

CALIFORNIA COASTAL COMMISSION

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STAFF REPORT AND RECOMMENDATION
ON CONSISTENCY DETERMINATION

Consistency Determination No. **CD-23-01**
 Staff: JRR-SF
 File Date: 3/16/2001
 60th Day: 5/15/2001
 75th Day: 5/30/2001
 Commission Meeting: 4/12/2001

FEDERAL AGENCY: **U.S. Air Force**

PROJECT
LOCATION:

Minuteman, Wall, Surf, and Ocean Beaches, Vandenberg
 Air Force Base, Santa Barbara County (Exhibit 1).

PROJECT
DESCRIPTION:

Interim restrictions on beach access (Exhibits 2, 3, and 4)
 to protect nesting habitat for the western snowy plover.

SUBSTANTIVE
FILE DOCUMENTS:

See page 18.

EXECUTIVE SUMMARY

The Air Force submitted a consistency determination for "interim" restrictions to beach access on Vandenberg Air Force Base (Vandenberg) in order to protect the western snowy plover, a federally listed threatened species. This closure is a continuation of previous closures, which began in July 1999. The Air Force's consistency determination requests concurrence with its proposal to continue with interim beach closures for the 2001-nesting season. The Air Force proposes that the following beaches remain open for recreational use: (1) general public access to 0.5 mile of Surf Beach in the vicinity of Surf Station; (2) military personnel and limited civilian (by pass only and for fishing purposes) access to the northernmost 0.25 mile of Wall Beach; and (3) military personnel access only to Minuteman Beach. In its biological opinion, the U.S. Fish and Wildlife Service (Service) approved the interim

closures provided that the Air Force provides for enforcement, monitoring, public education, predator control, and exotic plant removal.

The Air Force has been working with the Service and the Commission staff for a number of years on the conflict caused by the plover habitat protection measures and recreational use of the beach. Both needs are critical along this stretch of coastline. Vandenberg provides very valuable nesting habitat for the plover and is vital to the recovery of the species. However, Vandenberg is located on a stretch of coast that has limited public access opportunities; between Pt. Sal and Gaviota, a 64-mile stretch of coast, there are only two publicly accessible beaches.

In reviewing similar restrictions in the past, the Commission has found these restrictions to be consistent with the public access and recreation (Sections 30210-30214) and the habitat (Section 30240) policies of the Coastal Act. Past monitoring data indicated that the snowy plover population had declined and that it was necessary to implement more restrictive measures to protect the plover. There was substantial scientific evidence, including some monitoring data, that supported the conclusion that the plover was adversely affected by recreational activities on the beach. However, these historic data do not clearly show that recreational activities were the main cause of the decline of plover populations on Vandenberg. The access and recreation restrictions are not based on the presumption that beach recreational use was the sole cause of the decline. Rather, recreation restrictions were measures that the Air Force could immediately implement and were likely to result in increasing plover populations on Vandenberg.

The beach closures that occurred in 1999 were necessary to respond to a dramatic crash of the plover population on the base. The Commission concurred with the 2000 closures because the Air Force proposed to prepare a plover management plan by the end of the summer of 2000. The Air Force has not completed its plover management plan and is once again requesting the Commission to concur with an interim closure. The vital component of the management plan that is necessary for the Commission to concur with the access restrictions is the predator management plan. Without a management plan the access restrictions alone may not provide significant protection to natural resources and the duration of the access restrictions may be extended. Therefore, the proposed access restrictions are not consistent with the access policies of the California Coastal Management Program (CCMP).

The Air Force's consistency determination provides for the option of closing all the beaches recreation use with no apparent standards to justify that full closure. The Service concluded that 1.25 miles of beach can be opened for recreational use without significantly affecting the plover. Therefore, the closure is not necessary to protect natural resources. In addition, total closure is not consistent with the Coastal Act's limitations on the requirement to maximize public access and recreation opportunities, such as protecting private property rights, public safety, and military

security. Therefore, the total closure of the affected Vandenberg beaches is not consistent with the access policies of the CCMP.

