/Boundaries are not expected to be substantially affected by the implementation of this alternative, even with the removal of stressed or weakened trees since these values are all relatively low to begin with (EA pages 14 and 16).

The following affects are expected to the roadless characteristics of the area. With *Ips*

beetle infestations additional live trees, those that are stressed from dense stand conditions and/or those weakened by insect/disease effects, would be removed as described on page 21 of the EA. This would increase the negative effects to each of the following characteristics in the short term. In the long term is expected to maintain the stand and prevent any landscape mortality.

Soil, Water, and Air Resources and Sources of Public Drinking Water...The implementation of this project may have a minor short term effect upon the soil and water resources within the IRA lands of the project area with any removal of dead and dying or stressed or weakened trees of the area. This is true also with the approximately seven acres which would have the tree density reduced through the use of chainsaws only. However, this is not expected to affect the Dutch John, UT municipal watershed (Conroy/Plunkett 2007).

Air quality may be affected when burning activity slash. By following Utah's Smoke Management Plan constraints developed for human health, these effects are expected to be minor and of short duration.

Diversity of Plant and Animal Communities...The implementation of the project may result in minor changes to the diversity of plant and animal species. Where trees are removed, grasses, forbs and shrubs may become established if the openings are large enough. Where tree density is reduced in primary treatment units (seven acres in Unit 5), a greater diversity of plant species would be expected. Minor changes in age and structure could be expected also. Where activity slash is piled and burned the potential for nonnative species such as cheat grass to expand or become established is also increased. Subsequent seeding is expected to reduce the potential for this to occur.

Habitat for TES and Species Dependent on Large Undisturbed Areas of Land...Wildlife and plant species listed as TES are not expected to be present within the Inventoried Roadless Areas of the project area that are planned for any treatment. Negative effects to T&E species habitats are not expected. Sensitive species habitat will be affected but is expected to be minor (Probasco 2007; Goodrich 2007; Gouley 2007).

Primitive and Semi-primitive Classes of Recreation...The implementation of this project is not expected to change this characteristic.

Reference Landscapes for Research Study or Interpretation...The removal of dead and dying trees with potentially the removal of stressed and/or weakened trees, and a reduction of tree density within the seven acres of the primary treatment unit would further diminish the value of the inventoried roadless area for this characteristic. However, since this value is currently considered low it is expected that in the short term the diminished value is not substantial. In the long term this value is not expected to change, even with improved stand conditions.

Landscape Character and Integrity...The implementation of this alternative is expected to negatively affect this characteristic in the short term during project

implementation. This effect is expected to be minor and last up to five years. After five years the landscape character and integrity is expected to return to its former value.

Traditional Cultural Properties and Sacred Sites...Traditional cultural properties within the project area have been mapped and will not be treated. No effects to this value are expected with the implementation of this alternative. Any need to remove stressed trees to confine or prevent additional *Ips* beetle caused mortality would require Ashley National Forest Heritage personnel determine how best to prevent additional *Ips* damage and mortality while still protecting cultural resources. This would be determined on a case by case basis. As noted on the previous page there would be up to 30 pinyon trees removed per acre to prevent substantially more trees from *Ips* beetle caused mortality.

Other Locally Unique Characteristics...It is not expected that the implementation of the project would affect any locally unique characteristics.

Cumulative Affects...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. These activities, when combined with this alternative are not expected to result in any substantial affects to the recreational use, visual quality of campground and marina areas, and roadless attributes and characteristics within the project area. Short-term (less than five years) affects to the visual quality along Highway 191 and elsewhere where primary treatment units are located are expected. These affects would be most pronounced during the first year following project implementation and prior to any slash burning. However, the short-term affects to the visual quality are not expected to be intensified or worsened when considering the additional activities noted above.

The long-term visual quality of the entire project area is not expected to be substantially affected by this alternative or the other activities that have or may occur within the project area.

Wildlife

Affected Environment...Wildlife

Threatened and Endangered Species...The Endangered Species Act of 1973 (as amended) requires federal agencies to insure that any activities they authorize, fund, or carry out do not jeopardize the continued existence of any species that is federally listed, or proposed for listing, as Threatened or Endangered (Section 7). There are five federally listed terrestrial wildlife species for the Ashley National Forest: Bald Eagle, black-footed ferret, Mexican Spotted Owl, Canada lynx, and Yellow-billed Cuckoo (Probasco 2007). Of these five species only the Canada lynx and the Bald Eagle have potential habitat in the project area.

The **Bald Eagle** is a winter visitant to the Ashley National Forest and is commonly found near Flaming Gorge Reservoir and Green River corridor and occasionally near other waters until winter freeze-up. Only 12 confirmed active nest sites in Utah, none of which occur on the Ashley National Forest. The nearest known nest is near Manila, Utah. Suitable winter habitat consists of expansive areas of ice-free open water with abundant food supplies and large trees for roosting. The Bald Eagle was delisted in August of 2007.

The **Canada Lynx** uses mesic mid- to high-elevation forests including Engelmann spruce, subalpine fir, lodgepole pine and possibly Douglas-fir. It also uses aspen when it is mixed with or adjacent to suitable conifer forests. The lynx needs areas of dense understory cover and/or thickets of young trees for foraging, and 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. The project area is located within Lynx Analysis Unit (LAU) 26. The Lynx Conservation Assessment Strategy (LCAS) has delineated lynx into geographic areas in the lower 48 states. The Uinta Mountains occur in the southern portion of the Northern Rockies geographic area. Historically lynx have occurred on the Ashley National Forest throughout the spruce-fir habitats; however, there have been no confirmed sightings of naturally occurring individuals on the Forest.

Sensitive Species...It is Forest Service policy to analyze potential impacts to Forest Service Sensitive Species in addition to the analyses required by the Endangered Species Act (Forest Service Manual (FSM) 2670.31-32). Sensitive species are those that have been identified by the Regional Forester (U.S.D.A. Forest Service) as “those... for which population viability is a concern as evidenced by... ‘or’ significant or predicted downward trends in habitat capability that would reduce a species’ existing distribution” (FSM 2670.5). Sensitive species that have habitat within or near the project area are listed below (Probasco 2007).

In 1999, the **Peregrine Falcon** was removed from the federal list of endangered and threatened wildlife, because of data supporting its recovery. The Peregrine Falcon typically is associated with mountains, cliffs, open forested regions, and human population centers. Peregrine habitat is associated with cliffs, desert, shrubland/chaparral, tundra, urban/edificarian, woodland-conifer, woodland-hardwood, and woodland mixed. When not breeding, Peregrine Falcons occur in areas where prey concentrate, including farmlands, marshes, lakeshores, river mouths, tidal flats, dunes and beaches, broad river valleys, cities, and airports. Peregrine Falcon nest on ledges of vertical rocky cliffs, and is also known to nest on man-made structures (e.g., ledges of city buildings). Peregrines may hunt up to several kilometers from the nest site and feed primarily on birds, small mammals, lizards, fish, and insects. The Peregrine Falcon arrives in breeding areas late April - early May and departure begins late August - early September.

Greater Sage-grouse once occupied parts of 12 states within the western United States. Populations of Greater Sage-grouse have undergone long-term population

declines. Sage grouse are located on the Ashley National Forest. Sage grouse require an extensive mosaic of sagebrush of varying densities and heights, high levels of native grass cover for nesting, and areas rich in high-protein forbs and insect foods during nesting and brood-rearing. Leks (breeding display sites) typically occur in open areas surrounded by sagebrush; these sites include, but are not limited to, landing strips, old lakebeds, low sagebrush flats and ridge topes, roads, cropland, and burned areas. Nesting sites are irregularly distributed around leks, depending on location of quality habitat. For summer brood-rearing, maintaining food-rich areas is important, including seeps, wet meadows, and riparian areas. Sagebrush and tall grasses provide escape cover.

