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In Reply Refer To:  
AESO/SE  
02-21-05-F-0778

January 4, 2007

Memorandum

To: Field Manager, Arizona Strip Field Office, Bureau of Land Management, St. George, Utah

From: Field Supervisor

Subject: Biological Opinion for Grazing Permit Renewal for Six Allotments Containing Siler Pincushion Cactus Habitat

This biological opinion (BO) responds to your request for consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your August 1, 2006, request for initiation of formal consultation was received on August 3, 2006. At issue are impacts that may result from the proposed renewal of grazing permits for the Antelope, Cowboy Butte, Flattop Well, Fuller Road, Rider, and Valley Wash/Pipe Spring allotments located in Coconino and Mohave counties, Arizona, on the threatened Siler pincushion cactus (SPC) (*Pediocactus sileri*).

This biological opinion is based on information provided in your biological evaluation (BE) we received with the August 1 request, meetings, telephone conversations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, construction and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

## **CONSULTATION HISTORY**

Table 1 (all tables are in Appendix A) is a summary of the consultation history for the proposed project.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF THE PROPOSED ACTION**

Most of the information regarding the proposed action in this document is from your BE (Arizona Strip Field Office undated). The proposed action is renewal of the ten-year grazing permits for the Antelope, Cowboy Butte, Flattop Well, Fuller Road, Rider, and Valley Wash/Pipe Spring allotments. Renewal of the permits would authorize the continuation of

grazing under existing grazing systems and at current levels on the allotments. Grazing authorization includes all aspects of livestock grazing operations including implementation of the grazing system, seasons of use, maintenance of existing and construction of new range improvement projects, and use of all-terrain vehicles (ATVs) by the permittee.

Grazing systems on the allotments include season-long, deferred-rotation, rest-rotation, and best-pasture. With the season-long system, cattle graze an area for the entire time in the allotment without rotating to another pasture. The deferred-rotation system allows pastures to be deferred from use each year at a different season (summer, spring etc), allowing vegetation rest from grazing at different growth stages. Rest-rotation involves three or more pasture systems. The pastures are grazed during a different season each year and rested from grazing at different seasons, and each pasture receives 1-1.5 years of rest from grazing in each 3-or-more year grazing/rest cycle along with the seasonal rest periods included in the 3-or-more year cycle. The best-pasture system is a rotation system, but instead of following a prescribed set schedule, pastures are scheduled and rested each year in accordance with annual utilization, condition, and trend studies.

Utilization levels in season-long allotments not on rotation systems are limited to an average of 45 percent of the annual growth on key forage plants. The rotation systems have an average 50 percent utilization of annual growth of forage plants as the upper limit. When average utilization levels are exceeded over an evaluation period, livestock numbers and use are reduced to maintain the proper utilization levels.

ATV use by permittees for livestock operations in the allotments will be either light or moderate. Light use is strictly for maintenance of existing developments and follows fence-line roads and pipelines. Moderate use includes herding cattle and may involve use off of existing roads. Under the current (1992) Arizona Strip District Resource Management Plan, use of ATVs off of existing roads is not authorized, except by permittees actively engaged in carrying out actions specified in their permit. This exception for ATV use by permit holders does not apply in areas of critical environmental concern (ACECs).

Table 2 is a summary of allotment parameters. The proposed action does not include any range improvements, vegetation treatments, rehabilitation, habitat restoration projects, or use of pesticides on the allotments.

### **Conservation Measures**

The Arizona Strip Field Office (ASFO) developed several measures that will be implemented as part of the proposed action to reduce the potential for adverse effects (Arizona Strip Field Office undated) to SPC.

- SPC demographic study plots will continue to be read annually. Areas of possible or potential occurrence of the species will be re-inventoried at least once every ten years. Annual monitoring reports will be provided to the Fish and Wildlife Service.

- ATV use and activity will be monitored in the allotments. If monitoring reveals adverse effects to the species from that activity, then action will be taken to preclude further effects. In addition, the grazing permits will include a stipulation that use of ATVs off-road in occupied SPC habitat is prohibited. Maps illustrating occupied habitat will be provided to allotment permittees. Horses may be used in occupied habitat.
- The ASFO will conduct a survey at least once every ten years in areas of dense SPC populations outside of established monitoring plots in the allotments. The purpose of the surveys is to assess the condition of the populations and to check for damage to cactus and habitat associated with livestock operations. The surveys will include 1-mile transects in dense SPC populations. If any trampling or habitat damage is observed with the ten-year monitoring, then the monitoring will subsequently be conducted on an annual basis. If five individual SPC are trampled by livestock per year over a five-year period in the transects, fencing or changes in livestock management will be implemented to reduce trampling.
- If existing monitoring plots at Johnson Spring or observations made at Cottonwood Well reveal impacts to SPC due to trampling or ATV use, then the populations at those locations will be fenced. The Atkin Well population will be unfenced and studied. The dense SPC population at Coyote Spring will be fenced to preclude ATV use.
- During drought, grazing pressure on forage plant species will be reduced in the allotments. The drought policy known as Decreased Permitted Use (43 CFR 4110.3-2) will be implemented.

