

## 4.2 Santa Rosa and San Jacinto Mountains Trails Management Plan

### 4.2.1 Background

This trails management plan is being proposed to provide an endangered population of bighorn sheep protection during the critical times of the year, lambing and rearing season and the hot season. Adaptive in nature, the effectiveness of this plan will be monitored and changes made as research and monitoring efforts provide more detailed information about home range size, distribution, and ultimately, effects of trail use on bighorn sheep in the Santa Rosa and San Jacinto Mountains.

The *Recovery Plan for Peninsular Ranges Bighorn Sheep* (USFWS 2000) cites habitat loss (approximately 18,500 ac between the cities of Palm Springs and La Quinta), habitat fragmentation caused by roads (Rubin et al. 1998), disease (DeForge and Scott 1982, Wehausen et al. 1987, DeForge et al. 1995) which for many years in the Santa Rosa Mountains suppressed recruitment and contributed to a population decline, and predation which is apparently a limiting factor for some ewe groups between Highway 74 and the Mexican border (R. Botta, California Department of Fish and Game, 2002, personal communication).

The available peer-reviewed literature and publicly available data indicate that, to one extent or another, bighorn sheep are effected by recreational use of wildlands (e.g. Geist 1971, Wagner and Peek 1999, Leslie and Douglas 1980, MacArthur et al. 1982, Miller and Smith 1985, Bleich et al. 1994). Several research studies have illustrated that when bighorn sheep are disturbed their heart rates increase (MacArthur et al. 1978 and 1982, Hayes et al. 2000) and that metabolic changes can result in compromised immune function. However, what has not been clearly established is the relationship between disturbance and population dynamics. In addition, gender, group size, and time attributes are poorly documented in the publicly available spacial data. These are all identified as key variables in the peer reviewed literature. Both the lack of these data and the limitations of existing data in the public record, limit the ability to precisely tailor management actions.

Analysis of impacts to Peninsular Ranges bighorn sheep and other biological resources resulting from trails management has been broken into 4 categories: 1) documented conclusions from peer reviewed scientific studies; 2) gray literature and hypotheses; 3) unknowns and 4) facts and evidence related to potential disturbance effects on bighorn sheep in the Santa Rosa and San Jacinto Mountains, or in directly analogous situations. This is done to clearly separate fact from hypothesis, to acknowledge the unknowns, and to present the information directly related to or analogous to bighorn sheep in the Santa Rosa and San Jacinto Mountains.

**Synthesis of peer-reviewed literature relevant to impact of human disturbance on bighorn sheep.** Bighorn sheep are most sensitive to disturbance during the lambing and rearing season (Geist 1971, Light and Weaver 1973, King and Workman 1986, Wagner and Peek 1999, Wehausen 1980) and in lambing areas that are close to

dependable water sources ( Leslie and Douglas 1980, McCarty and Bailey 1994, BLM 1980, Blong and Pollard 1968). Ewes exhibit a heightened response to disturbance about a month prior to having their lambs (Geist 1871, Hansen and Deming 1980, Wagner and Peek 1999). The onset of lambing is correlated with seasonal precipitation and forage availability (Goodson 1999, Wagner and Peek 1999, Rubin et al. 2000). In the deserts of the southwestern United States, bighorn ewes may have their lambs during any month of the year (Guy Wagner, personal communication), but in general, ewes in the Peninsular Ranges have their lambs January through June (DeForge 1982, Rubin et al. 2000, Bighorn Institute unpublished data) with the peak March 1 - April 30 (Figure 1). Lambing habitat is characterized by rugged canyons and steep, open slopes which provide escape cover from predators (Geist 1971, Wakelyn 1987, Risenhoover and Bailey 1985) and reduces impact from human disturbance as well (Risenhoover et al. 1988). DeForge (1982) observed ewes in the northern Santa Rosa Mountains giving birth in rugged canyons adjacent to the urban interface. Another critical constituent of lambing habitat is water and nutritious forage. Postpartum nutrition exerts the greatest influence on total milk yield and is more critical to the ewe than prepartum nutrition, based on the amount of weight lost by ewes fed different pre- and postpartum diets (Wehausen 1980). Ewes with lambs are typically found within 2 miles of water and will go to water every day if it is available (Monson and Sumner 1980). Inadequate water could contribute to low lamb survival in some areas and productivity and herd survivorship is reduced (Monson and Summer 1980).

In the Peninsular Ranges, outside of drought years, water is not considered a factor limiting recovery of bighorn sheep (USFWS 2000). However, some bighorn sheep in the Santa Rosa and San Jacinto Mountains have supplemented natural water with water found in the urban areas of the Coachella Valley since the 1970's (Monson and Sumner 1980). This situation is being remedied by the construction of a fence to keep bighorn sheep out of the urban interface. With the construction of the fence, bighorn sheep in the Northern Santa Rosa Mountains will be forced to find water outside of the urban areas. There are currently some plans to provide additional water for sheep to mitigate for the loss of access to forage and water within the urban environment. The effectiveness of supplying water artificially is the subject of much debate in the western United States (e.g. Broyles 1995, Broyles and Cutler 1999, Krausman and Etchberger 1993, Lee 1993). What is clear, however, is that bighorn sheep modify their behavior to avoid predictable human interactions around waterholes, timing visits to coincide with periods when humans are not present (Campbell and Remington 1981, Hamilton et al. 1982). Human activities around water holes can alter access to water (Blong 1967, DeForge 1972, Cunningham 1982, Miller and Smith 1985, Leslie and Douglas 1980, Jorgensen 1974) and may cause them to abandon the source altogether (Blong 1967). Unlike bighorn sheep in the northern latitudes, bighorn in the southern latitudes lose body fat during the hot season, when nutritional requirements are high and forage opportunities slim (Wagner and Peek 1999). Thus, if bighorn are prevented from accessing forage and water during the hot season, recruitment may be affected and the fall rut as well.

Response by bighorn sheep to disturbance varies depending on group size (Risenhoover and Bailey 1985), distance to escape terrain (Wakelyn 1987), visibility (Fairbanks et al. 1987, Risenhoover et al. 1988, Risenhoover and Bailey 1985), season (Leslie and Douglas 1980, McCarty and Bailey 1994, BLM 1980, Blong and Pollard 1968), and the history of human disturbance to the local population of bighorn (King and Workman 1986, Geist 1971, Hansen 1970, Horesji 1976). General changes in habitat use, activity patterns, and seasonal migration routes have been linked to human encounters or disturbances (Van Dyke et al. 1983, Miller and Smith 1985, King and Workman 1986, Etchberger et al. 1989, Papouchis et al. 2000, Harris 1992, Ough and deVos 1984). Bighorn sheep have been documented to exhibit elevated heart rates or demonstrate adverse reactions such as flight, in response to direct approaches by people (generally researchers) in controlled studies and especially when approached with a dog or from over a ridge (MacArthur et al. 1979, MacArthur et al. 1982, Miller and Smith 1985, Papouchis et al. 2000, Hicks and Elder 1979). Direct studies of hiking recreation, as opposed to researcher-induced responses, found that sheep avoided contact with humans when they were present but were not permanently displaced and that no differences in levels of sheep disturbance were evident when comparing heavy-use and light-use recreation areas (Hamilton et al. 1982, Hicks and Elder 1979). Bighorn sheep populations that have been exposed to high levels of human activity may exhibit stronger responses to disturbance (King and Workman 1982) but may also become habituated to predictable human activity (Campbell and Remington 1981, Hamilton et al. 1982, Papouchis et al. 2000).

Flight and cardiac response seems to be stimulated at a distance of 50-100 meters when directly approached by people on foot (Holl and Bleich 1983, MacArthur et al. 1982, Miller and Smith 1985). Response to helicopters is stimulated at about 400-meters above the ground (Bleich et al. 1994) and may cause temporary shift in habitat use patterns (Bleich et al. 1990, Bleich et al. 1994). Helicopter surveys may significantly alter the movement, habitat use, and foraging efficiency of sheep so that survivorship or reproduction is reduced (Bleich et al. 1990, Bleich et al. 1994). Unlike other forms of human disturbance such as hiking, bighorn sheep do not become habituated or desensitized to repeated helicopter flights (Stockwell 1991 *in* Bleich et al. 1994, Bleich et al. 1994, Bleich et al. 1990, Harris 1992, Miller and Smith 1985).