The **spotted bat** is found in various habitats from desert to montane coniferous stands, including open ponderosa pine, pinyon-juniper woodland, canyon bottoms, open pasture, and hayfields. This bat roosts in caves and in cracks or crevices in cliffs and canyons. In British Columbia, they were found to use the same roost each night May-July, but not after early August. The breeding and birthing period for the spotted bat is usually over by June. In Utah, this species has been captured over a waterhole near limestone cliffs with cracks. Spotted bats are lepidopteran specialists and feed almost exclusively on noctuid moths. They appear to capture prey while in flight (gleaning). They forage in open areas 15 to 100 feet above ground flying in elliptical paths of 655 to 985 feet. In southeastern Utah, spotted bats fed on small insects within 2 m of the ground. The spotted bat has been captured in Utah in several habitats: low riparian habitat in the desert shrub community, sagebrush – rabbitbrush, ponderosa pine forest, montane grassland (grass- aspen), montane forest and woodland (grass-spruce-aspen). Bat surveys on the Ashley National Forest in 2001 and 2002, detected several spotted bats on the Forest.

Terrestrial Management Indicator Species...Management indicator species (MIS) are used to assess the effects of management activities on a range of species. There are 10 MIS terrestrial species on the Ashley National Forest. MIS that have habitat within or near the project area are listed below (Probasco 2007a).

Elk consume a combination of grasses, forbs, and shrubs. They will eat mostly grasses and forbs during the summer, but will switch their diet to mostly browse in the winter. Winter foraging habitat, which has been documented as the limiting habitat factor for elk, consists primarily of browse and grass species such as aspen, sagebrush, mahogany, oak brush, serviceberry, snowberry, and bitterbrush.

The rutting season occurs in September and October, with the peak of the rut occurring in mid to late September. Cows usually seek seclusion in thick brush or near heavily forested areas prior to calving. Calves are usually born from mid May to early June. Elk are gregarious animals and often gather into large nursery bands (up to several hundred) consisting of cows and calves in early summer. Within a few weeks these bands usually disperse into smaller bands across the summer range.

Based on the available UDWR data, it appears that the elk population on the Forest is stable, sustains an annual harvest, and remains viable. It also appears that the Ashley National Forest provides elk habitat that is well distributed across the Forest and is sufficient to sustain a viable elk population. For additional trend information, Ashley National Forest MIS report is located in the project record.

Mule deer eat a wide variety of plants including herbaceous plants (grasses and forbs) during the spring and summer, and current year's growth of leaves and stems of browse species during the fall and winter. Winter foraging habitat, which has been documented as the limiting habitat factor for mule deer, consists primarily of browse species such as sagebrush, mahogany, oak brush, serviceberry, and bitterbrush. The largest portions of winter habitat on the Forest, occur on the South Unit of the Duchesne Ranger District and on the National Recreation Area in the Flaming Gorge Ranger District.

The breeding (rutting) season occurs in the fall with the peak of the rut occurring in mid November. In late spring, the does seek solitude for fawning, and fawns are normally born during the month of June.

Based on the available data, it appears that the mule deer population on the Forest is stable to slightly decreasing, but sustains an annual harvest and remains viable. It also appears that the Ashley National Forest provides mule deer habitat that is well distributed across the Forest and is sufficient to sustain a viable mule deer population. For additional trend information, Ashley National Forest MIS report is located in the project record.

Migratory Birds...The Migratory Bird Treaty Act of 1918 (MBTA) as amended was established to protect migratory birds. This act makes it illegal to pursue, hunt, take, capture, kill, or possess migratory birds or any part, nest, or egg of any such bird (16 U.S.C. 703-7012). In January of 2001, an Executive Order 13186 was issued on the Responsibility of Federal Agencies to Protect Migratory Birds. Section D, item 2 of the draft 12/09/02 Memorandum of Understanding between the USDA – Forest Service, USDI – Bureau of Land Management, and USDI – Fish and Wildlife Service provides direction to “avoid or minimize the unintentional take of migratory birds to the extent practicable.” Section D, item 3 provides direction applicable to site-specific actions and directs the responsible official to review the affects of actions on migratory birds prior to approval of a decision/action. Items 3 (a) and (b) clarify the need “to identify if any species of concern 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 Fish and Wildlife Service Birds of Conservation Concern.” The Birds of Conservation Concern list as well as the Utah Partners in Flight Avian Conservation Strategy are used to comply with this act and are listed below.

Birds of Conservation Concern (Migratory Birds)...(more information is available in the Wildlife Resources Technical Report).

The overall goal of the Birds of Conservation Concern (BCC) report is to accurately identify the migratory and non-migratory bird species (beyond those

already designated as federally threatened or endangered) that represent the highest conservation priorities and draw attention to species in need of conservation action. Pinyon Jay (*Gymnorhinus cyanocephalus*) is the only migratory species on the BCC list with habitat in the project area and discussed in this section. The Black-throated Gray Warbler (*Dendroica nigrescens*), Gray Vireo (*Vireo vicinior*), and Virginia's Warbler (*Vermivora virginiae*) are found on both the BCC and Utah Partners in Flight (PIF) lists and is discussed in the PIF section. The Peregrine Falcon is on the BCC list and is discussed under the Forest Service Sensitive Species section above.

The **Pinyon Jay** (*Gymnorhinus cyanocephalus*) is associated with the pinyon-juniper woodland, but flocks also breed in sagebrush (*Artemisia* spp.), scrub oak (*Quercus* spp.) and chaparral communities. In central Arizona and southern California, it inhabits ponderosa and Jeffrey pine (*Pinus jeffreyi*) forests. This is a highly social, cooperative breeder, and seed-caching bird. It feeds, most commonly, on pine seeds, acorns, juniper berries, wild berries, and cultivated grains. They will also feed on arthropods, lizards, snakes, nestling birds, and small mammals. The Ashley NF is within their breeding range. BBS have been conducted on the Ashley NF and have found that the Pinyon Jay is present on the Forest in very low numbers.

Utah Partners in Flight Avian Conservation Strategy...

The Utah Partners in Flight (PIF) working group completed a statewide avian conservation strategy. The Conservation Strategy was also used to determine which migratory bird species needed to be reviewed for the proposed project. The PIF has a list of 231 species of native birds that breed in Utah. The strategy identifies 24 bird species that are "priority species" for conservation in Utah 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 for use as a tool by federal and state agencies in prioritizing bird species which should be considered for conservation action. 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. There were four priority species identified as having possible habitat within the project area. These species are the Black-throated Gray Warbler, Gray Vireo, Virginia's Warbler, and Brewer's Sparrow (*Toxostoma bendirei*). These species are discussed below (Probasco 2007a).

The **Black-throated Gray Warbler** (*Dendroica nigrescens*) is associated with open coniferous or mixed coniferous-deciduous woodland with brushy undergrowth, pinyon-juniper (*Pinus-Juniperus*) and pine-oak (*Pinus-Quercus*), and oak scrub. It has been found to nest on low ridges with open stands of junipers. The Ashley NF is within their breeding range. BSS have been conducted on the Ashley NF, but have not detected the Black-throated Gray Warbler on those surveys.

Compared to other vireos the **Gray Vireo** (*Vireo vicinior*) is more tolerant of heat and aridity. It prefers mixed juniper, pinyon, and oak scrub associations and/or chaparral in hot, arid mountains and high plains scrubland. In southwest Utah, it breeds on arid slopes dominated by mature pinyon-juniper or juniper woodlands. Woodlands with moderate to steep slopes appear to be a critical factor for the Gray Vireo. The Gray Vireo eats a variety of arthropods, including large grasshoppers, cicadas and caterpillars. The Ashley NF is on the very north end of their breeding range. BBS conducted adjacent to the Ashley NF have found that the Gray Vireo is present in very low numbers.