## **STATUS OF THE SPECIES**

SPC was listed as endangered without critical habitat on October 26, 1979 (44 FR 61786). Threats listed in the original listing package included mining, trampling by livestock, off-road-vehicle activity, and collection (U.S. Fish and Wildlife Service 1979). A recovery plan was published on April 14, 1986 (U.S. Fish and Wildlife Service 1986). The species was downlisted to threatened on December 27, 1993 (58 FR 68476).

SPC is a globose, usually single stemmed cactus (occasionally clustered) averaging 4-5 inches tall and about 4 inches in diameter (plants in old age have been noted over 20 inches tall). The areoles are circular and each contains three to seven brownish-black straight or slightly curved central spines, becoming pale gray or nearly white with age. The flowers are one inch in diameter, with yellowish marginally scarious petals with maroon veins. The flowers occur from late April into May. The fruits, which dry at maturity, are greenish-yellow and somewhat enlarged upward. The fruits dehisce, generally in May and June, by both a dorsal slit and a ring around the circumsessile apex (U.S. Fish and Wildlife Service 1986).

SPC occurs in and appears to be strongly correlated with the geologic Schnabkaib and middle red members of the Moenkopi formation (Arizona Strip Field Office undated). Recently published geologic maps and inventories conducted from 1978 to 2004 support the concept that a close association exists between those members and the species. Intensive searches on other members have been negative for the species. The Schnabkaib and middle red members occur

frequently from the Fort Pierce area near St. George, Utah, and the occurrences arc south into the Arizona Strip and terminate east of Fredonia, Arizona, at the Arizona-Utah border. The species is found exclusively on gypsiferous clay to sandy soils apparently high in soluble salts. The soils are also often highly erodible.

The species occurs within three broad vegetation communities (Arizona Strip Field Office undated). The largest distribution is in the Great Basin desert shrub biotic community. A few of the higher-elevation cacti occurrences are located in the Great Basin conifer woodland and plains and Great Basin grassland. One low-elevation cactus site is in Mohave Desert Scrub. Dominant associated species include shad scale, four-wing saltbush, big sagebrush, gyp sagebrush, snake weed, desert sage, shrubby buckwheat, slender buckwheat brush, rabbit brush, and Mormon tea. At higher elevation sites, associated species include Colorado pinyon, Utah juniper, cliff rose, and banana yucca. At some low elevation sites, it is associated with creosote bush and cheese bush. At the sites near St. George it is associated with the endangered dwarf bear claw poppy.

Inventories were conducted from 1978-90 to determine where the species occurs and at what densities (Arizona Strip Field Office undated). During 1985-90, approximately 2,476 acres were surveyed and 10,000 individuals were observed at selected locations throughout the Schnabkaib and the middle red member. As of 2000, a total of 10,657 individuals were known to occur on 2,476 acres. As of 2004, the species was known to occur on 6,061 acres.

Four known populations are outside of the action area and are not administered by the ASFO (Arizona Strip Field Office undated). The White Dome population is administered by the State of Utah. Population(s) of unknown size and status occur on the Kaibab-Paiute Indian Reservation. The Warner Ridge and Muggins Flat populations are administered by Utah BLM. In 2000, 1,648 acres were transected and 3,775 individuals were observed in the Warner Ridge area. Forty acres were transected at Muggins Flat and 188 individuals were observed.

While no comprehensive monitoring has been developed to determine the impacts of known and suspected threats, some information has been derived from a demographic monitoring effort conducted by the ASFO. Most of the demographic monitoring that has been conducted was outside of the six allotments of the project area. Only one of the six demographic plots was in any of the six allotments. That effort indicates that mortality occurs from trampling by livestock and herbivory by rabbits and rodents (Arizona Strip Field Office undated).