The sandy beaches on Vandenberg support nesting snowy plovers, a federally listed threatened species. In addition, the Service has designated these beaches as "Critical Habitat" for the snowy plover. Therefore, the snowy plover habitat on Vandenberg is an environmentally sensitive habitat area (ESHA). The purpose of these access restrictions are to provide better management of the sensitive resource and, as such, is an activity that is dependent on the sensitive habitat resources. Finally, since the beach restrictions will reduce human disturbances, the activity would not significantly affect the ESHA. Therefore, the project is consistent with ESHA policy of the CCMP.

STAFF SUMMARY AND RECOMMENDATION:

I. **Project Description.** The Air Force proposes to extend interim restrictions on beach access (including military personnel) at beaches where snowy plovers nest on Vandenberg Air Force Base in northern Santa Barbara County. The closures will occur during the plover's nesting season, March through September. Under this interim plan, the Air Force proposes to provide open (i.e., not a linear restriction) recreational access during the nesting season to three separate areas:

- Public access to 0.5 mile of Surf Beach in the vicinity of Surf Station, using the existing access trail and a trail from Ocean Beach County Park along the back dunes. The southern boundary of the closure will be just south of the Surf Station access route. The northern boundary will be established so as to avoid the cluster of several nests that typically occurs on the northern edge of this beach segment (Exhibit 2).
- Military access and civilian fishing access (subject to Vandenberg pass) only to the northernmost 0.25 mile of Wall Beach (Exhibit 3).
- Military access only to the northernmost 0.5 mile of Minuteman Beach, on the bluff-backed beach north of the existing access trail where snowy plover nesting has not been known to occur to date (Exhibit 4).

The Air Force consistency determination included a request that the Commission consider "*continued full closure of snowy plover nesting beaches through September 30, 2001.*"

Enforcement of beach access restrictions will be accomplished using three enforcement officers assigned at open beaches from dawn to dusk every day. One person will be stationed at Surf Beach, another at Ocean Park, and a third person will patrol both Wall and Minuteman Beaches. Periodic night patrols will be

conducted. Enforcement will be conducted by foot or horseback and will be restricted to the wet sand in closed areas to the maximum extent practicable. "All terrain vehicles" will only be used for emergency purposes and will be restricted to the wet sand to the maximum extent practicable. [In addition:]

- If more than 25 violations of the closed area of Surf Beach are documented by the Air Force in any one breeding season, Surf Beach will be closed to all recreational access for the remainder of the snowy plover breeding season.
- If more than 10 violations of the closed area of Wall Beach are documented by the Air Force in any one breeding season, Wall Beach will be closed to all recreational access for the remainder of the snowy plover breeding season.
- If more than 5 violations of the closed area of Minuteman Beach are documented by the Air Force in any one breeding season, Minuteman Beach will be closed to all recreational access for the remainder of the snowy plover breeding season.

All other beach areas on Vandenberg supporting nesting snowy plovers would be closed from March 1 through September 30, 2001. In all, 11.25 miles (90 percent) of nesting habitat on Vandenberg would be protected during the nesting season.

II. History of Plover-Related Closures. In 1995, the Air Force proposed a one-year "linear" closure of Ocean and Wall Beaches area above +7 ft. mean lower low water (MLLW) during the plover's nesting season. The closure was accompanied by signs restricting entrance into the plover nesting area, interpretive signs explaining the status of this threatened species, and active enforcement and education by Base and Fish and Wildlife Service personnel. After the Air Force agreed to limit the closure to one year and return at a later date with an access management plan protecting the plovers, the Commission concurred and found the linear closure consistent with the public access policies of the Coastal Act. The Commission and the Air Force had hoped that a linear closure would benefit snowy plover nesting success without significantly affecting public use of the beach.