Bighorn sheep evolved with canine predators (Geist 1971) and thus react very strongly to domestic dogs. Disturbance of bighorn sheep by dogs causes heart rate increases and flight response (MacArthur et al. 1979, MacArthur et al. 1982, Purdy and Shaw 1981), with nervousness and alertness persisting for up to 30 minutes following an encounter and exhibiting response to subtle stimuli which otherwise evoked no response (MacArthur et al. 1982).

**Hypotheses relevant to the impact of human disturbance on bighorn sheep.** here are several factors which have been suggested as contributors to the decline of bighorn sheep populations in the desert southwestern United States. These include the presence of roads and ensuing habitat fragmentation (Ough and deVos 1984), fire suppression and resulting visual obscurity (Etchberger et al. 1989), trails and housing developments (Krausman et al. 2000, Kelly and Krausman 2000, Schoenecker and Krausman 2002). Goodson et al. (1999) suggested that the elimination of camping and dogs in critical bighorn sheep habitat would result in a reduction in the effects of human disturbance to bighorn sheep.

Unknowns. There remain some outstanding questions relevant to the question of human disturbance to bighorn sheep. These include, but are not limited to, the following:

1. Is there a cause-effect relationship between different types of human disturbance and the population level effects on bighorn sheep?
2. What is the relationship between population-level effects, known levels of human use, or historic factors which influence response of bighorn sheep to disturbances?
3. What were the relative numbers of predators concentrating on sheep populations now and at the time of highest sheep numbers?
4. Gender, group size, and time attributes are poorly documented in the publicly available spacial data. Both the lack of these data and the limitations of existing data in the public record limit the ability to more precisely tailor management actions.

**Facts and Evidence Related to Potential Disturbance Effects on Bighorn Sheep in the Santa Rosa and San Jacinto Mountains or Directly Analogous Situations.**

Ewes in the Santa Rosa and San Jacinto Mountains are constrained by the amount of available habitat which is limited by the urban interface along the toe of slope and by the chaparral zone at about 1,400 meters. At that elevation, vegetation changes and habitat attributes such as visibility and escape cover, become poor. As a result, ewes near birthing or with young lambs may be challenged to find undisturbed areas to have their lambs.

Bighorn sheep modify their behavior to avoid predictable human interactions around water holes, timing visits to coincide with periods when humans are not present (Campbell and Remington 1981, Hamilton et al. 1982).

Rubin et al (2000) found a strong correlation between seasonal precipitation, forage availability and the onset of lambing.

DeForge (1982) observed ewes in the northern Santa Rosa Mountains giving birth in rugged canyons adjacent to the urban interface.

Population levels of bighorn sheep in the peninsular ranges are now at approximately 400 adults. Population estimates are approximately 1200 during the 1970s. Disease and predation are generally acknowledged as the primary contributors to the decline.

The primary human activities or land uses potentially affecting bighorn sheep in the Santa Rosa and San Jacinto Mountains are: habitat loss or conversion, construction (housing, fencing, landscaping, golf facilities, etc.), general urban interface, hiking, horseback riding, mountain biking, vehicle use, and research.

In the past, the majority of mortality was attributable to natural causes such as predation and disease. During the past 4 years, no mountain lion kills have been recorded in the northern Santa Rosa or San Jacinto Mountains and the effects of urbanization continues to take a toll. During 1990-1999, 13 adult and 2 lamb mortalities were directly attributable to urbanization; 8 died in automobile collisions, 5 from toxic plant ingestion, 1 fence strangulation, and 1 drowned in a swimming pool (J.DeForge, personal communication 2002).

Some groups of bighorn sheep enter the urban interface, even in areas of intense human activity such as developed sites or along Highway 111, in search of forage or water.

Known lambing areas include the Bear Creek Canyon/Coyote Canyon region, Cathedral Canyon, and Bradley Canyon. Others likely exist but are unknown to BLM at this time.

Sheep population levels around Little Morongo Canyon are healthy on either side of a backcountry road with use levels similar to, or higher than, current use on Dunn Road. Use of the road is not controlled by a gate and the road communicates with the urban interface.

## 4.2.2 Analysis of the Alternatives

### 4.2.2.1 **Alternative A.**

#### I. Trail Use

*- Voluntary trail avoidance program would be in effect. Individuals would be requested to voluntarily refrain from using trails in essential bighorn habitat from February 15 - September 30 each year.*

**Voluntary Trail Avoidance Program:** During 2001 and 2002, BLM Sheep Ambassadors monitored compliance with voluntary closures on trails in the Santa Rosa and San Jacinto Mountains. Overall, compliance with requests to refrain from using the trails during the lambing season and hot season was 60%. A total of 4,421 people were observed using trails during 2001 and 2002; of these, 3,440 were contacted directly by sheep ambassadors at the trail heads. This number is somewhat misleading because of the inability to count users who were contacted the first time and continued to comply throughout the year. Trail users who chose not to refrain from using trails were counted each time they encountered a sheep ambassador, thus biasing the count data toward non-compliance. In 2000, a trail use survey was mailed to 700 registered voters in Palm Desert to assess attitudes about trail use and knowledge about the status of bighorn sheep (Carrie McNeil, UC Davis 2000). Of the 700 surveys mailed in August 2000, 296 (42%) had been returned by mid-October and 11% of those respondents were trail users. Of the 79 people who responded to queries about using trails under a voluntary closure, 92% said they would not use a trail under a voluntary avoidance program. The organizer of the study recommended that voluntary closures be continued during lambing and hot season. As illustrated by BLM's data collected by the Sheep Ambassadors during 2001 and 2002, it is difficult to accurately assess the percentage of people who comply with voluntary programs, thus making it difficult to assess the efficacy of such a program. In addition, there is little incentive for people to comply, other than the knowledge that they are contributing to conservation of an endangered species. Likewise, there are no consequences for those who do not choose to participate in the voluntary trail avoidance program. Because of the endangered status of bighorn sheep in the Peninsular Ranges, it may be necessary to adopt more stringent measures to facilitate and promote recovery of the population.

**February 15 - September 30:** The 7 ½ month closure of certain trails would provide increased protection for bighorn sheep during the lambing season and hot season.

**Trail Specific Measures:** Trail by trail management only targets specific trails. Although this list of trails is inclusive of known lambing areas, many other trails penetrate into lambing areas, effectively reducing the benefit of the voluntary program.

*- Individuals would be requested to venture no more than 100 feet from trails for purposes of resting, nature study, or other similar activities. Bighorn sheep may adapt to certain, predictable uses, including use of trails. Off-trail activities have been shown*

to elicit stronger responses from bighorn sheep (Papouchis et al 2000, Schoenecker and Krausman 2002). In addition, the 100-foot limit will reduce crushing of native vegetation and minimize the creation of new, spur trails.