## **ENVIRONMENTAL BASELINE**

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

## **A. STATUS OF THE SPECIES WITHIN THE ACTION AREA**

### **Antelope Allotment**

Eight SPC individuals are known to occur on a 0.02-acre outcrop of the middle red member of the Moenkopi formation. Livestock occur at the SPC location. The nearest livestock water is approximately one mile from the SPC location, and four other waters are just over one mile from the location. Horses are used to herd cattle and ATVs are used for fence maintenance on the allotment. In 1986, 1999, and 2004, transects were conducted in and around the SPC population. No regular monitoring of the population is conducted in the allotment.

### **Cowboy Butte**

Twelve SPC individuals have been observed on the 1,545 acres of habitat. Livestock occur at the SPC locations and in the habitat. Nine livestock waters occur within one mile of SPC habitat. Use of ATVs by the permittee is light on the allotment. However, ATV use by recreationists is high in portions of this allotment due to the allotment's proximity to Fredonia. The allotment has been surveyed for SPC several times. No regular monitoring of the population is conducted in the allotment.

### **Flattop Well**

In 1992 and 2004, twelve SPC individuals were observed on 0.34 acre of the middle red member on the allotment. Livestock occur at the SPC location. The SPC location is approximately 0.50 mile from a livestock water. ATV use by the permittee is light. No regular monitoring of the population is conducted in the allotment.

### **Fuller Road**

A dense population of SPC occurs on 119 acres in the allotment at Johnson Spring. During 1985-1990, 122 individuals were observed on 40 acres. Livestock occur at the SPC locations and in the habitat. Livestock waters occur at the SPC location and habitat and within 0.50 mile of the habitat. Trampling of an individual by livestock occurred in 1988 on the two demographic monitoring plots. ATV use is light in areas of the allotment that are away from the Johnson Spring population. Demographic population monitoring occurs in the allotment.

### **Rider**

Seven SPC individuals have been observed on the 72-acre outcrop of the Schnabkaib member in the allotment. Livestock occur at the SPC location. Two livestock waters are within one mile of the SPC population. ATV use by the permittee is light. No regular monitoring of the population is conducted in the allotment.

### **Valley Wash and Pipe Spring**

Seventy SPC individuals have been observed on 49 acres in the allotment. Livestock occur at the SPC location. Two livestock waters are within one mile of the SPC population. The

permittee does not currently use ATVs in the allotment. No regular monitoring of the population is conducted in the allotment.

## **B. FACTORS AFFECTING THE SPECIES' ENVIRONMENT WITHIN THE ACTION AREA**

Table 3 contains a summary of previous actions affecting SPC and its habitat in the project area and the range of the species.

### **EFFECTS OF THE ACTION**

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Renewing the 10-year grazing permits for the six allotments could result in effects to SPC in the form of: injury or mortality due to trampling by livestock; rodent herbivory exacerbated by competition for forage with livestock; injury or mortality of individual plants from use of ATVs or other off-road vehicles; and loss of individuals or habitat due to modification of plant communities as a result of livestock grazing (Arizona Strip Field Office undated).

#### Trampling By Livestock

Livestock grazing occurs throughout the habitat of SPC (U.S. Fish and Wildlife Service 1993) and can cause trampling of plants by livestock (U.S. Fish and Wildlife Service 1986), resulting in injury or mortality of individual SPC. Trampling is most likely to occur in areas where: desired forage for livestock is in or adjacent to areas where the cactus is found; individual SPC are in proximity to range improvements such as livestock waters, corrals, and mineral supplements; and along regularly traveled livestock movement routes between range improvements and livestock forage areas (Arizona Strip Field Office undated).

The extent of damage or mortality caused by livestock grazing, either in the project area or rangewide, is unknown. No comprehensive monitoring, designed to detect and measure the extent of damage or mortality, has been conducted. One study (conducted in the 1970s and outside of the project area) found six of 1,153 SPC individuals were killed by livestock (U.S. Fish and Wildlife Service 1993). Six population demographic monitoring plots have been established by BLM. The plots are not designed to detect or quantify damage or mortality caused by livestock grazing. Only one of the demographic plots (Johnson Spring in the Fuller Road Allotment) is in the project area of the six allotments. However, damage and mortality of SPC due to trampling have been detected in those plots (Arizona Strip Field Office undated). Two trampled SPC have been observed in the Atkin Well plot, and one was observed in the Yellowstone plot of the Clayhole Allotment.