The Air Force did not formally return to the Commission the following year for an extension to these restrictions. However, the Air Force did continue to work with the Commission staff and the U.S. Fish and Wildlife Service in subsequent years to continue to implement the linear restrictions and continue to monitor impacts on both public access and plover nesting. After monitoring results indicated a significant decrease in plover population of Vandenberg, the Fish and Wildlife Service recommended an immediate emergency closure of 3 miles of publicly accessible beaches (starting just south of Surf Station and continuing 3 mi. further south) where the greatest concentrations of plover nesting occurs. The Air Force complied with this recommendation, and on September 2, 1999, the Commission's Executive Director concurred with the Air Force's negative determination (ND-87-99) for after-

the-fact beach closures for the summer 1999 snowy plover nesting, with an agreement for follow-up submittals in 2000.

In February of 2000, the Air Force submitted a consistency determination for an interim beach closures that was similar to the 1999 closure except that only a half mile of Surf Beach remained open to the public, with the northern boundary about ½ mile south of the Santa Ynez River (Exhibit 2). The Commission's concurrence with that interim closure was made in part because of the Air Force's commitment to develop and submit a Plover Management Plan by summer 2000. That plan has not been finalized.

III. Status of Local Coastal Program. The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the Commission certified the LCP and incorporated it into the California Coastal Management Program (CCMP), the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. The Commission has certified Santa Barbara County's LCP and incorporated it into the CCMP.

IV. Federal Agency's Consistency Determination. The U.S. Air Force has determined the project to be consistent to the maximum extent practicable with the California Coastal Management Program.

V. Staff Recommendation. The staff recommends that the Commission adopt the following motion:

A. Motion:

I move that the Commission agree with consistency determination CD-23-01 that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

B. Staff Recommendation. Staff recommends a **NO** vote on the motion. Failure to pass of this motion will result in an objection to the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

C. Resolution to Object to Consistency Determination. The Commission hereby **objects** to the consistency determination by the U.S. Air Force, on the grounds that the project described therein is not consistent to the maximum extent practicable with the enforceable policies of the CCMP.

VI. Consistent to the Maximum Extent Practicable.

Section 930.32 of the federal consistency regulations provides, in part, that:

(1) The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.

The Commission recognizes that the standard for approval of Federal projects is that the activity must be "consistent to the maximum extent practicable" (Coastal Zone Management Act Section 307(c)(1)). This standard allows a federal activity that is not fully consistent with the CCMP to proceed, if compliance with the CCMP is "prohibited [by] existing Federal law applicable to the Federal agency's operations" (15 C.F.R. § 930.32). The Air Force has not demonstrated that this project is consistent to the maximum extent practicable with the CCMP by citing and "statutory provision, legislative history, or other legal authority which limits [its] ... discretion to comply with the provisions of the" CCMP (15 C.F.R. § 930.32). Therefore, there is no basis for the Commission to conclude that although the proposed project is inconsistent with the CCMP, it is consistent to maximum extent practicable.

VII. Project modifications.

Section 930.43 of the federal consistency regulations (15 CFR § 930.43) requires that, if the Commission's objection is based on a finding that the proposed activity is inconsistent with the CCMP, the Commission must identify measures, if they exist, that would bring the project into conformance with the CCMP. That section states that:

The State agency should also describe alternative measures (if they exist) which, if adopted by the Federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the enforceable policies of the management program. Failure to describe alternatives does not affect the validity of the State agency's objection.

As described in the findings below, the proposed project is inconsistent with the Access Policies of the CCMP. Pursuant to this federal regulation, the Commission is responsible for identifying measures, if they exist, that would bring the project into compliance with the CCMP. The measures are as follows:

1. Develop and submit a plover management plan that provides for, in addition to any access restrictions that are determined to be appropriate, public education, enforcement of access restrictions, predator management, and habitat restoration.

2. Modify the proposed consistency determination to eliminate the alternative proposal to completely close all beaches to recreational uses during the nesting season.

VIII. Findings and Declarations

The Commission finds and declares as follows:

A. Regulatory Background. The U.S. Fish and Wildlife Service listed the Pacific Coast population of the Western snowy plover as "threatened" in March 1993 under the Endangered Species Act (ESA) of 1973, as amended. The ESA mandates Vandenberg Air Force Base to protect snowy plovers within its borders and enforce the provisions of the ESA, which prohibit accidental and intentional take. "Take," as defined under the Section 3 of the Endangered Species Act, means to "*harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect this species, or to attempt to engage in any such conduct.*" Under the ESA, "species" includes snowy plover eggs as well as adults and chicks. The ESA also places a proactive requirement on all federal agencies to participate in the recovery of the species.