The **Virginia's Warbler** (*Vermivora virginiae*) occurs statewide in Utah as a common summer resident. Historical nesting records for Utah include Salt Lake and Summit Counties (1869), San Juan County (1936), Utah County (1937), Kane County (1946 and 1947), Garfield County (1952), Daggett County (1959), Beaver County (1965), Weber County (1973-1974), and the Uinta Basin (1977). Elevation for nesting in Utah ranges from 1220 m (4,000 ft) in the Salt Lake Valley to approximately 3050 m (10,000 ft) in San Juan County. The Virginia's Warbler typically requires scrubby hillsides where a herbaceous or woody under story is well developed. Lower mountain habitats with dense stands of Gambel's oak and relatively high slope are preferred for breeding, although mountain mahogany, riparian areas, ponderosa pine forests, and pinyon-juniper woodlands, all with shrubby understories, are also used for breeding. Breeding occasionally occurs in Douglas-fir and aspen habitats that have the required shrubby understory.

The **Brewer's Sparrow** (*Toxostoma bendirei*) is common to very common as a summer residents, breeding throughout the state in appropriate habitats. Densities in Utah are high in the northern and western parts of the state and highest in Rich and Summit counties. Brewer's sparrows breed primarily in shrub steppe habitats in Utah and are considered to be shrub steppe obligates. However, Brewer's sparrows may also be found in high desert scrub (greasewood) habitats, particularly where these habitats are adjacent to shrub steppe. They may also breed in large sagebrush openings in pinyon-juniper habitat or coniferous forests.

Other Species from Public Comments...

The **Uinta Mountainsnail** (*Oreohelix eurekaensis uinta*) was petitioned for listing under the Endangered Species Act (ESA) by the Utah Environmental Congress in August of 2001. The petition cited concerns/threats to current habitat via grazing, prescribed fire, logging and sediments from road building operations of the U.S. Forest Service. A ninety day finding was published in the Federal Register on November 15, 2005. The finding indicated that listing was not warranted and that there was insufficient evidence to indicate that *Oreohelix eurekaensis uinta* is a valid subspecies and could not be considered a listable entity pursuant to section 3(15)of the Act.

The site where *Oreohelix eurekensis uinta* was first located was relatively open, 45°, south-southwest facing slope of broken limestone and loam. The sparse plant cover of the small area inhabited by *O. e. uinta* was predominantly chokecherry (*Prunum virgniana*), rose (*Rosa cf. woodsii*), serviceberry (*Amelanchier cf. alnifolia*), pine (*Pinus sp.*), Douglas fir (*Pseudotsuga menzeisii*), thistle (*Cirsium sp.*), and wax currant (*Ribes cereum*), although 9 other species of forbs and 2 other species of shrubs were also present. It should be noted that there is no habitat for the Uinta mountain snail located within the project area. If this snail is a separate species, it is known to occur in only two locations on the Forest, and only one location on this District. Furthermore, no evidence has been found that supports this snail as a separate species. Therefore this snail will not be evaluated in this document (Probasco 2007a).

The **Osprey** (*Pandion haliaetus*) is the continent's only raptor that eats almost exclusively live fish. Despite this restriction, Ospreys have colonized a broad array of habitats. North American Ospreys gained increased recognition during the 1950s–1970s because populations in several key regions crashed. Studies showed high levels of contaminants (especially DDT and its derivatives) in eggs, severe eggshell-thinning, and poor hatching success. Although small pockets of contamination remain, apparently mostly on wintering grounds, by the year 2000 many U.S. and Canadian populations were approaching historical numbers, boosted by a cleaner environment, by increasingly available artificial nest sites, and by this bird's ability to tolerate human activity near its nests.

Ospreys are generally tolerant of land development. They are probably more vulnerable to changes in water quality. Some regional population declines associated with loss of nest sites, related in turn to increased logging and agricultural activities. They habituate easily to human activity nearby. Pairs that begin nesting near humans usually develop high tolerance; those nesting away from disturbance may be sensitive to human presence.

One historic nest is between both project areas.

Environmental Consequences...Wildlife

Alternative 1...No Action Alternative.

The implementation of this alternative is not expected to have an affect on terrestrial wildlife species. However, since the risk of fire would not be reduced, and may be slightly increased as pinyon-juniper stands thicken and age, the risk of habitat loss due to fire is not reduced and over time may slightly increase. The risk of *Ips* beetle mortality would also increase as stands thicken and age.

No effects would be expected to bald eagles and lynx, which for the purposes of this analysis were considered as Threatened and Endangered species.

There are no expected affects the Peregrine falcon which is a sensitive species that has potential habitat within the project area.

Affects to management indicator species (elk and deer) are expected to be minor. There would be no reduction in the thermal and hiding cover in portions of the area, and correspondingly, there would be no increase in browse and grass species associated with any tree removal. The implementation of this alternative is not expected to cause a decrease in trend for Rocky Mountain elk or mule deer.

Affects to migratory birds are expected to be minor (Probasco 2007a). Those species requiring mature to late seral vegetation are not expected to be affected since woodland secession would continue without disturbance (with fire this would not be the case). However, some studies suggest that as woodland secession continues, avian abundance, diversity, and richness will decline with loss of understory species and structural complexity. Even among some of the pinyon-juniper specialists, Gray Flycatcher (*Empidonax wrightii*), Juniper Titmice (*Baeolophus griseus*), Bewick's Wrens (*Thryomanes bewickii*), Blue-gray Gnatcatcher (*Polioptila caerulea*), and Black-throated Gray Warbler (*Dendroica nigrescens*), there are differences in the conditions of the mature woodlands they occupy. By ensuring the presence of multiple stages of mature woodland on the landscape, the biological integrity of the juniper woodland community would be enhanced.

The presence of multiple stages of woodland succession has positive and negative benefits for a number of migratory birds such as the Gray Vireo, Virginia's Warbler and Brewer's Sparrow. With the implementation of this alternative it is expected that there would be no human disturbance that may result in that species' temporary displacement, but also no long term benefit of treatments resulting in additional understory and browse habitats (Probasco 2007a). Overall this affect is expected to be minor.

The implementation of this alternative would not affect the foraging or nesting of Ospreys (Probasco 2007a).

Cumulative Effect to Terrestrial Wildlife Species and Migratory Birds...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. With the implementation of this alternative there are no substantial cumulative effects expected.

Alternative 2...Proposed Action.

The following mitigations measures have been developed to alleviate impacts from the action:

1. On going surveys are being conducted for the Northern Goshawk. If goshawks are located in the project area, the guidelines of the Goshawk Strategy and the Forest Plan Amendment for the Utah Northern Goshawk Project would be implemented, which are the following: 1) Prohibit forest vegetation manipulation within active nest areas during the active nesting period. The active nesting period will normally occur between March 1st and September 30th. 2) In active nest areas, restrict Forest Service management activities and human uses for which Forests issue permits during the active nesting period unless it is determined that the disturbance is not likely to result in nest abandonment. 3) Identify a Post-Fledgling Area (PFA) which encompasses the active, alternate and replacement nest areas and additional habitat needed to raise fledglings. A PFA

- should be approximately 420 acres (exclusive of nest area acres) when sufficient habitat exists. No treatments would occur if a nest is active within this buffer until young have fledged the nest (September 30th).
2. Where possible, treatments should be conducted in fall after the breeding season for migratory birds.
 3. Where possible, retain large trees, standing dead trees, and trees containing cavities, especially near the edges of clearings (Gillihan 2006).

Threatened and Endangered Species

There are two Threatened and Endangered species that have potential habitat within the project areas. These are the bald eagle and the Canada lynx (Probasco 2007).