- *The Santa Rosa Wilderness Area is closed to mechanized forms of transport, including mountain bikes and hang gliders, in accordance with the Wilderness Act of 1964 and the California Desert Protection Act of 1994. No Impacts.*

- *All trail use within essential bighorn sheep habitat would be subject to monitoring to assess impacts of trail use on bighorn sheep. This activity level management plan is intended to be adaptive in nature. Monitoring trail use and bighorn sheep population parameters will allow management agencies to assess impacts to sheep and the efficacy of the trails management plan.*

- *Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, trails would be open year-round for non-motorized use subject to existing regulations. The purpose of this trails management plan is to reduce human disturbance to bighorn sheep. Essential habitat is that habitat which is critical to the persistence of the population. Trail use outside essential habitat would have no impact on bighorn sheep.*

- *Implementation of the voluntary trail avoidance program would be undertaken upon approval of the Coachella Valley Multiple Species Plan/Natural Communities Conservation Plan. Until a decision is made through the Coachella Valley Multiple Species Plan/Natural Communities Conservation Plan, trails on BLM-managed public lands will continue to be managed under the interim management measures proposed by BLM in the *Biological Evaluation on Effects of CDCA Plan on Peninsular Ranges Bighorn Sheep* (BLM 2001). Continuation of the interim management measures would continue to reduce disturbance to sheep during the lambing and hot seasons; reduce disturbance from dogs and contribute to habitat improvement and maintenance via water inventory and maintenance, tamarisk eradication, fire management, and land acquisition.*

## II. Cross-country travel

- *Individuals would be requested to voluntarily refrain from traveling cross-country in essential bighorn habitat from February 15 - September 30. Bighorn sheep may adapt to certain, predictable uses, including use of trails. Off-trail activities have been shown to elicit stronger responses from bighorn sheep (Papouchis et al 2000, Schoenecker and Krausman 2002).*

- *Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, cross-country travel would be allowed year-round subject to existing regulations. The purpose of this trails management plan is to reduce human disturbance to bighorn sheep. Essential habitat is that habitat which is critical to the*

persistence of the population. Cross-country travel outside of essential habitat would have no impact on bighorn sheep.

### III. Camping

*- Individuals would be requested to voluntarily refrain from camping in essential bighorn sheep habitat from February 15 - September 30, except along trails not subject to the voluntary trail avoidance program. This trails management plan is intended to reduce impacts caused by humans in bighorn sheep habitat. There are no designated campsites within the trails plan area at this time and as such, bighorn sheep are not habituated to such activities. Bighorn sheep may adapt to certain, predictable uses, including use of trails. Camping would likely have the same effect as cross-country activities, eliciting stronger responses from bighorn sheep (Papouchis et al 2000, Schoenecker and Krausman 2002).*

*- from February 15 - September 30 in essential bighorn sheep habitat, individuals would be requested to camp no more than 100 feet from trails that are NOT subject to the voluntary trail avoidance program. Bighorn sheep may habituate to certain, predictable uses (Papouchis et al 2000, Schoenecker and Krausman 2002). By remaining within 100 feet of established trails, impacts to sheep may be reduced by the predictability of the location.*

*- Individuals would be required to camp at least 1/4 mile from water sources throughout the year. This measure would reduce competition and disturbance at water sources and conforms with California Department of Game and Fish Code. Bighorn sheep have been observed waiting for humans to leave before coming to water (Hamilton et al. 1982) and have abandoned water sources altogether in the face of heavy human use (Blong 1967).*

*- Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, camping would be allowed subject to existing regulations. The purpose of this trails management plan is to reduce human disturbance to bighorn sheep. Essential habitat is that habitat which is critical to the persistence of the population. Camping outside of essential habitat would have no impact on bighorn sheep.*

### IV. Dogs

*- In essential bighorn sheep habitat, dogs would be allowed only in designated areas. Bighorn sheep react very strongly to domestic dogs. Disturbance of bighorn sheep by dogs causes heart rate increases and flight response (MacArthur et al. 1979, MacArthur et al. 1982, Purdy and Shaw 1981), with nervousness and alertness persisting for up to 30 minutes following an encounter and exhibiting response to subtle stimuli which otherwise evoked no response (MacArthur et al. 1982).*

- *Dog owners would be required to keep dogs under restraint to ensure they do not freely roam.* Requiring that owners keep dogs leashed in designated areas would reduce the likelihood of dogs chasing wildlife, including bighorn sheep.

- *Leash restrictions would be enforced by city, state, and federal agencies.* Enforcement of leash restrictions would increase compliance with leash restrictions and help reduce any impacts to bighorn sheep.

- *The following areas in essential bighorn sheep habitat would be approved for entry with dogs on leashes:*

- *west of Cathedral City Cove* - this area is within critical habitat but located adjacent to a road, flood control levee, and in the bottom of a wash. There are some records of sheep using the area above the wash but no records of sheep coming down into the wash. Visibility to the wash from above is good, there is adequate escape terrain nearby such that disturbance to sheep would be minimal.

- *Homme-Adams Park and adjacent lands in Palm Desert* - this proposed dog use area is located between the Cahuilla Hills subdivision near Highway 74 and Ramon Creek. There is a well-documented lambing area nearby. Located deep in the canyons, this lambing area is not within sight of the proposed dog park and as such, bighorn sheep would not be effected by this designation.

- *South of La Quinta Cove, outside of essential habitat* - this proposed dog use area is between the flood control dike and the main road around the south end of the Cove. Although outside essential habitat, bighorn sheep use the area adjacent to the Cove in Bear Creek Canyon, crossing over between the mountains to the south and the Coral Reef Mountain which rise above La Cahuilla to the north. The adjacent habitat places sheep generally above the proposed dog use area and near escape terrain, both which reduces the impact of the disturbance.

- *Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, dogs would be allowed subject to existing regulations.* No impact to bighorn sheep.

#### V. New Trail Development

- Proposals for new trail development inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains would be addressed on a case-by-case basis. Impacts to bighorn sheep would depend on location of trail, season of use, types of use, and other factors. All projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.

#### VI. Trail Re-Routing

- *Proposals for trail reroutes in essential bighorn sheep habitat would be considered on a case-by-case basis, with the following criteria applied:*
  - *benefits to bighorn sheep or other sensitive wildlife occur*
  - *protection of other resource values (e.g., cultural resources, soils) would be considered.*
  - *Habitat use and bighorn sheep distribution data support decisions.*

Impacts to bighorn sheep from trail reroute projects would depend on location of reroute, season of construction or destruction, types of use allowed, and other factors. All projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.

#### VII. Trail decommission and removal

- *Proposals to decommission and remove trails inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains would be addressed on a case-by-case basis.* Impacts to bighorn sheep from trail reroute projects would depend on location of reroute, season of construction or destruction, types of use allowed, and other factors. All projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.

#### VIII. Murray Hill Facilities

- *Picnic tables and equestrian hitching posts at the summit of Murray Hill would be relocated and could remain inside essential habitat.* The impact of disturbance by equestrians has not been studied. Additionally, data from the USFWS (2000) show few observations made of bighorn sheep in the Murray Hill area. During 2001 and 2002, BLM sheep ambassadors observed 6 equestrians using the Clara Burgess Trail which leads to the facilities on top of Murray Hill. Given the level of reported use of Murray Hill area by bighorn sheep, the impacts from people using these facilities would likely be minimal.

#### IX. Non-Commercial, Non-Competitive Organized Group Activities

- *Non-commercial, non-competitive organized groups would be requested to voluntarily refrain from using trails in essential bighorn sheep habitat from February 15 - September 30, except for trails that are not subject to the voluntary trail avoidance program.* See impact analysis under "Voluntary Trail Avoidance Program" above.

- *Non-commercial, non-competitive organized groups of 10 to 24 individuals would be required to obtain a free use permit for activities in essential bighorn sheep habitat throughout the entire year.* Group size may play a role in level of response by bighorn sheep (Miller and Smith 1985). Miller and Smith (1985) evaluated responses by bighorn sheep to researcher-induced disturbances and determined that sheep reacted more strongly to the presence of 2 people than 1. However, data relevant to human

group size is scarce and it is difficult to draw conclusions from a single published study. What is clear, however, is that people in bighorn habitat can cause disturbance during critical times of the year. The intent of this trails management plan is to reduce the overall level of disturbance to bighorn sheep.