During the 1993 nesting season, the U.S. Fish and Wildlife Service reported to Vandenberg that normal public activity previously permitted within snowy plover nesting habitat on Ocean Beach resulted in both direct mortality to snowy plover eggs and harassment of adults and chicks. Overall, observed fledging success was far lower at Ocean Beach, which is open to the public, than at other Vandenberg beaches that are not open to the public. Snowy plovers nest in sandy areas above the high tide line along the entire length of Ocean Beach. On December 7, 1999, the Fish and Wildlife Service adopted formal "critical habitat" designations for the plover, including all beaches where the plover nests on Vandenberg, including publicly-accessible Surf and Wall beaches.

The ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service regarding actions that may affect listed species. Such actions include management of recreational beach use that results in a take of Western snowy plovers or otherwise affects this listed species. The ESA also directs Federal agencies to use their authorities to further the purposes of the Act, which include conservation and recovery of listed species.

In October of last year, the Air Force published an environmental assessment for beach and snowy management on Vandenberg. The Air Force submitted a biological assessment on that plan to the Service in compliance with Section 7 of the ESA. In January 2001, the Service produced a draft biological opinion for the Air Force's management plan, which concluded that the plan would jeopardize the continued existence of the snowy plover. In response to that plan, the Air Force proposed to extend the previously approved interim closure through the 2001-

nesting season. The Air Force has also agreed to increase its enforcement of the beach closures, prepare a predator management plan, beach restoration plan, and provide for public education.

On March 7, 2001, the Air Force submitted a negative determination to the Commission for complete closure of all beaches on Vandenberg for the period between March 1, 2001, and the April 13, 2001. That negative determination was necessary because the Service had not yet issued its biological opinion for beach restrictions on Vandenberg, and thus the Air Force did not have authority to allow any take of the plover from recreational activities on the beach. The Service issued its biological opinion on March 9, 2001 (Exhibit 5). That opinion requires the Air Force to increase its enforcement of the beach regulations. Until the Air Force hires and trains its enforcement personnel, it cannot reopen the limited portions of the closed beaches. The consistency determination before the Commission includes a request to extend the total closures until mid-April and re-apply the previously approved interim restrictions.

B. Public Access and Recreation. Section 30210 of the Coastal Act provides for maximizing public access and recreation opportunities, providing that such activities take into account natural resource protection needs. Section 30213 provides for protection of lower cost visitor and recreational facilities. Section 30214 elaborates on access management considerations, providing that:

(a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:

...

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area....

The access policies of the Coastal Act clearly provide for restricting public access and recreational opportunities in order to protect natural resource areas, such as nesting habitat for a threatened species. However, in order to understand the significance of the impact of the proposed restrictions, the Commission must analyze these access restrictions in the context of the existing access resources in the area. Access to the northern Santa Barbara County coast is more limited than almost any other portion of the California coast. Between Gaviota and Point Sal is a 64-mile stretch of coastline that is only fully open to the public at two locations: Surf Beach

and Jalama Beach. There are some other limited access opportunities on Vandenberg, which require permits from the Air Force Base and are limited to fishing. All of these beaches are subject to temporary closures during missile launches at Vandenberg.