Bald Eagles...The proposed project area does occur adjacent to the Flaming Gorge Reservoir with an adequate food source for wintering and breeding Bald Eagles. There are no known nesting sites near the project area. The closest known nesting site is approximately 20 miles to the northwest of the project area.

Bald Eagles are known to scavenge on big game carcasses for an alternate food source during the winter months. Wintering eagles that may forage along Highway 191 on the eastern edge of the project area would not be expected to be present in the area when implementation is taking place. If project implementation is conducted in the fall or winter months, the availability of carcasses in the area would not be affected by the project. If project implementation is conducted in the spring or summer months then the Bald Eagles are expected to be foraging mostly out of the reservoir. The project would not affect Bald Eagle food sources around or in the reservoir bordering the project area. It is my determination that the proposed project would have “no effect” on the Bald Eagle.

The official delisting of the Bald Eagle occurred on August 9, 2007 during the analysis for this project. The Bald Eagle is now considered as a Region 4 Sensitive Species. The verbiage in the review and effects determination did not change from what was written when the Bald Eagle was a listed species.

Canada Lynx...The Lynx Conservation Assessment Strategy (LCAS) has delineated lynx into geographic areas in the lower 48 states. The Uinta Mountains occur in the southern portion of the Northern Rockies geographic area. Primary habitat is Engelman spruce, white-fir, subalpine-fir and lodgepole forests at the higher elevations. Historically lynx have occurred on the Ashley National Forest throughout the spruce-fir habitats; however, there have been no confirmed sightings of naturally occurring individuals on the Forest. Recently, three radio-collared lynx released in Colorado were recorded (tracked) in Utah during the summer and fall of 2004. One individual was recorded on the Ashley National Forest. To date, the remaining lynx (female) was last recorded in the western portion of the Uintas in January 2005. Attempts to relocate this individual have been unsuccessful. In 2006, there were several Colorado released radio-collared lynx recorded in Utah. These lynx have all followed similar paths as the three lynx from 2004, but have not traveled towards the Ashley National Forest. It is likely

none of these lynx currently remain near or are traveling towards the Ashley National Forest (Probasco 2007).

Lynx occur in relatively remote, undisturbed areas and prefer large continuous stands of conifer that provide denning and foraging habitat. Home ranges of lynx are generally 6-8 square miles, but range up to 94 square miles. Lynx are closely tied to snowshoe hare, their primary food source throughout the year. In years with low snowshoe hare populations, lynx will turn to alternate prey sources such as squirrels and grouse. A Conservation Agreement and Strategy has been developed based on a Conservation Assessment that was completed in 2000. The Ashley National Forest has developed lynx analysis units (LAUs) across the Forest as directed in the Canada Lynx Conservation Assessment and Strategy. The proposed project area occurs in LAU 26. The available lynx habitat in LAU 26 can be found in Table 1.

Table 1. LAU 26 affected environment.

LAU	Total Acres	Primary/Secondary Habitat	Past harvest Acres	Treatment acres in the past 20 years	Treatments acres in the past 10 years	Suitable Acres
26	67,277	10	17,930	10,590	830	14,575

There has been a total of 17,930 acres harvested within LAU 26. Approximately 2,267 acres of the treated acres have occurred within lynx suitable habitat. Very little of the LAU is in primary and/or secondary lynx habitat. Most past harvested units have shown to provide foraging habitat within 20 years, but some are only partially recovered by then. Regeneration of vegetation depends on site quality, species, and harvest method, thus there are differences in harvest unit characteristics.

Although this project is within a LAU, it does not contain suitable lynx habitat. The primary vegetation type in the project area is juniper woodlands. The project area could provide linkage areas to suitable habitat; however, juniper woodlands do not support snowshoes hares, the primary food source for lynx and would not support a breeding population of lynx. It could potentially support dispersing individuals for a short period of time. Thinning of the juniper and creation of some small openings would not impact the ability for the area to function as linkage to other suitable habitats. Openings and down woody debris left could improve prey habitat, improving prey availability to dispersing lynx. During the time of project implementation, if dispersing individuals are in the area, it is likely they would not pass through the project area, but go north of the project area to reach suitable habitat.

Cumulative Effects to Threatened and Endangered species...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

Not far from the project area and within the cumulative effects area was the Mustang fire, which burned in 2002. This fire cleared much of the mature juniper woodlands. Currently, grasses and forbs are starting to reestablish within the burned areas. The

effects of the burn combined with those possible from the project should not add to any long-term effects for any terrestrial listed species.

The project area and the reservoir are used for camping, boating, and fishing. The main affects to wildlife from these activities are noise and human presence. Noise and human presence associated with these activities can displace wildlife to other areas outside the project area. Since there is suitable habitat adjacent to the project area for the displaced species, there should be no long-term cumulative affect.

There is one sensitive species, the Peregrine falcon, which has potential habitat within the project area (Probasco 2007).

Peregrine Falcon...The Peregrine Falcon is known to nest within the Ashley National Forest on cliffs near Flaming Gorge and within Ashley Gorge (Probasco 2007). Suitable habitat can be found on the cliffs on the reservoir near the project area. The project would not alter the primary habitat nor would it affect prey availability in the area. If a peregrine nest is found in the area, the noise from the project might displace them. This displacement should be short, only lasting for the duration of the project. Normal activity in the area would return after completion of the project. Depending on the time of the implimentation, if after August, peregrines may have left the area or no longer tending to the nest site, further reducing any potential for disturbance. A determination of *may impact individuals but not likely to cause a trend to federal listing or loss of viability* is reached for this species because of the noise associated with the project.

Cumulative Effects to Terrestrial Sensitive Species...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

These cumulative effects may result in disturbance to wildlife and their prey species within and adjacent to the project area. The main affects to wildlife from these activities are noise and human presence. Noise and human presence associated with these activities can displace wildlife to other areas. If there is available habitat for the displaced species, there may be no long-term affect. If the displaced animals are forced into an area that is currently at carrying capacity, then individual animals may be lost from the population.

Management indicator species (MIS) are used to assess the effects of management activities on a range of species. There are 10 MIS terrestrial species on the Ashley National Forest. Two of the species habitat types fall within the project area, elk and mule deer (Probasco 2007a).

Elk...Direct and indirect impacts are expected for elk, but are expected to be minimal. The Mustang area does contain year-round critical range for elk. The Cedar Springs area contains critical winter range for elk. Opening up the crown cover in the areas would have positive and negative effects. There would be a reduction in the thermal and hiding cover in portions of the area with a decrease in canopy cover. This would be more of a concern in areas with larger openings. Over the entire project area, the thermal cover would still be maintained and provide adequate protection. However, with a more open

canopy there would be an increase in the browse and grass species, and these open areas may melt faster supplying food during critical periods. It has been shown that cutting of western juniper woodland can potentially restore understory productivity and diversity. With these treatments, there would be temporary displacement of individuals.

This project is not expected to cause a decrease in trend for Rocky Mountain elk because the project is not reducing the number of acres of suitable habitat, just displacing individuals to surrounding areas for the duration of the project.

Mule Deer...Direct and indirect impacts are expected for mule deer, but expected to be minimal. The Cedar Springs area contains critical winter range for mule deer. Opening up the crown cover in the areas would have positive and negative effects. These effects would be similar to those described above for elk. The area would still maintain protection and forage in the winter months. With these treatments, there would be temporary displacement of individuals. The displacement is expected to last the duration of the treatment or until vegetation recovers for winter use.

This project is not expect to cause a decrease in trend for mule deer because the project is not reducing the number of acres of suitable habitat, just displacing individuals to surrounding areas for the duration of the project.

Cumulative Effects to Terrestrial MIS...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

Not far from the project area and within the cumulative effects area was the Mustang fire. This fire cleared much of the mature juniper woodlands. Currently, grasses and forbs are starting to reestablish within the burn. This has benefited the elk in the area and has drawn in other elk from the surrounding areas. This project would not reduce thermal cover in the cumulative effects area.