*- Non-commercial, non-competitive organized groups of 16-24 individuals would be requested to break into groups with no more than 15 individuals in any one group, and attempt to maintain at least ½ mile separation between groups when entering designated wilderness areas. Group size may play a role in level of response by bighorn sheep (Miller and Smith 1985). Miller and Smith (1985) evaluated responses by bighorn sheep to researcher-induced disturbances and determined that sheep reacted more strongly to the presence of 2 people than 1. Light and Weaver (1973) recommended that there be no more than 10 people in a group of hikers. However, data relevant to human group size is scarce and it is difficult to draw conclusions from a single published study. What is clear, however, is that people in bighorn habitat can cause disturbance during critical times of the year. By requiring that large groups be broken into smaller groups, bighorn sheep would be impacted several times over the course of a day instead of all at once. This “pulse” effect could prevent bighorn sheep from accessing water during passage of groups. However, use levels in the wilderness area are likely not high enough for this to be a serious problem for bighorn sheep.*

*- Non-commercial, non-competitive organized groups of more than 25 individuals would be required to obtain a special recreation permit from BLM when recreating on BLM-managed lands in bighorn sheep habitat, except when exemptions apply. Special recreation permits are subject to the NEPA process and section 7 consultation under the ESA. Thus, impacts to bighorn sheep would be assessed on a case-by-case basis.*

*- All permits would be issued for use of trails and areas where and when the voluntary trail and cross-country avoidance programs are not in effect. Same as impact analysis for voluntary trail and cross-country trail avoidance programs.*

*- Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, non-commercial and non-competitive organized group activities would be allowed on BLM-managed land, subject to existing regulations. No impact.*

#### X. Non-motorized commercial recreation activities

*- non-motorized commercial recreation activities may be permitted in essential bighorn sheep habitat where and when the voluntary trail avoidance program does not apply. Commercial recreation events require a Special Recreation Permit and thus, would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis.*

*- A special recreation permit would be required for non-motorized commercial recreation activities on BLM-managed lands in the Santa Rosa and San Jacinto Mountains except when exemptions apply. Same as above.*

*- Special Recreation Permits would be issued through existing BLM regulatory processes, including compliance with NEPA and the Endangered Species Act. Compliance with stipulations developed by the BLM and in consultation with USFWS would be mandatory. Same as above.*

#### XI. Motorized Commercial Recreation Activities

*- Motorized commercial recreation activities would be prohibited year-round in essential bighorn sheep habitat except on Dunn Road.*

*- Motorized commercial recreation activities may be permitted October 1 to February 14 only on BLM-managed portions of the Dunn Road. Dunn Road is a winding dirt road through rugged terrain that begins at the edge of the urban interface of the Coachella Valley at an elevation of 800 feet and rises to above 4000 feet, where it connects with Highway 74 to the south. There are historic and current sheep sightings along the Dunn Road. Bighorn sheep movements between the San Jacinto Mountains and the Northern Santa Rosa Mountains occurs by sheep crossing Dunn Road (USFWS 1999). Both ewes and rams have been observed near the lower elevations of the Dunn Road. Below the Dunn Road are three lambing areas: Cathedral Canyon, Bradley Peak, and Magnesia Canyon (USFWS 1999). The Cathedral Canyon lambing and rearing area is adjacent to and partly overlapping with Dunn Road. Several studies have identified that vehicle use will modify the behavior of nearby bighorn sheep (Jorgensen 1974, Leslie and Douglas 1980, Campbell and Remington 1981, Miller and Smith 1985). Miller and Smith (1985) documented that 25% of bighorn sheep (45 out of 180 observations) immediately reacted to a parked jeep or truck by either walking or trotting away and returning to their original activity within 10 minutes, or by running away and not returning to their original activity. Jorgensen (1974), Leslie and Douglas (1980), and Campbell and Remington (1981) demonstrated behavioral reactions or change in use patterns due to vehicle use and other human activity at water sources. The intensity of motorized commercial recreation use along Dunn Road would likely diminish the seclusion of the Cathedral Canyon lambing and rearing area, thus reducing the quality of this lambing area.*

*- A special recreation permit would be required for motorized commercial recreation activities on BLM-managed lands, including vending associated with recreational use, except when exemptions apply.*

Each application would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis.

*- Special Recreation Permits would be issued through existing BLM regulatory processes, including compliance with NEPA and the Endangered Species Act. Compliance with stipulations developed by the BLM and in consultation with USFWS would be mandatory. Same as above.*

## XII. Competitive Recreation Events

*- Competitive recreation events may be permitted in bighorn sheep habitat where and when the voluntary trail avoidance program does not apply. Each application would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis.*

*- A special recreation permit would be required for all competitive recreation use of BLM-managed public lands, except when exemptions apply. Each application would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis.*

*- Special Recreation Permits would be issued through existing BLM regulatory processes, including compliance with NEPA and the Endangered Species Act. Compliance with stipulations developed by the BLM and in consultation with USFWS would be mandatory. Same as above.*

## XIII. Motorized-vehicle use of trails

*-motorized vehicles would be prohibited on all trails in the Santa Rosa and San Jacinto Mountains except for motorized vehicles specifically approved for trail maintenance and construction projects.*

*- approval for use of motorized vehicles for trail maintenance projects in the Santa Rosa and San Jacinto Mountains would be addressed on a case-by-case basis. Each project would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis.*

*- Motorized-vehicle use of trails may be authorized only where and when the voluntary trail avoidance program is not in effect. See impact analysis for voluntary trail avoidance program.*

## XIV. Public Outreach

*- An information and education program addressing all management prescriptions herein described, upon approval, would be implemented. Education and outreach would benefit bighorn sheep by informing the public about trail closures, reasons for management prescriptions, and the role that bighorn sheep play in the ecosystem.*

#### **4.2.2.2 Proposed Preferred Alternative B.**

##### I. Trail Use

*- Non-motorized activities would be prohibited in Seasonal Trail Areas from January 15 - June 30, except for the following:*

*Art Smith Trail - open Tuesday and Sunday each week January 15 - February 15 and May 1 - June 30.*

*Boo Hoff Trail - open Tuesday and Saturday each week January 15 - February 15 and May 1 - June 30.*

*In addition, certain trails would be posted as "closed" from July 1 - September 30 to ensure access to water by bighorn sheep and other wildlife during the hot season.*

**Non-voluntary:** As illustrated by BLM's data collected by the Sheep Ambassadors during 2001 and 2002, it is difficult to accurately assess the percentage of people who comply with voluntary programs, thus making it difficult to assess the efficacy of such a program. In addition, there is little incentive for people to comply, other than the knowledge that they are contributing to conservation of an endangered species. Likewise, there are no consequences for those who do not choose to participate in the voluntary trail avoidance program. Because of the endangered status of bighorn sheep in the Peninsular Ranges, it may be necessary to adopt more stringent measures to facilitate and promote recovery of the population. (*See also discussion under Alternative A*).

**January 15 - September 30:** Bighorn sheep are most sensitive to disturbance during the lambing and rearing season (Geist 1971, Light and Weaver 1973, King and Workman 1986, Wagner and Peek 1999, Wehausen 1980) and in lambing areas that are close to dependable water sources (Leslie and Douglas 1980, McCarty and Bailey 1994, BLM 1980, Blong and Pollard 1968). Ewes exhibit a heightened response to disturbance about a month prior to having their lambs (Geist 1871, Hansen and Deming 1980, Wagner and Peek 1999) and the onset of lambing is correlated with seasonal precipitation and forage availability (Goodson 1999, Wagner and Peek 1999, Rubin et al. 2000). In the deserts of the southwestern United States, bighorn ewes may have their lambs during any month of the year (Guy Wagner, personal communication), but in general, ewes in the Peninsular Ranges have their lambs January through June (DeForge 1982, Rubin et al. 2000, Bighorn Institute unpublished data) with the peak February 15 - April 30 (Figure 1). Rubin et al. (2000) determined that 87% of the lambs born in the Peninsular Ranges were born during February - April. Thus, by implementing hard closures on trails in sensitive bighorn sheep habitat January 15 instead of February 15, ewes near parturition will benefit from the extra month of limited disturbance.

**Seasonal Trail Area Measures:** Trail-by-trail management only targets specific trails. The Seasonal Trail Area concept allows managers to target sensitive areas where there may be numerous un-named or un-mapped trails. This provides large blocks of habitat

for bighorn sheep that is protected from disturbance during the lambing season. (See also *discussion under Alternative A*).