Three large landowners, the Air Force, Bixby Ranch, and Hollister Ranch, own most of the coast in this area. The Commission has a long and extensive history of concern over the limitations on public access to this area of the coast, including numerous attempts to implement the public access provisions of the Coastal Act at Hollister and Bixby Ranches through the permit and LCP processes. Although the Santa Barbara County LCP contains public access requirements that would be triggered by development at Bixby Ranch, that development has not occurred and that area remains inaccessible. In addition, the Commission concurred with a consistency determination (CD-21-82) by the Air Force for the construction of a Space Shuttle launch facility, in part, because it included additional public access at Ocean Beach and north of Jalama Beach. In another consistency determination (CD-5-89), the Commission staff recommended objection (the Air Force withdrew the project at the hearing) to a proposal to construct a new launch facility because of impacts, including closures, to the use of Jalama Beach. Finally, the Commission objected to a consistency determination (CD-65-90) for the Air Force's proposed acquisition of development rights on Bixby Ranch, because it affected the local government's ability to implement the access provisions of its LCP. These actions demonstrate that protecting existing and providing new access opportunities in this area of the coast is a high priority for the Commission.

At the same time, just as Vandenberg provides critically needed public access opportunities in an area where access is limited, it is equally, if not more, critical to the survival of the snowy plover. As discussed in the ESHA section below, habitat for the snowy plover is an ESHA under the Coastal Act, and Vandenberg provides important habitat that is necessary for the survival and recovery of the bird. Because of the historic and geographic limitations on public access to the shoreline, snowy plover issues on publicly open beaches on Vandenberg are complex and difficult issues for the Commission. The Commission is forced to make a difficult choice between protecting snowy plover habitat that the Service and other biologists (including Gary Page of the Point Reyes Bird Observatory) have identified as critical to the survival and recovery of the species. On the other hand, the current limitations on public access along this portion of the coast make it difficult for the Commission to authorize any activities that further restrict public access.

Adding to the complexity of this issue is the lack of clear evidence that beach recreation activities are adversely affecting the snowy plover population. There is a significant amount of research that indicates that human activities on the beach

affect snowy plovers. In its biological opinion, the Service describes this impact as follows:

The Pacific coast population of the western snowy plover has experienced widespread loss of nesting habitat and reduced reproductive success at many nesting locations due to urban development and the encroachment of European beachgrass. Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Indirect impacts from these activities include disturbance of western snowy plover adults to the extent that they abandon nests or interference with incubation to the point that eggs become buried by sand or fail to hatch because of exposure to cold or heat (Warriner et al. 1986). Western snowy plovers do not usually abandon their nests because of wind without another compounding factor such as human disturbance (Page, pers. comm.). Human activities can also interfere with foraging activities by disrupting the ability of adults and chicks to get to the wet beach to feed and return to the dunes or their nest (Burger 1993). Chicks can also become separated from their parents as a result of human disturbance of broods. Such disturbance could cause or contribute to chick mortality by interfering with essential chick-rearing behaviors or by causing intolerable stresses directly to the chicks (Cairns and McLaren 1980). For example, separation of chicks and their parent can lead to lethal exposure to wind and cold temperatures or disturbance that interferes with foraging could result in the starvation of western snowy plover chicks. In some instances, disturbance associated with these types of recreational activities is expected to temporarily flush western snowy plovers and not affect the birds in such a substantial manner. In other cases, such disturbance could interfere with the metabolism and thermoregulation of western snowy plover chicks and migrating or wintering adults such that they starve or egg production is impaired during the subsequent nesting season (Cairns 1982). The available information regarding the energetics of western snowy plovers is inadequate to assess the likelihood that such injury or mortality would result. In 1998, a pattern of increased chick loss over weekends (when increased human use of beach areas occurs) was observed by western snowy plover researchers at Point Reyes National Seashore. In response to this observation, a protocol for collecting data on chicks was standardized in 1999 and 2000. Chicks were observed on Fridays and then again on Mondays (or the day after a holiday). Chick loss over weekends was over 1.5 times the weekday loss. Data from 1999 and 2000 show almost identical trends (Page, pers. comm.).¹

¹ Biological Opinion for Beach management and the Western Snowy Plover on Vandenberg Air Force Base for the 2001 Breeding Season (1-8-01-F-13).