Livestock have grazed the Arizona Strip in far greater numbers over the past century than presently permitted (U.S. Fish and Wildlife Service 1986). Thus, it is difficult to know to what extent livestock grazing over that time period has influenced the distribution and numbers of SPC. Where SPC is found in dense populations, the probability of trampling is greater than where the populations are more scattered (Arizona Strip Field Office undated). Trampling and loss of SPC are also more likely to occur where livestock are concentrated. At Atkin Well, where livestock are severely affecting the habitat, SPC occur in the shrub understory or along drainage slopes, which are the only areas that are somewhat protected from the trampling by livestock moving to and from the water source (U.S. Fish and Wildlife Service 1993). BLM indicates that information about areas of high livestock forage value and location of livestock trails is not available; additionally, these areas vary with precipitation patterns (Arizona Strip Field Office undated).

### Small Mammal Herbivory

Rabbits and many small rodents may forage on SPC. Where heavy grazing causes forage shortages for rodents and rabbits, these species may rely more heavily upon SPC, which results in increased injury or mortality to the cactus. Livestock grazing, particularly during drought seasons, may lead to an increase in rabbit or rodent herbivory on SPC (Arizona Strip Field Office undated). Studies at Johnson Spring and Atkin Well, which sustain heavy use by livestock, indicate that rabbit and rodent herbivory does occur. However, small mammal herbivory on SPC can occur even in non-drought years and even where competition for forage with livestock is not an issue. As with the other effects addressed here, the actual impact of this factor on SPC will be determined only with a comprehensive, well-designed research or monitoring program.

### Damage From ATV Use

Habitat disturbance by off-road vehicles is an ever increasing threat to SPC, particularly near urban areas such as Fredonia and St. George (U.S. Fish and Wildlife Service 1986). Potential damage includes: direct destruction of individuals by off-road vehicles; loss of habitat to routes and trails created by the vehicles; and secondary loss of plants and habitat where trails become erosion channels during periods of heavy run-off. Off-highway traffic, particularly ATVs, are adversely affecting SPC and its habitat at several localities in the St. George Basin, including Atkin Well and the Warner Ridge/Fort Pierce area (Arizona Strip Field Office undated).

The current BLM Arizona Strip District Resource Management Plan includes off-road vehicle designations for the district (Arizona Strip Field Office undated). Under the plan, use of ATVs off of existing roads is not authorized, except by permittees actively engaged in carrying out actions specified in their permit. Use of ATVs by grazing permittees varies in scope and intensity. Generally, such use tends to be infrequent, of short duration, and follows existing roads, fences, or pipelines. Although most of the ATV use by permittees in the six allotments will be light, such use and the associated effects could occur anywhere in SPC habitat.

### Long-term Grazing Effects On SPC Habitat

Livestock grazing can modify vegetation composition and abundance. It can also cause soil erosion and compaction, reduce water infiltration rates, and increase runoff (Arizona Strip Field Office undated). All of those consequences can result in modifications of habitat for SPC.

Erosion has been identified as a source of mortality for SPC (U.S. Fish and Wildlife Service 1993). Because the species grows in erodible soils, a low rate of mortality due to erosion is expected and probably natural. However, off-road vehicle traffic, roads, overgrazed habitat, and areas of livestock concentration may lead to increased erosion, resulting in increased cactus mortality and loss of habitat.

The actual extent of these impacts to SPC and its habitat are essentially unknown. Although they are recognized as existing, no comprehensive examination of these impacts on the species has been conducted. Because livestock grazing and associated activities can occur anywhere in SPC habitat in the six allotments, long-term effects to SPC habitat can be expected to continue.

### Effects In The Allotments

Because livestock grazing can occur anywhere within SPC habitat in the allotments, any of the recognized effects could result where the species occurs. In general, the greatest extent of effects is anticipated to occur where the highest concentration of livestock activity overlaps with the highest density of SPC populations. That pattern of effects is likely to hold for trampling, small mammal herbivory, ATV use, and long-term modification of SPC habitat. Thus, the populations of SPC in the allotments are anticipated to sustain the greatest extent of effects in the declining order of the Fuller Road, Cowboy Butte, Valley Wash/Pipe Spring, Rider, Flattop Well, and Antelope allotments.

### **CUMULATIVE EFFECTS**

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The action area occurs primarily on Federal land. Private actions that are likely to occur within the action area include various forms of recreation such as hiking, camping, and off-road vehicle use. Of those activities, off-road vehicle use is likely to result in the greatest impact to SPC. Although that activity is recognized as a threat to SPC, the extent of injury, mortality, and loss of habitat caused by ATV use in the action area is unknown.

### **CONCLUSION**

After reviewing the current status of the Siler pincushion cactus, the environmental baseline for the action area, the effects of the proposed project in the Arizona Strip District and the cumulative effects, it is our biological opinion that the Grazing Permit Renewal for Six Allotments, as proposed, is not likely to jeopardize the continued existence of the Siler pincushion cactus.