Other cumulative effects to wildlife such as off-highway vehicle use, camping, hiking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing and other recreational pursuits, contribute disturbance to deer and elk within and adjacent to the project area. The main affects to deer and elk from these activities are noise and human presence. Noise and human presence associated with these activities can displace wildlife to other areas. If there is available habitat for the displaced species there may be no long-term affect. In the project area, the effects from human disturbance when combined with the effects of the project should not cause an increase in disturbance to deer and elk, and should not affect the population trend for deer and elk or any other MIS species.

Migratory Birds...For migratory birds in general, there would be both positive and negative effects for some species (Probasco 2007a). The effects would be expected to be short term for those species requiring early seral vegetation types. The time period would vary depending on site conditions and species regeneration. Those species requiring mature to late seral vegetation would be expected to be effected for a longer period of time. Because some vegetation types mature at different times; the time period could

range from 60-100 yrs. Some studies suggest that as woodland secession continues, avian abundance, diversity, and richness will decline with loss of understory species and structural complexity. Even among some of the pinyon-juniper specialists, Gray Flycatcher (*Empidonax wrightii*), Juniper Titmice (*Baeolophus griseus*), Bewick's Wrens (*Thryomanes bewickii*), Blue-gray Gnatcatcher (*Polioptila caerulea*), and Black-throated Gray Warbler (*Dendroica nigrescens*), there are differences in the conditions of the mature woodlands they occupy. By ensuring the presence of multiple stages of mature woodland on the landscape, the biological integrity of the juniper woodland community would be enhanced.

Disturbance and displacement of bird species is expected where treatments are proposed. Depending on species' breeding period, there may be some loss or incidental take of nests within the treatment units. Some species may abandon nesting areas or not breed within stands that are proposed for treatment because of disturbance levels. However, acres of habitats similar to those found within the proposed project are available within and outside of the analysis area. These habitats can be found at different elevations, densities, and seral stages across the Ashley National Forest. Most of the effects to migratory birds would be minimized where treatments are conducted in the fall outside the breeding season of migratory birds.

Birds of Conservation Concern (Migratory Birds)

As with most other migratory birds, this project would have positive and negative effects. There would be minimal negative effects to the Pinyon Jay by this project. This would mainly be due to human disturbance within the juniper stands. The birds may move into other portions of the project area or to surrounding suitable juniper stands outside the project area, until project completion. Over time, this project would have a positive effect on the Pinyon Jay's habitat. It would open up the canopy cover, which would likely promote understory growth, providing an increase in forage in the area.

Utah Partners in Flight Avian Conservation Strategy

This project would have both a positive and negative effect to the Black-throated Gray Warbler. There would be minimal negative effects by this project. The effect would mainly be due to human disturbance within the juniper stands during project implementation. This may move the birds into other portions of the project area or to surrounding suitable juniper stands outside the project area, until project completion. Treatments are targeting juniper, but some pinyon pine would be cut to reduce the canopy cover and meet project objectives. The Black-throated Gray Warbler has a higher association with pinyon pine and pinyon-juniper woodlands than with pure stands of juniper. However, they also prefer microhabitats with well-developed shrub understories during breeding season. This understory would be lost over time through secession in these juniper woodlands. With these treatments, this project would open up the canopy cover, which would likely promote understory growth, providing an increase in the understory shrub layer and increase forage in the area. Overtime, this project would increase the available habitat for the Black-throated Gray Warbler.

Gray Vireo...As with most other migratory birds, this project would have positive and negative effects. There would be minimal negative effects to the Gray Vireo by this project. This would mainly be due to human disturbance within the juniper stands. This may move the birds into other portions of the project area or to surrounding suitable juniper stands outside the project area, until project completion. Over time, this project would have a positive effect on the Gray Vireo's habitat. It would open up the canopy cover, which would likely promote understory growth, providing an increase in forage in the area.

Virginia's Warbler...This project would have both a positive and negative effect to the Virginia's Warbler. There would be minimal negative effects by this project. The effect would mainly be due to human disturbance within the juniper stands during project implementation. This may move the birds into other portions of the project area or to surrounding suitable juniper stands outside the project area, until project completion. Treatments are targeting juniper, but some pinyon pine would be cut to reduce the canopy cover and meet project objectives. The Virginia's Warbler prefers microhabitats with well-developed shrub understories. This understory would be lost over time through secession in these juniper woodlands. With these treatments, this project would open up the canopy cover, which would likely promote understory growth, providing an increase in the understory shrub layer and increase forage in the area. Overtime, this project would increase the available habitat for the Virginia's Warbler.

Brewer's Sparrow...This project would have both a positive and negative effect to the Brewer's Sparrow. There would be minimal negative effects by this project. The effect would mainly be due to human disturbance within the juniper stands during project implementation. This may move the birds into other portions of the project area or to sagebrush openings in the surrounding juniper stands outside the project area, until project completion. The Brewer's Sparrow prefers habitats with large sagebrush opening. There are some larger openings within the project area. These opening were created by removal of the juniper. These openings would be maintained by removal of juniper and piling and burning of slash within these openings to maintain the wildlife benefits. With the cutting of juniper in the main project area, the project would open up the canopy cover, which would likely promote understory growth, providing an increase in the understory shrub layer and some smaller openings in the area. Overtime, this project would increase and maintain the available habitat for the Brewer's Sparrow.

Cumulative Effect to Migratory Birds...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

Cumulative effects to wildlife such as off-highway vehicle use, camping, hiking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing and other recreational pursuits, contribute disturbance to migratory birds within and adjacent to the project area. The main affects to wildlife from these activities are noise and human presence. Noise and human presence associated with these activities can displace migratory birds to other

areas. If there is available habitat for the displaced species, there may be no long-term affect. If the displaced animals are forced into an area that is currently at carrying capacity, then individual animals may be lost from the population. In the project area, the effects from human disturbance when combined with the effects of the project should not cause an increase in disturbance to migratory birds. The effects would be further reduced if the project is conducted outside the breeding season for migratory birds.

Not far from the project area and within the cumulative effects area was the Mustang fire. This fire cleared much of the mature juniper woodlands. Currently, grasses and forbs are starting to reestablish within the burn. This fire did benefit some migratory birds that prefer the early successional stages. There should not be any further reduction of habitat for those migratory bird species that prefer the mature woodlands, because the woodlands within the project area would not be cleared of juniper and would still maintain the overall characteristics of a mature woodland.

Other species from Public Comments

Osprey...(Probasco 2007a) Ospreys are generally tolerant of land development. They are probably more vulnerable to changes in water quality. Some regional population declines associated with loss of nest sites, related in turn to increased logging and agricultural activities. They habituate easily to human activity nearby. Pairs that begin nesting near humans usually develop high tolerance; those nesting away from disturbance may be sensitive to human presence.

The project would not affect the foraging or nesting of Ospreys. One historic nest is between both project areas; however, it is on a cliff face away from any project treatments. This nest was used by Common Ravens (*Corvus corax*) in 2008. No suitable nesting trees along the reservoir shoreline would be affected by the project. There may be some noise disturbance during project implementation. This disturbance should not be significant when added to the noise disturbance associated with the camp grounds and boats on the reservoir. There are no expected cumulative effects of Osprey.

Hydrology, Watershed and Soils...(Conroy and Plunkett 2007)

Affected Environment... Hydrology, Watershed and Soils

There are intermittent and ephemeral watercourses, as well as the Flaming Gorge Reservoir, within or adjacent to the proposed project areas. There are minor floodplains associated with each of these watercourses (except for the Flaming Gorge Reservoir, which does not have an associated floodplain). *Wetlands*...A narrow riparian corridor 10 to 20 feet wide and 600 feet in length exists immediately downstream of Cedar Spring.