*- Modifications of Seasonal Trail Area boundaries may occur where new perimeter trails are proposed and topographic limitations and/or configuration of private lands constrain trail development outside the Seasonal Trail Areas. The Seasonal Trail Area boundaries were drawn using bighorn sheep location data and the essential habitat line. Any modifications of the Seasonal Trail Area boundaries would be assessed on a case-by-case basis and would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.*

*- Some trails on the perimeter of the mountains would be posted open to provide hiking opportunities year-round. All trail use within bighorn sheep habitat would be subject to monitoring to assess the impacts of trail use on bighorn sheep. Because ewes seek out rugged, isolated areas to birth and rear their lambs (Wagner and Peek 1999, DeForge and Scott 1982, Geist 1971), open trails on the perimeter of the wildland-urban interface is not expected to have a significant impact on bighorn sheep. Use of perimeter trails may create a barrier between the wildland and urban systems, thus discouraging bighorn from using water and forage in the urban environment (USFWS 2000).*

*- Individuals would be requested to venture no more than 50 feet from center-line of trails on either side for purposes of resting, nature study, or other similar activities from January 15 - June 20 in bighorn sheep habitat. Holders of permits issued for research and extended study (subject to NEPA and ESA review) would be exempt from this requirement. Bighorn sheep may adapt to certain, predictable uses, including use of trails. Off-trail activities have been shown to elicit stronger responses from bighorn sheep (Papouchis et al 2000, Schoenecker and Krausman 2002). In addition, the 50-foot limit will reduce crushing of native vegetation and minimize the creation of new, spur trails.*

*- Individuals would be required to obtain a free permit for use of the following trails from October 1 through January 14: Bear Creek Canyon and Bear Creek Oasis Trails, Cathedral Canyon Trail, Skyline Trail, North Lykken Trail. The Boo Hoff Trail and Art Smith Trail (including Dead Indian Canyon), would require that individuals obtain a free use permit year round. The self-issue permit system would be used to monitor trail use and adapt the trails management plan when necessary to ensure the best management for recreation users, Peninsular bighorn sheep, and other wildlife. The same permit system would be used to track cross-country recreation activities. The data collected through these permits will provide a snapshot of trail use and will be combined with bighorn distribution data to determine how well the trails management plan is working.*

*-All trail use would be subject to monitoring to assess the impacts of trail use on bighorn sheep. No Impact to bighorn sheep (see discussion above on permit system).*

*-Outside bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, trails would be open year-round for non-motorized use, subject to existing regulations. No impact to bighorn sheep.*

*-Implementation - Trail Use*

*- Implementation of Seasonal Trail Area closures would be phased in as new perimeter trails are constructed in identified corridors. Prior to completing any phase of new trail construction, the voluntary trail avoidance program as currently implemented for the adjacent Seasonal Trail Area, would be continued. Priorities for new trail construction and the phase-in strategy for the Seasonal Trail Area closures are described in the full text of the preferred alternative. Phasing in the closures as new perimeter trails are developed will require relying on the continued goodwill from trail users voluntarily refraining from using trails in the Seasonal Trail Areas. Impacts to bighorn sheep could result from decreased compliance with voluntary program. However, at the end of each calendar year, the Trails Management Committee will review the trail use data, progress made in trail development, and bighorn sheep population numbers to, determine the effectiveness of the the phasing in, and to evaluate possible impacts to bighorn sheep. Continued monitoring by a multiple jurisdiction/multiple agency Sheep Ambassador team would continue to provide outreach and education to trail users, and to request and monitor compliance with the voluntary trail avoidance program during implementation. Each specific trail construction project will comply with NEPA and ESA.*

II. Cross-country travel

*- Cross-country travel would be prohibited in essential bighorn sheep habitat from January 15 to September 30, and allowed from October 1 to January 14. Bighorn sheep may adapt to certain, predictable uses, including use of trails. Off-trail activities have been shown to elicit stronger responses from bighorn sheep (Papouchis et al 2000, Schoenecker and Krausman 2002). Cross-country travel disturbs sheep because it is impossible to predict where a person might show up.*

*- Outside bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, cross-country travel would be allowed, subject to existing regulations. No impact to bighorn sheep.*

III. Camping

*- Camping would be prohibited in bighorn sheep habitat from January 15 - September 30 and allowed from October 1- January 14. This trails management plan is intended to reduce impacts caused by humans in bighorn sheep habitat. There are no designated campsites within the trails plan area at this time and as such, bighorn sheep are not habituated to such activities. Bighorn sheep may adapt to certain, predictable*

uses, including use of trails. Camping would likely have the same effect as cross-country activities, eliciting stronger responses from bighorn sheep (Papouchis et al 2000, Schoenecker and Krausman 2002).

- *Campers would be required to obtain a free use permit at the Palm Springs BLM office, the Santa Rosa and San Jacinto Mountains National Monument Visitor Center, or other locations from October 1 - January 14. Information gathered through this permit system would be used to assess numbers of campers per year in the Santa Rosa and San Jacinto mountains. Same as above but impacts would be reduced because use would occur outside of the sensitive seasons (i.e. lambing, rearing, and hot season).*

- *Camping would be prohibited within 1/4 mile of water sources to prevent disturbance to wildlife at these locations. Same as Alternative A.*

- *Camping would be allowed outside of bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, subject to existing regulations. Same as Alternative A.*

#### IV. Dogs

- *Dogs would be allowed in designated areas only. Same as Alternative A.*

- *Dogs would be kept under restraint to ensure that they do not freely roam. Leash restrictions would be enforced by city, state, and federal agencies. Same as Alternative A.*

- *The following areas in bighorn sheep habitat would be approved for entry with dogs on leashes:*

- *west of Cathedral City Cove*

- *Homme-Adams Park and adjacent lands in Palm Desert*

- *South of La Quinta Cove, outside of essential habitat.*

Same as Alternative A.

- *Outside of bighorn sheep habitat in the Southern Santa Rosa and San Jacinto Mountains, dogs would be allowed subject to existing regulations. No Impacts to bighorn sheep.*

#### V. New Trail Development

- *New trails would be developed within perimeter trail corridors (see implementation under trail use) approved in this plan. Additional new trail development would be addressed on a case-by-case basis. The Recovery Plan for Peninsular Ranges Bighorn Sheep (USFWS 2000) suggests that perimeter trails may create a barrier between the wildland and urban systems, thus discouraging bighorn from using water and forage in the urban environment (USFWS 2000). The proposal to develop new perimeter trails to replace hiking opportunities lost during the hot season and lambing season would likely benefit bighorn sheep by reducing access to the urban environment. Conversely, bighorn sheep may be impacted by loss of access to food*

and water in the urban areas adjacent to the mountains, resulting in reduced fitness overall for bighorn sheep living near the urban interface. It is critical to minimize these impacts by providing water sources away from the urban environment prior to construction of any perimeter trails.

- *Guidelines for development of new perimeter trails -*
  - *new perimeter trails would generally run parallel to and not rise more than 200 feet above the toe of slope*
  - *new perimeter trails would not be constructed within 1/4 mile of water.*
  - *new perimeter trails would incorporate topographic variability where possible.*
  - *new perimeter trails would be available for year-round use.*
  - *Construction of approved perimeter trails would be allowed only between July 1 and January 14.*

Application of these guidelines would ensure that construction of new perimeter trails would remain on the perimeter of the mountains and not penetrate into bighorn sheep habitat.