We present this conclusion for the following reasons:

1. The extent of injury and mortality of individual Siler pincushion cactus due to the proposed action is anticipated to be low.

2. The extent of modification of Siler pincushion cactus habitat due to the proposed action is anticipated to be low.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

### **INCIDENTAL TAKE STATEMENT**

Sections 7(b)(4) and 7(o)(2) of the Act do not apply to listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal permit for removal or reduction to possession of threatened or endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law. Neither incidental take nor recovery permits are needed from us for implementation of the proposed action.

### **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We recommend that BLM develop and implement a well-designed comprehensive monitoring and/or research program to determine the actual impact of each of the effects (trampling, small mammal herbivory, ATV use, and modification of habitat) to SPC that are associated with livestock grazing.

### **REINITIATION NOTICE**

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your efforts to identify and minimize effects to listed species from this project. For further information, please contact Bill Austin (928) 226-0614 (x102) or Brenda Smith (x101).

Please refer to the consultation number 02-21-05-F-0778 in future correspondence concerning this project.

/s/ Steven L. Spangle

cc: Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix AZ

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**LITERATURE CITED**

- Arizona Strip Field Office. Undated. A biological evaluation for renewal of ten year grazing permits on allotments with Siler pincushion cactus habitat. Arizona Strip Field Office, Bureau of Land Management, St. George, Utah. 16 pp. + appendices.
- U.S. Department of the Interior, Bureau of Land Management. 1992. Arizona Strip Resource Management Plan. USDI, BLM, Arizona Strip District, St. George, Utah.
- U.S. Fish and Wildlife Service. 1979. Determination that *Pediocactus sileri* is an endangered species. *Federal Register* 44 (209): 61786-61788.
- U.S. Fish and Wildlife Service. 1986. Siler pincushion cactus recovery plan. U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico.
- U.S. Fish and Wildlife Service. 1993. Reclassification of the plant *Pediocactus sileri* (Siler pincushion cactus) from endangered to threatened status. *Federal Register* 58:68476-68480.

## APPENDIX A

Table 1. Consultation history for renewal of grazing permits in the six allotments.

<i>Date</i>	<i>Event</i>
September 9, 2005	We received a September 2, 2005, request for formal consultation on the effects of the proposed action on SPC.
September 22, 2005	We received notification by email that the September 2 request was withdrawn.
April 20, 2006	We met with BLM to discuss conservation measures for the proposed action.
August 3, 2006	We received an August 1, 2006, request for formal consultation which included an undated biological evaluation.
September 6, 2006	We issued a thirty-day letter initiating the formal consultation.
November 30, 2006	We issued a draft BO for review.
January 3, 2006	BLM indicated the draft biological opinion was ready for finalization.

Table 2. Summary of allotment parameters.

<i>Allotment</i>	<i>Grazing System</i>	<i>Season of Use</i>	<i>Number of Livestock</i>	<i>ATV Use by Permittee</i>
Antelope	Rest-Rotation	March 1-February 28	116	Light to Moderate
Cowboy Butte	Rest-Rotation	November 1-May 31	40	Light
Flattop Well	Deferred rotation	March 1-February 28	72	Light
Fuller Road	Deferred rotation	October 16-June 15 June 16-October 15	184 50 horses	Light
Rider	Season long	March 1-February 28	28	Light
Valley Wash/ Pipe Spring	Season long Deferred rotation	March 1-February 28 Yr 1 March 1-April 15 Yr 2 October 15-February 28	36 72	Light

Table 3. Summary of previous actions affecting SPC and its habitat in the project area and the range of the species.

<i>Consultation Number</i>	<i>Action</i>	<i>Result of Consultation</i>
02-21-83-F-22	80-acre land sale at Fredonia, Arizona	Non-jeopardy Loss of 10 SPC individuals
02-21-87-F-21	4,000-acre BLM Arizona Strip-Arizona State Land Department Land Exchange near Fredonia, Arizona	Non-jeopardy
02-21-87-I-103	SPC Habitat Management Plan	Concurrence
02-21-87-I-132	Ft. Pierce Reservoir in Coyote Spring Allotment	Reservoir was built outside of SPC habitat to change patterns of livestock movement through the habitat
02-21-88-F-127	Arizona Strip BLM Resource Management Plan	Non-jeopardy
02-21-90-F-147	Valley Wash Pipeline for water placement south of SPC habitat	Non-jeopardy Project not implemented