Municipal Watersheds...The proposed project is entirely within the designated municipal watershed for the Town of Dutch John, UT.

The terms ‘*channel*’ or ‘*watercourse*’ are used only where there were identifiable features indicating channelized flow (i.e., bed material, banks, flowing water). The following definitions are used where there are identifiable channels:

Perennial: A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Intermittent or Seasonal: A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in the mountainous areas.

Ephemeral: A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.

There are no perennial streams within the project area. There are two intermittent streams in the Cedar Springs/Deer Run portion of the project area. One is a small spring-fed channel which emanates from Cedar Spring. This channel flows for approximately 600 feet below the spring. At the time of survey in mid-March the discharge from the spring was estimated at .1 cfs. On the western edge of the Cedar Springs/Deer Run portion of the project area is a second drainage that was flowing at time of survey in March. Lack of riparian vegetation and a distinct channel bed in this drainage bottom indicate that flows are restricted to short periods during snowmelt and summer storm events. Steep slopes (55-60%) with frequent rock outcrops make mechanized access to the drainage bottom impossible.

At the Mustang Ridge portion of the project area there is an ephemeral channel vegetated with juniper and upland grasses. Slopes along this dry streambed are vary from gentle slopes of less than <10% gradient to steep rock outcrops 40 feet in height.

Bank conditions in all drainage bottoms visited were stable, with no evidence of erosion or head cutting.

Floodplains...By definition, all watercourses have a floodplain, and according to Executive Order 11988: a floodplain is considered “the lowland and relatively flat areas adjoining inland...waters...including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.” There are several intermittent, and ephemeral watercourses within or adjacent to the proposed project area. There are minor floodplains associated with each of these watercourses. These floodplains extend on the order of only a few feet from the bank-full elevation. The floodplain for the Green River is within the boundaries (and is submerged by) of the full-pool elevation of the Flaming Gorge Reservoir (FGR) and its functionality is largely governed by the management practices and storage capacity of the FGR. The river’s floodplain (where it existed) is no longer functioning as a natural floodplain. The areas between the full-pool elevation and water surface elevation (at any given time) may occasionally be inundated, but are not typically functioning as floodplains.

Wetlands...Below Cedar Spring there is a 10 to 20 foot wide corridor of riparian vegetation (juncus and carex species as well as red osier dogwood) adjacent to the 600 foot long intermittently flowing portion channel. Upstream and downstream of this springfed portion of stream, the drainage is an ephemeral bed vegetated with upland grasses and juniper.

Watershed Conditions...Soils...The majority of soils within the project area are sandy loams and silt loams. A geologic break occurs in both project areas between soils with quartzitic parent material and soils derived from sandstones. In the quartzite underlain

portions of the project areas, bedrock outcrops and high rock content in the soils contribute to stable soil conditions. This soil type is part of the Greendale Plateau (GP) 14 landtype.

In the sandstone underlain portions of the project area there are areas identified as being sensitive to disturbance. This soil type is part of the (GP15) landtype (Oprandy 2007).

Mosses and cryptogamic soils are common throughout the project area while soil lichen is less common, found only in the most stable areas. Most of the soils in the Cedar Springs and Mustang Campgrounds are stable with either vascular and/or nonvascular plant understory (Oprandy 2007).

Watershed Conditions...Vegetation...The majority of the project area is pinyon-juniper woodland with minor components of mountain brush and ponderosa pine communities. Site productivity potential for timber growth (in all units) is low to very low. Potential productivity for spring, fall, and winter range forage is moderate to high in all of the areas, but at the present state is low to moderate due to the lack of an understory vegetation layer.

Water Quality...Water quality parameters for the water bodies within the project area are currently meeting standards for maintaining beneficial uses.

Municipal Watersheds...The town of Dutch John UT draws its municipal water supply directly from the FG Reservoir. The Source Protection Plan indicates that the municipal watershed boundary ends at the Utah-Wyoming state line, but extends to the watershed divide (encompassing the majority of the Flaming Gorge Ranger District). As such, all proposed activities are within the municipal watershed for Dutch John. The FGR and its tributary watercourses have no current pollution impairments; even though timber management has occurred in the watershed area for many decades.

Flaming Gorge NRA and Ashley National Forest Campgrounds and Facilities...There are several campgrounds adjacent to the FGR that have public drinking water supplies that are serviced by either on-site ground water wells, surface springs or water from the FGR. Although these campgrounds do not have officially designated municipal watersheds, The Forest Service Handbook specifically protects drinking water resources for these areas (FSH 2532.02, 2).

Environmental Consequences... Hydrology, Watershed and Soils

Alternative 1...No Action Alternative. There are minimal effects expected from this alternative. Without treatment all parameters would remain the same or nearly the same. Floodplains and wetlands would not be affected. Over time, as the pinyon juniper canopy further closed in, erosion and sedimentation would increase as the understory vegetation is lost or reduced. This may result in a minor increase in sedimentation into Flaming Gorge Reservoir. This is not expected to have an effect on any municipal watersheds or Forest Service campgrounds and facilities that have public drinking water supplies that are serviced by either on-site ground water wells or by directly pumping water from surface springs. The possibility of a large fire stays the same or slightly increases over

time with a denser pinyon juniper canopy cover. Any effects to the soils within the project area would remain the same.

Cumulative Affects... Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

These activities when combined with this alternative are not expected to be substantial.

Alternative 2...Proposed Action.

This alternative does not propose development or modification to any of the project area floodplains or wetlands. The minor wetland area below Cedar Spring would be excluded from treatment. A 50' buffer from the riparian bottom would be established consistent with guidelines for intermittent stream and wetland areas under 1 acre. As such, this alternative would have no significant and adverse effects on wetlands.

This alternative would have no significant and adverse effects on any municipal watersheds or Flaming Gorge NRA and Ashley National Forest Campgrounds and Facilities.

Watershed Conditions...Soils and Vegetation...The WEPP (Water Erosion Prediction Project) model shows that there would be little erosion or sedimentation for a mechanical treatment using the following standards:

- For erosion control, long term nutrient additions and the creation of micro sites is desirable for the development of understory species. A minimum recommendation for the pinyon juniper type would be 5 tons per acre of ≥ 3 " diameter coarse woody debris to be left on mechanical treatment sites.
- Burn piles should be on as flat of ground as possible and should be on already disturbed sites. They should also be as small as possible.
- Raking the burn piles to a depth of several inches following burning would help to break up hydrophobic soils for a better seed bed.
- Any heavy equipment should work from roads and/or other disturbed areas when ever possible and on slopes no greater than 35%.

With the recommended silvicultural prescription for spacing and thinning mechanical treatment is not expected to be widespread on the more sensitive soils in the GP15 landtype. The amount of erosion and sedimentation for this alternative is expected to be small in comparison to either a prescribed fire or wildfire. Actual detrimental disturbance to soil in the form of compaction or displacement is expected to be within Region 4 soil disturbance guidelines of less than 15 percent (Oprandy 2007).

There would be enough remaining and continuous pinyon juniper cover after thinning to limit wind and water erosion (Oprandy 2007).

Water Quality...The risk of water quality impairment with the implementation of this alternative in this municipal watershed is low because the proposed activities are planned to be sufficiently far from perennial watercourses and the Flaming Gorge Reservoir so

that the risk of pollutant transport (e.g. sediment) to perennial watercourses would be minimized. The following recommendations are suggested:

- Obtain and review the biennial state water quality reports (i.e., List of Waters Requiring TMDLs, and Water Quality Assessment Report to Congress) for Utah. All states are required by Congress to produce these reports to comply with the Clean Water Act Sections 303(d) and 305(b).
- The district hydrologist should coordinate with the Fire Management Officer on post-treatment evaluations.
- Disturbed areas from mechanical treatment should be seeded to promote recovery and monitored for adequate revegetation.
- Burn piles should be kept to a minimum and reseeded and monitored after treatment for infestation by noxious weeds.
- Placement of excess slash in stream channels (ephemeral, intermittent and perennial) should be avoided. Operation of machinery should be limited to established routes where possible. Drainage crossings off established routes should be limited to locations where slope and rock content are sufficient to avoid compaction and bank erosion.