*- Additional proposals for new perimeter trail development in the Santa Rosa and San Jacinto Mountains would be considered on a case-by-case basis using the criteria laid out above and subject to NEPA and ESA review.*

*- A new trail linking Deep Canyon and the west side of La Quinta Cove, connecting the cities of Palm Desert and La Quinta would be constructed. Three alignments would be considered for the connector trail. The preferred route will be identified in the Coachella Valley Multiple Species Habitat Conservation Plan/Natural Communities Conservation Plan.*

- *North of Eisenhower Mountain - trail would be open year-round.*
- *Between Eisenhower Mountain and Indio Mountain - trail would be closed January 15 - June 30.*
- *South of Indio Mountain between Indio Mountain and Coyote Canyon - Trail would be closed from January 15-September 30.*

*Santa Rosa and San Jacinto Mountains Trails Management Plan  
Chapter 4 - Environmental Consequences*

**Criteria Matrix for Alignments of La Quinta Cove to Palm Desert Trail**

	<b>Biological impacts</b>	<b>Land ownership</b>	<b>Buildability</b>	<b>Cultural Impacts</b>
Alignment A – North of Eisenhower Mtn	Few bighorn sheep observations, no evidence of lambing here. Farthest away from bighorn lambing area in coyote canyon and bear creek area.	Primarily private land, perhaps one small piece of public land. Would require easements or cooperative agreements with city of Indian Wells, which owns the Eisenhower Mt parcel and leases access to Living Desert for trail, and other land owners.	City of Indian Wells has expressed opposition to this alignment because the trail would look down on homes. Terrain is extremely rugged - construction would be costly.	May present conflict with cultural resources. Foothills and areas conducive to travel over mountains have the potential to contain cultural resources. Adjacent areas have a high density of recorded sites.
Alignment B – between Eisenhower and Indio Mountains	Sheep observations present. 2 drainages nw of coyote creek water hole and bear creek parturition areas.	BLM, private, UCR State Land. UCR has indicated a willingness to accommodate proposed trail. Private landowners unknown.	May pose topographic challenges. Terrain is rugged and construction would be costly.	May present conflict with cultural resources where the trail dips into and crosses Deep Canyon. Foothills and areas conducive to travel over mountains have the potential to contain cultural resources. Adjacent areas have a high density of recorded sites.
Alignment C – south of Indio Mtn. (original alignment proposal)	Lots of sheep observations around coyote creek and associated drainages. Area used by bighorn ewes during spring for lambing and rearing. Excellent forage in canyon bottoms. Strong ephemeral water source in drainage south of alignment that is used extensively by bighorn sheep.	BLM, UCR State Land – no private land involved	Traverses east side of Deep Canyon via wash. Trail is already somewhat established and is hiked several times a year by various people. Wash bottom would be fairly easy to build trail in. Relatively straight shot to Deep Canyon.	May present conflict with cultural resources. Foothills and areas conducive to travel over mountains have the potential to contain cultural resources. Adjacent areas have a high density of recorded sites.

The proposed trail would connect La Quinta and Palm Desert by linking the two cities. The challenge is to find an alignment that avoids sensitive cultural resources, creates the least potential disturbance to bighorn sheep, while providing an enjoyable hiking opportunity for the people of and visitors to the Coachella Valley. Under any of the three alignment options, the trail would originate at the west side of La Quinta Cove, this trail would run west toward Deep Canyon, cross the canyon at Section 4 and 5 through the Deep Canyon Research Station, up the west side of the canyon and connecting with a proposed trail loop on Palm Desert city land adjacent to the Santa Rosa and San Jacinto Mountains National Monument. The three alignments were chosen for analysis based on the above decision matrix.

**Alignment A – North of Eisenhower Mountain** (*T5S, R6E, sections 1, 2, 3, 35; T5S, R5E, sections 4,5*). This alignment would present the least impact to bighorn sheep. Starting north of the western side of La Quinta Cove, this proposed trail would follow a drainage northeast toward Eisenhower Mountain. Data collected during the past 30 years indicates that bighorn sheep use the area north of Eisenhower Mountain occasionally but not with any regularity. It is probable that rams occasionally wander into this area. Lack of permanent water and abundant forage may limit use of this area by bighorn sheep.

The majority of this alignment falls into privately owned parcels of land with one exception on the east side of Deep Canyon. The City of Indian Wells owns section 35 and Larry Grafton, chief city planner, has stated that the City would oppose this alignment.

**Alignment B – Between Eisenhower and Indio Mountains** (*T5S, R6E, sections 11, 10; T5S, R5E, sections 4, 5*). This alignment presents some potential impact to bighorn sheep. There have been a few observations in this area during the past 30 years but nothing that indicates extensive use by sheep. This alignment would be entirely on BLM-managed public land east of Deep Canyon and on State of California land crossing Deep Canyon. This would simplify the process. During a ground reconnaissance of this route, BLM staff observed numerous sheep pellets on the east side of Indio Mountain. No sign of water was found and the tinajas in the canyons were small and had sandy bottoms, indicating that ephemeral water likely does not last long.

**Alignment C – west of La Quinta Cove** (*T5S, R6E, sections 14, 10; T5S, R5E, sections 4, 5*) This alignment is adjacent to some of the best bighorn sheep habitat in the Palm Springs Field Office. All sex and age classes of bighorn sheep have been observed in this area. Ewes and lambs occupy the Bear Creek, Coyote Creek and Sheep Creek drainages and adjacent tributaries, foraging on the abundance of shrubs in the washes and visiting the numerous ephemeral water sources in the canyons. There are several water sources that during years of normal rainfall hold water through the summer months. In addition to providing habitat for ewes and lambs, ram groups also use the area, foraging farther from the ewes and lambs between Martinez Canyon and the valley floor to the north.

## VI. Trail Re-Routing

*- Trails would be re-routed to protect sensitive resource values (e.g. cultural resources, wildlife habitat, soils).*

*- Identification of trails to be re-routed would be based on habitat use patterns, home range, and distribution of bighorn sheep. Until sufficient data are available to identify meaningful and feasible trail re-routes, proposals regarding specific re-routes would be considered on a case-by-case basis. Impacts to bighorn sheep from trail reroute projects would depend on location of reroute, season of construction or destruction, types of use allowed, and other factors. All projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.*

*- Trails would be re-routed around existing wildlife water sources, where feasible, to prevent disturbance to wildlife during the hot season. Same as above*

*- Construction of trail re-routes would occur only between October 1 - January 14 within bighorn sheep habitat. See impact analysis for dates of closures.*

*- Re-routing the Guadeloupe Trail to avoid desert slender salamander habitat would be proposed upon locating salamander populations and determining level of trail use. Same as above*

*- Outside bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, proposals for trail re-routes would be addressed on a case-by-case basis. No impact to bighorn sheep.*

## VII. Trail Decommission and Removal

*- Redundant trails in the Murray Hill Complex would be identified and removed. Redundant trails are defined as those serving the same or similar purpose as other trails (e.g. connecting the same two points) and providing the same or similar recreation experience. Secondary or tertiary braided trails and trail shortcuts would generally be considered redundant. In the peer-reviewed literature available for this analysis, there are no studies which examined the density of trails relative to impacts on bighorn sheep. However, predictability may be compromised if there are numerous braided trails crossing through bighorn habitat.*

*-Additional redundant trails would be identified using aerial photography and other methods.*

*-Redundant trails would be identified for permanent closure using the following criteria:*

- Relocation would not be meaningful or feasible*
- Seasonal restrictions could not be effectively monitored and enforced.*
- Recurring violations of trail closures have occurred.*
- Trail removal would occur only between October 1 and January 14.*
  
- Consideration would be given to using redundant trails to separate potentially conflicting trail uses (e.g. horseback riding and mountain biking).*

Impacts to sheep would be determined on a case-by-case basis and all projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.

*-Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, proposals to decommission and remove trails would be addressed on a case-by-case basis. No Impacts to bighorn sheep.*

#### VIII. Murray Hill Facilities

*-picnic tables and equestrian hitching posts at the summit of Murray Hill would remain in place.*

The impact of disturbance by equestrians has not been studied. Additionally, data from the USFWS (2000) show few observations made of bighorn sheep in the Murray Hill area. During 2001 and 2002, BLM sheep ambassadors observed 6 equestrians using the Clara Burgess Trail which leads to the facilities on top of Murray Hill. Given the level of reported use of Murray Hill area by bighorn sheep, the impacts from people using these facilities would likely be minimal.