Cumulative Affects... Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

These activities when combined with this alternative are not expected to be substantial.

Fisheries and other Aquatic Species

Affected Environment...Fisheries and other Aquatic Species...(Gouley 2007, 2007a)

The project area is located adjacent to the Flaming Gorge Reservoir just upstream from the Flaming Gorge Dam. The Flaming Gorge dam impounds the Green River as it cuts through the Uinta Mountains. The Reservoir supports populations of rainbow trout (*Oncorhynchus mykiss*), kokanee (*Oncorhynchus nerka*), lake trout (*Salvelinus namaycush*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), channel catfish (*Ictalurus punctatus*), brown trout (*Salmo trutta*), whitefish (*Prosopium spilonotus*), Utah chub (*Gila atraria*), burbot (*Lota lota*), carp (*Cyprinus carpio*), and brook trout (*Salvelinus fontinalis*). The northern part of the reservoir is characterized as shallow, narrow, poorly oxygenated, mesoeutrophic, and not thermally stratified. The southern portion is characterized deep, narrow, well oxygenated, nearly oligotrophic, and thermally stratified throughout the summer. The project area is relatively small within the Flaming Gorge Watershed. No Threatened/Endangered or Sensitive aquatic species exist in Flaming Gorge Reservoir.

Additionally, no perennial streams exist within the project area.

MIS Macroinvertebrates...Macroinvertebrates are used as indicators for aquatic habitat and water quality. The genera identified in the Forest Plan are (Mayflies) *Epeorus ssp*, *Ephemerella doddsi*, *Ephemerella inermis*, (Stoneflies) *Zapada ssp.*, and the True fly family chironomidae. They have been monitored on the Ashley National Forest since the

early 1980's. Forest-wide, macroinvertebrates are relatively widespread and abundant with an average Biotic Condition index that exceeds the Forest Plan minimum value of 75 (Abeyta et al., 2006). Additional analysis on macroinvertebrates may be found in the *Life Histories and Population Analysis for Management Indicator Species of the Ashley National Forest*, MIS Report (Abeyta et al., 2006). Colorado Cutthroat Trout are also a forest MIS species but are not present within the project area.

Threatened or Endangered Species or Designated Critical Habitat...Four endangered fish species were identified as being potentially impacted by this project. These four fish are all native to the Colorado River Basin and include humpback chub, bonytail, Colorado pikeminnow, and razorback sucker are all native to the Colorado River Basin. None of these species currently occur within the Ashley National Forest. There is no suitable habitat in the project area. No threatened or endangered aquatic/fish species occur or exist within or near the project area.

Environmental Consequences...Fisheries and Other Aquatic Species

Alternative 1...No Action Alternative

There are no expected effects to fisheries or macro-invertebrates with the implementation of this alternative. Current levels of erosion and sedimentation into Flaming Gorge Reservoir caused by surface runoff quickly settle at the bottom of the reservoir due to the lentic nature and oligotrophic character at this end of the reservoir. This level of sedimentation has not previously caused any problems. With an unsuppressed fire within the project area the potential for any effects to Flaming Gorge Reservoir fisheries values would be minor.

Cumulative Affects...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. These activities when combined with this alternative are not expected to be substantial.

Alternative 2...Proposed Action

There are no expected effects to fisheries or macro-invertebrates with the implementation of this alternative. The small amount of area proposed for the primary treatment (86 acres within the Cedar Springs area and 51 acres with the Mustang area) would not result in any effects to the fisheries and other aquatic species of the reservoir. Over the long-term any potential effects would be reduced as understory grasses and forbs increase within the primary treatment units. Overall effects to fisheries and macroinvertebrate species would be minor.

Cumulative Affects... Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. These activities when combined with this alternative are not expected to be substantial.

Cultural Resources

Affected Environment...Cultural Resources

Cultural Resources are located within the project area within 14 different sites. Surveys to determine this were conducted in 2004, 2005, 2006 and 2007 (Elliott 2006: Elliott 2007). The location and significance of these sites are noted in the project record, Determination of Significance and Effect November 29, 2006 and October 1, 2007.

Environmental Consequences...Cultural Resources

Alternative 1...No Action Alternative

There would be no affects to cultural resources. Potential risk of loss due to a wildfire would remain the same or nearly so over time. As pinyon juniper stands increased in density, risk of a large and fast moving wildfire would also increase.

Cumulative Affects...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. These activities when combined with this alternative are not expected to be substantial.

Alternative 2...Proposed Action

There would be no effects to cultural resources with the implementation of this alternative since a 50 meter buffer around 12 of 14 sites where no work would be allowed would protect these sites. Within 2 of the 14 sites only hand work would be allowed, no heavy equipment. These two sites would also not have any piling or dragging of cut trees or brush. However, if *Ips* beetle infestations occur within the 55.2 acres needing special protection then Ashley Heritage personnel will determine on a case by case basis how best to protect cultural resources and still minimize the potential for *Ips* beetle damage or mortality. If additional cultural resources are identified during project implementation these resources would also be protected.

Potential risk of loss or damage to these sites from a large wildfire would be reduced with the implementation of this alternative.

Cumulative Affects... Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. Any future activities when combined with this alternative are not expected to be substantial since all activities that may result in ground disturbance are cleared through on-the-ground surveys and/or a review of existing surveys. At that time the Utah State Division of State History determines whether or not affects would be expected.

Forest Health

Affected Environment...Forest Health

The project is composed of two distinct areas separated by the Flaming Gorge Reservoir. Stand examination was completed and evaluated for both areas in 2007 (Webb 2007). Stand Structure is uneven age for both areas. Both stands likely originated near the mid

1800's. There is a minor older growth component of juniper that originated earlier, but increment core readings were not taken on these larger, older trees. Basal area distribution in the overstory consists of about 70-80 percent Utah juniper (*Juniperus osteosperma*) and 20-30 percent pinion pine (*Pinus edulis*) with minor amounts of rocky mountain juniper (*Juniperus scopulorum*) and ponderosa pine (*Pinus ponderosa*). Conversely, understory tree vegetation is about 80 percent pinion and 20 percent juniper by trees per acre (Webb 2007).

Tree vegetation density is high (Webb 2007). In the Cedar/Deer area, most of the basal area is found in the 9.0 to 16.9 inch diameter class. Stand Density Index (SDI¹) is at 197 or 47% of max. In the Mustang area, most of the basal area is found in the 25 to 32.9 inch class. SDI is at 251 or 60% of max. SDI values indicate that trees are at greater than full site occupancy in which overcrowding is reducing growth and tree vigor. Higher stand densities results in trees competing for available resources, causing slower growth (low vigor) and increased tree susceptibility to bark beetle attack due to reduced pitch production. Trees with poor health include those with low crown ratios and those heavily infested with dwarf mistletoe, black stain root disease, pinyon blister rust, or pitch mass borer. Pitch mass borer (*Dioryctria ponderosae*) was present at approximately 5 trees per acre (tpa) in the Cedar/deer run area and at 20 tpa in the Mustang area in 2007. Consequently, insect activity (pitch mass borer) is evident at endemic level, particularly in the Mustang area which is the denser of the two areas (Webb 2007). Weak or stressed trees are more susceptible to *Ips* beetle attacks and eventual mortality.

In July 2008 pinyon engraver beetles, *Ips confusus*, were discovered in the Mustang Campground infesting a small pocket of pinyon pine. *Ips* beetles were also observed in other trees scattered throughout the Mustang Campground area and within two miles to the northeast and northwest of the area. The scattered presence of this beetle and recently identified infestation pockets approximately two miles to the northeast and northwest of this area does indicate that there are pinyon pine stands susceptible to *Ips* beetle infestation within or adjacent to the project area.

Environmental Consequences...Forest Health

Alternative 1...No Action Alternative

A no action alternative would leave the stand density index high throughout the project area which is a primary attribute associated with bark beetle infestations (Webb 2007). High density would leave the trees competing for available resources, causing slower growth (low vigor) and increasing tree susceptibility to bark beetle attack due to the decrease in the tree's natural defenses (reduced pitch production). In 2003 Negron and Wilson examined conditions in pinyon forests associated with infestation probabilities (Webb 2007). Their results suggest infestations are related to stand density and tree

¹ Reineke 1933: SDI reference. SDI is well documented for use as an index of competitive interaction among tree vegetation. There is also a linear relationship between leaf-area index and Reineke's Stand Density Index, correlating stand density management with canopy fuel reduction (Dean 1996, Sherlock 2007). Maximum SDI's for pinion and juniper, however, are still being studied. SDI's are developed for Rocky Mountain juniper and Colorado pinion, but not for Utah juniper to date. Forest Vegetation Simulator (FVS), the USDA Forest Service's nationally supported framework for forest growth and yield modeling, currently uses 415 as the maximum SDI value for pinion and juniper mix species.

stress caused by other insects/diseases (e.g. pinyon pine pitch mass borer, dwarf mistletoe), among other factors. Their results indicate *Ips confusus* (pinyon *ips*) infestation is more common in sites where pinyon stand density index is higher, even in those stands showing high diversity with juniper.

Endemic populations of pinyon engraver beetles can increase when there is susceptible host material available (i.e. suitable slash, stressed or weakened trees). Pinyon engraver beetles often attack host material weakened by biotic stress caused by other insects and/or disease, or abiotic factors such as drought. Extended periods of drought are often associated with outbreak populations of this insect. Higher stand densities contribute to between-tree competition as trees compete for available moisture. This can result in additional stress on individual trees and also weakens the trees defenses to bark beetle attack. The Cedar Springs/Mustang area is currently considered to be in an extended drought.

A no action alternative leaves insect/disease affected trees and trees exhibiting signs of poor vigor which contribute to the tree's susceptibility to beetle infestation. Trees with low crown ratios (less vigorous) and trees exhibiting symptoms and signs of insect/disease damage would remain in the stands.

A no action alternative associated with the retention of pinyon engraver, *Ips confusus* infested pinyon pine trees within and in the vicinity of the Cedar Springs-Deer Run and Mustang Ridge Campgrounds Fuel Reduction Project could result in increased pinyon pine mortality. The no action alternative would result in leaving trees that become infested with pinyon engraver and stressed trees that are susceptible to attack which could result in building populations of *Ips* beetles that affect surrounding, uninfested trees. Landscape level mortality caused by this bark beetle is associated with susceptible landscapes and prolonged periods of drought.

Potential risk of loss due to a wildfire would remain the same or nearly so over time without *Ips* beetle caused tree mortality, but would increase with *Ips* caused tree mortality, especially during the first several years during the red-needle stage. As pinyon juniper stands increased in density, and as the potential for increased insect mortality increases, risk of a large and fast moving wildfire would also increase.

Cumulative Affects...Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA. These activities when combined with this alternative are not expected to represent a substantial change in the environmental consequences of implementing Alternative 1.

Alternative 2...Proposed Action

The proposed action, with slash mitigation in place, would lower the risk of pinyon *Ips* infestation. While this would be most pronounced within the 147 acres proposed for the primary treatment, positive effects would also occur with the "all other areas" treatment areas. In primary treatment areas where thinning occurs, the proposed action would reduce tree density and inter-tree competition thus increasing available water and nutrients for residual trees improving tree growth and vigor. A reduction in overall tree density (i.e. residual tree spacing ranging from 5 to 30 feet) reduces stand density index

for residual trees and decreases a stand characteristic associated with *Ips* infestations (Webb 2007). Removing diseased and damaged trees, and trees with low crown ratios also lowers the risk of pinyon *Ips* infestation. This would also suppress existing populations of *Ips* and reduce tree and stand characteristics associated with population increases within treated sites.

The removal of encroaching trees within the P/J regeneration units would delay these areas converting back to a forested landscape. However, with the removal of P/J regeneration wildlife forage and browse would be maintained and the risk of a crown dominated fire would be reduced.

This bark beetle insect can rapidly become a problem as this beetle has multiple life cycles throughout the spring/summer/fall months often resulting in 3-4 bark beetle generations per year. Stressed pinyon trees or fresh breeding material (slash) produced in late winter or spring provide an ideal environment for this insect. These beetles can then colonize stressed trees or slash during the spring and summer months and newly emerging adults can then attack nearby residual pinyon trees. A mass attack is evidenced by beetle pitch tubes and/or boring dust around all sides of a tree. This type of attack girdles the cambial layer of the tree and causes the tree to die. With successful beetle infestation, the needles of the affected tree may begin to discolor several months to one year after the tree has been attacked. Once attacked in this manner pinyon pine trees will exhibit high levels of mortality.

Seasonal implementation of the proposed action and pinyon slash treatment can mitigate *Ips* population increases. Host volatiles released from “green” pinyon slash attracts dispersing adult beetles to the treatment area. Colonized slash created in the spring and early summer months can result in 3-4 generations of the insect. As the downed material dries and becomes unsuitable for insect development, dispersing adults begin to attack adjacent green trees.

Fall thinning of pinyon pine is recommended after early-August to reduce the number of insect generations produced in the green slash. If slash or chips remain on the site, late fall treatments are preferred to reduce the number of insect generations produced and to allow the material to dry before adults disperse the following spring. Larger green material not chipped should be piled and burned, removed, or disposed of before next beetle flight (mid-April). If the material cannot be burned before beetle flight, lopping and scattering the residual slash in sunny locations will promote drying. Piling and burning any remaining green slash will mitigate bark beetle population increases.

Since the project calls for retention of five tons per acre consisting of coarse woody debris >3 inches in diameter, slash should be generated using late summer/fall treatments, using other trees species not susceptible to this insect to meet retention objectives or using older dead host material no longer suitable for bark beetle development (Webb 2009).

In thinning operations, besides removing trees currently infested with *I. confusus*, other management options to consider for reducing the risk of increased incidence of *I. confusus* include selecting trees with the following tree characteristics for removal: 1)

larger diameter trees (*I. confusus* prefers trees with larger diameter root collars) 2) insect/disease affected trees such as those infected with dwarf mistletoe, black stain root disease, pinyon blister rust, or those infested with pitch mass borer (weak or stressed trees are more susceptible to *I. confusus* attacks). 3) cut stumps close to the ground to avoid colonization by beetles; and 4) select trees for removal with lowest percentage of crown-to-height ratios as a result of poor health (*I. confusus* prefer trees with smaller crown ratios).

This treatment strategy will mitigate an increase in bark beetle populations within treated sites. The trees surrounding the observed *Ips confusus* caused mortality pocket in 2008 exhibited the effects described above. As *I. confusus* populations increased, adult beetles attacked trees infested by pitch mass borer within approximately 300 feet of the mortality pocket. Removing the stressed trees would increase residual tree vigor and reduce the probability of an increase in pinyon engraver populations.

Potential risk of loss or damage from a crown dominated fire would be reduced with the implementation of this alternative.

Cumulative Affects... Other activities that have occurred or may reasonably be expected to occur within the project area are the same as those listed on page 19 of the EA.

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