#### IX. Non-commercial, non-competitive organized group activities

*-non-commercial, non-competitive organized groups would be prohibited in Seasonal Trail Areas from January 15 - June 30, and on certain trails under hot season closure, July 1 - September 30. See Seasonal Trail Area Measures.*

*- non-commercial, non-competitive organized groups of 10-24 individuals would be required to obtain a free use permit for activities in bighorn sheep habitat throughout the entire year. Permits would be available at the Palm Springs BLM office, the Santa Rosa and San Jacinto Mountains National Monument Visitor Center, and other locations. No impact to bighorn sheep.*

*- All non-commercial, non-competitive groups of more than 25 individuals using BLM-managed lands would be required to obtain a Special Recreation Permit except for when exemptions apply. Same as Alternative A.*

*-When entering the Santa Rosa Wilderness, noncommercial, noncompetitive organized groups of 16-24 individuals would be required to break into groups of no more than 15 individuals in any group, and attempt to maintain at least a 2-mile separation between the groups. Same as Alternative A.*

*- Special recreation permits would be issued through existing BLM regulatory processes, including compliance with NEPA and the Endangered Species Act. Compliance with stipulations developed by BLM and in consultation with the USFWS would be mandatory. Same as Alternative A.*

*- All permits would be issued only for use of trails and areas where and when the Seasonal Trail Area closures, the seasonal cross-country prohibition, or the voluntary trail avoidance program are not in effect. See impact analysis for Seasonal Trail Area, cross-country prohibition, and voluntary trail avoidance programs.*

*- Noncommercial, noncompetitive organized groups using State lands would be subject to the California Code of Regulations. Impacts to bighorn sheep would be assessed on a case-by-case basis, subject to California Environmental Quality Act (CEQA) and the Endangered Species Act.*

*- Outside bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, noncommercial, non competitive organized group activities could be allowed, subject to permission of private landowners and approval through state or federal regulatory permitting processes, where applicable. No impact to bighorn sheep.*

#### X. Non-Motorized Commercial Recreation

*- Non-motorized commercial recreation activities would be prohibited in Seasonal Trail Areas from January 15 - June 30 and on certain trails under hot season closures from July 1 through September 30. Commercial recreation events require a Special Recreation Permit and thus, would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis through this process.*

*- Non-motorized commercial recreation activities would be permitted in the remainder of bighorn sheep habitat where and when the voluntary trail avoidance program does not apply, subject to permission of private landowners and approval through regulatory permitting processes. Commercial recreation events require a Special Recreation Permit and thus, would be subject to the NEPA process and section 7 consultation under the ESA. Impacts to bighorn sheep would be assessed on a case-by-case basis.*

*- A special recreation permit would be required, except in circumstances when exemptions apply for non-motorized commercial recreation activities on BLM-managed lands, including vending associated with recreational use. Special Recreation Permits are subject to the NEPA process and section 7 consultation under the ESA. Impacts to*

bighorn sheep would be assessed on a case-by-case basis.

*-Special Recreation Permits for use of BLM-managed lands would be issued through existing BLM regulatory processes, including compliance with NEPA and ESA. Same as above.*

#### Xi. Motorized Commercial Recreation Activities

*- Motorized commercial recreation activities would be prohibited year-round in bighorn sheep habitat, except a portion of the Dunn road, subject to permission from private landowners. Same as Alternative A.*

##### *Dunn Road:*

*- Motorized commercial recreation activities between Pinyon Flats and the common boundary of Sections 32 and 3, T5S, R5E, would be considered on a case-by-case basis and allowed only from October 1 - January 14. This part of the Dunn Road is above the area used by ewes and lambs and in general, has poor habitat characteristics. The USFWS (1999) determined that use of the Dunn Road on the lower end posed significant threats to bighorn sheep in the Northern Santa Rosa Mountains and as such, recommended that vehicles remain in a caravan and that people be required to remain inside the vehicles. However, once reaching Section 33, the caravan requirement was no longer necessary and people could get out and walk around. Impacts to bighorn sheep may still occur on the upper end of Dunn Road but the terrain is relatively flat and habitat poor for bighorn sheep. Impacts to bighorn sheep from motorized commercial recreation on the upper end of Dunn Road would likely be minimal.*

*- Motorized commercial recreation activities would be subject to approval through regulatory permitting processes (including compliance with NEPA and the ESA), including issuance of a special recreation permit by BLM for use of BLM-managed portions of the Dunn Road.*

*- Motorized commercial recreation activities on the portion of Dunn Road from Cathedral City Cove to the common boundary of Sections 32 and 33 would be prohibited year round. Same as Alternative A.*

##### *Martinez Canyon Cherry Stem Road*

*-motorized commercial recreation activities would be prohibited year round. Prohibiting motorized commercial recreation on the Martinez Canyon cherry stem road would protect bighorn sheep during most seasons of the year. Martinez Canyon provides lambing and rearing habitat for bighorn sheep, water during the summer months, forage, and escape terrain.*

## XII. Competitive Recreation Events

*- Competitive recreation events would be prohibited year-round in essential bighorn sheep habitat on BLM-managed public lands in the Santa Rosa and San Jacinto Mountains. No impacts to bighorn sheep.*

*- A special recreation permit would be required for competitive recreation use of BLM-managed public lands outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains. No impact to bighorn sheep.*

## XIII. Public Outreach and Environmental Education

*- An information and education program addressing all management prescriptions herein described, upon approval, would be implemented.*

*- Guided hikes during the fall season would be undertaken by BLM in partnership with local jurisdictions and user groups to provide outreach and education.*

*- The lower portion of Dead Indian Canyon (about 0.75 miles up canyon) contains a prehistoric archaeological site that would be used for interpretation and education.*

*- Outreach and general education would not be limited to bighorn sheep ecology but would include desert ecology in general.*

*- Viewing areas would be established so that the public can view bighorn sheep and other wildlife from a distance. These areas would be located to prevent disturbance to the animals under observation.*

Outreach and education are essential in endangered species management. Bighorn sheep in the Santa Rosa and San Jacinto Mountains have a far better chance at recovery if the local populace is involved and committed to recovery.

#### 4.2.2.3 **Alternative C.**

##### I. Trail Use

- *Non-motorized activities would be prohibited from January 1 - September 30 on the trails listed.*

Same as A.

- *Non-motorized activities would be prohibited January 1 - June 30 on other trails in designated essential bighorn sheep habitat. These trails would be available for use during the summer months because there are no bighorn sheep water holes in these areas. Impacts to bighorn sheep would be minimal because sheep would likely be elsewhere looking for water. (See also discussion on water in preface to alternatives).*

- *Implementation - Trail Use*

- *All trail closures would be effective upon approval of the Coachella Valley Multiple Species Plan/Natural Communities Conservation Plan. Would provide immediate benefit to bighorn sheep by eliminating trail use during sensitive seasons.*

##### II. Cross-country travel

- *Cross-country travel would be prohibited year-round in essential bighorn sheep habitat. Same as Alternative A.*

- *Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, cross-country travel would be allowed year-round subject to existing regulations. Same as Alternative A.*

##### III. Camping

- *Camping would be prohibited year-round in essential bighorn sheep habitat. Same as Alternative A and B.*

- *Outside designated critical bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, camping is allowed subject to existing regulations. Same as Alternative A.*

#### IV. Dogs

- *Dogs would be prohibited in essential bighorn habitat except in designated areas.*
- *Dogs would be allowed outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains subject to existing regulations.*
- *The following areas in bighorn sheep habitat would be approved for entry with dogs on leashes:*
  - *West of Cathedral City Cove*
  - *Homme-Adams Park and adjacent lands in Palm Desert*
  - *South of La Quinta Cove outside essential habitat*

Same as Alternative A.

#### V. New Trail Development

- *New trails along the mountain perimeter would be developed in identified corridors where feasible. Same as Alternative B*

#### VI. Trail Re-Routing

- *Trails would be re-routed to protect sensitive wildlife habitat or other resource values (e.g. cultural resources, soils). Same as Alternative B*

- *Identification of trails to be re-routed for protection of wildlife habitat would be based on the best publicly available data. Same as Alternative B.*

- *A re-route of a portion of the Guadeloupe Trail to avoid habitat for the desert slender salamander would be considered upon locating the salamander habitat. Same as Alternative B.*

- *Trail re-routes would be addressed on a case-by-case basis outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains.*

#### VII. Trail Decommission and Removal

- *Redundant trails in the Murray Hill Complex would be identified and removed. Same as Alternative B.*

- *Additional redundant trails would be identified using aerial photography and other methods.*

- *Trails would be identified for permanent closure using the following criteria:*

- *Where relocation would not be meaningful or feasible*
- *Seasonal restrictions could not be effectively monitored and enforced.*
- *Decisions regarding permanent closure and removal of trails will be based,*

*in part, on reports citing recurring violations of trail closures.*

*-Where two or more trails have the same or similar purpose (e.g. connects the same two points or provides the same recreation experience.*

*Secondary or tertiary braided trails and trail shortcuts would generally be considered redundant.*

Same as Alternative B.

*- Outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, proposals to decommission and remove trails would be addressed on a case-by-case basis. No impact to bighorn sheep.*

#### IX. Non-Commercial, Non-Competitive Organized Group Activities

*- Non-commercial, non-competitive organized group activities would be prohibited on certain trails in essential bighorn sheep habitat when such trails are closed to non-motorized activities. Same as Alternative B.*

*- Non-commercial, non-competitive organized groups of 10-24 individuals would be required to obtain a free use permit for activities in bighorn sheep habitat January 1 - December 31. No impact to bighorn sheep.*

*- Groups of more than 25 individuals using BLM-managed lands would be required to obtain a Special Recreation Permit except for when exemptions apply. Same as Alternative A.*

*-Non-commercial, noncompetitive groups of 16 - 24 individuals entering the Santa Rosa Wilderness, would be required to break into groups of no more than 15 individuals in any group, and attempt to maintain at least a 2-mile separation between the groups. Same as Alternative A.*

*- Permits may be issued for (1) use of trails not subject to seasonal closure, and (2) for use of trails that area subject to seasonal closure, but only when closure is not in effect. Permits subject to NEPA and ESA regulations. Impacts to bighorn sheep assessed case-by-case.*

*- Non-commercial, non-competitive organized group activities may be allowed outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, subject to existing regulations. No impact on bighorn sheep.*

#### X. Non-Motorized Commercial Recreation Activities

*- Non-motorized commercial recreation activities would be prohibited on certain trails in essential bighorn sheep habitat when such trails are closed to non-motorized activities. Same as Alternative B.*

*- Non-motorized commercial recreation activities may be permitted on the trails subject to seasonal closures from October 1 - December 31, and year-round on all other trails in essential bighorn sheep habitat. Same as Alternative B.*

*- A special recreation permit would be required for non-motorized commercial recreation activities on BLM-managed lands in essential bighorn sheep habitat, except where exemptions apply. Same as Alternative B.*

*- A special recreation permit may be required for non-motorized, commercial recreation activities on BLM-managed lands outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, except where exemptions apply. No impact to bighorn sheep.*

#### XI. Motorized Commercial Recreation Activities

*- Motorized commercial recreation activities would be prohibited year-round on BLM-managed public land in essential bighorn sheep habitat. Same as Alternative A.*

*- A special recreation permit for motorized commercial recreation activities on BLM-managed land outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains would be required, except where exemptions apply. No impact to bighorn sheep.*

#### XII. Competitive Recreation Events

*- Competitive recreation events would be prohibited year-round on BLM-managed land in essential bighorn sheep habitat. No impacts to bighorn sheep.*

*- A special recreation permit would be required for competitive recreation use on BLM-managed land outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains except where exemptions apply. No impacts to bighorn sheep.*

#### XIII. Motorized Vehicle Use of Trails

*- Motorized vehicle are prohibited on all trails in essential bighorn sheep habitat. No impacts to bighorn sheep.*

*- BLM-managed portions of trails that can accommodate full-size four wheel vehicle are subject to the route designation process. No impacts to bighorn sheep.*

#### XIV. Public Outreach

*- An information and education program addressing all management prescriptions herein described, upon approval, would be implemented.*

*- Guided hikes during the fall season would be undertaken by BLM in partnership with local jurisdictions and user groups to provide outreach and education.*

*- Outreach and education would not be limited to bighorn sheep ecology but would include desert ecology in general.*

*- Viewing areas would be established so that the public can view bighorn sheep and other wildlife from a distance designed to prevent disturbance of the animals under observation. Same as Alternative B.*

#### **4.2.2.4 Alternative D - No Action.**

##### I. Trail Use

*- All trails would be open year-round for non-motorized activities inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, subject to existing regulations. Same as Alternative A and B.*

##### II. Cross-country travel

*- Cross-country travel would be allowed year-round inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains, subject to existing regulations. Same as Alternative A and B.*

##### III. Camping

*- Camping would be allowed year-round inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains subject to existing regulations. Same as Alternative A.*

##### IV. Dogs

*- Dogs would be allowed inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains subject to existing regulations. Bighorn sheep evolved with canine predators (Geist 1971) and thus react very strongly to domestic dogs. Disturbance of bighorn sheep by dogs causes heart rate increases and flight response (MacArthur et al. 1979, MacArthur et al. 1982, Purdy and Shaw 1981), with nervousness and alertness persisting for up to 30 minutes following an encounter and exhibiting response to subtle stimuli which otherwise evoked no response (MacArthur et al. 1982).*

In addition, domestic dogs will kill bighorn sheep, given the opportunity (DeForge, Bighorn Institute, personal communication, 2002). Allowing domestic dogs free run in bighorn sheep habitat is inconsistent with recovery objectives and goals.

#### V. New Trail Development

*- Proposals for new trail development inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains would be addressed on a case-by-case basis. Same as Alternative A.*

#### VI. Trail Re-routing

*- Proposals for trail reroutes inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains would be considered on a case-by-case basis. Impacts to bighorn sheep would depend on location of trail, season of use, types of use, and other factors. All projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.*

#### VII. Trail Decommission and Removal

*- Proposals to decommission and remove trails inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains would be addressed on a case-by-case basis. Impacts to bighorn sheep would be assessed on a case-by-case basis. All projects would comply with NEPA, ESA, and terms and conditions developed through Section 7 consultation with the USFWS.*

#### VIII. Murray Hill Facilities

*- Picnic tables and equestrian hitching posts at the summit of Murray Hill would remain in place. Same as Alternative B.*

#### IX. Non-Commercial, Non-Competitive Organized Group Activities

*- noncommercial, noncompetitive, organized groups may be allowed inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains. Subject to NEPA and ESA review, each group may be assessed individually. Impacts to bighorn sheep would be determined on a case-by-case basis.*

*- A special recreation permit may be required for use of BLM-managed lands by noncommercial, noncompetitive organized groups. Same as above.*

#### X. Non-Motorized Commercial Recreation Activities

*-Non-motorized commercial recreation activities may be permitted inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains. Same as above.*

*- Special Recreation Permits would be required for non-motorized commercial recreation activities on BLM-managed lands, except where exemptions apply. Same as above.*

#### XI. Motorized Commercial Recreation Activities

*- Motorized commercial recreation activities may be permitted inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains. Same as above*

*-A special recreation permit would be required for motorized commercial recreation activities on BLM-managed lands. Same as Above.*

#### XII. Competitive Recreation Events

*- Competitive recreation events may be permitted inside and outside essential bighorn sheep habitat in the Santa Rosa and San Jacinto Mountains. Same as above.*

*- A special recreation permit would be required for competitive recreation activities on BLM-managed lands. Same as Above.*

#### XIII. Motorized Vehicle Use of Trails

*- existing routes are subject to the route designation process (See California Desert Conservation Area Plan-motorized vehicle access). Impacts would be assessed on a case-by-case basis, subject to plan amendment, NEPA, and ESA processes.*

*- Approval for use of "non-road" trails by motorized vehicles for trail maintenance and construction projects inside and outside essential bighorn sheep habitat would be addressed on a case-by-case basis. Same as Alternative C.*

#### XIV. Public Outreach

*- Existing information and education programs pertaining to the use of trails and areas would be continued. No impact to bighorn sheep.*