Additionally, the monitoring reports for snowy plovers on Vandenberg have documented, since 1996 (when regular monitoring of fledging success began), that those beaches that are open to recreational use usually have lower fledging success than closed beaches. However, the data are not consistent. For example, during the 2000-nesting season, when most of the beaches were closed to recreational activities, fledging success was less than it was in previous years. Although this kind of conflicting data has been prevalent in the last six years of monitoring, one factor remains clear: the population of snowy plovers is declining. The Pacific Coast population of the western snowy plover has declined over the last few years and continues to decline. The range-wide population has decreased by 29% from (1371 to 976).² The population decline on Vandenberg has been slightly more dramatic than the range wide declines. The Vandenberg population has declined from 242 to 106 adult plovers,³ a 56% decline. The Service, Air Force, and Commission are concerned that this decline may continue unless something is done to protect the birds nesting habitat. To err on the side of caution is called for in this situation. In other words, allowing beach closures would provide for additional protections for a species whose population appears to be in decline. Therefore, the Commission generally supports the proposed beach closures as cautious measure to protect the plover, in light of its threatened status and its continued population decline.

However, the proposed closures submitted by the Air Force in this consistency determination are not consistent with the access policies of the CCMP. First, the Air Force's consistency determination provides for the option of closing all the beaches recreation use with no apparent standards to justify that full closure. In its most recent biological opinion, the Service has authorized Air Force to open 1.25 miles of its beaches to recreational use, provided that the beach users do not excessively violate the beach restrictions and that nesting activities on those beaches remain relatively low. It appears that the request for complete closure is based on concerns over the ability of the Air Force to meet the enforcement requirements of the Service's biological opinion (Jim Johnston, pers. comm., March 16, 2001). Regardless of the reason, the complete closure of the beach is not necessary for the protection of the plovers, as the Service has acknowledged and the Commission agrees. In addition, total closure is not consistent with the Coastal Act's limitations on the requirement to maximize public access and recreation opportunities, such as protecting private property rights, public safety, and military security. Therefore, the Commission finds the provision for total closures of the affected Vandenberg beaches inconsistent with the access policies of the CCMP.

The second basis for finding the proposed beach recreation restrictions inconsistent with the access policies of the Coastal Act is the lack of a plover management plan

² Ibid.

³ Ibid.

for Vandenberg. If the closures are not implemented in an overall management context, the plover population is likely to continue to decline. Members of the public have expressed concerns that public access is not the primary cause of the snowy plover population declines (Exhibits 6, 7, and 8). Rather, predation is the most significant cause of the habitat impacts. In 2000, the predation rate was even higher, with 47 percent of the nests lost to predation.⁴ In addition, unless public education is a component of the access restrictions, it is more likely that there would continue to be conflicts between access and the plovers. Finally, plover populations and reproductive success could possibly be improved by habitat restoration, mainly removal of exotic vegetation including European beach grass and ice plant. As the Commission stated above, the plover population is declining and the Service and the Air Force must take every measure available to protect the species.

For several years, the Air Force has committed to the Commission that it would prepare a management plan for the plovers. In May 1998, the Air Force committed to prepare a management plan for the plover as part of the Commission concurrence with its consistency determination for the Evolved Expendable Launch Vehicle program, CD-049-98. In its consistency determination for the interim closures during the 2000 nesting season (CD-19-00), the Air Force stated that the closures were interim because it was preparing a management plan, which was expected to be completed by the summer of 2000. Although the Air Force circulated a draft environmental assessment for the management plan, the document is not final and has not been submitted to the Commission.

The decision to continue to implement interim restrictions without an overall management plan is likely to not adequately provide for the protection and recovery of the plover. Since recreational use of the beach does not appear to be a significant direct cause of nest losses and there are conflicting data on the impact from recreational use on fledgling success, the access restrictions alone will not allow for recovery of the species. In addition, the duration of the access restrictions is likely to be longer, if not permanent, without implementation of other measures, such as predator control. In other words, public access to shoreline is being restricted in a manner that may not significantly protect the habitat. Therefore, without predator controls the restriction is not consistent with the Coastal Act's natural resources exception to the requirement to maximize public access and recreation opportunities, and the Commission finds that the proposed restrictions are not consistent with the access policies of the CCMP.

⁴ Western Snowy Plovers on Vandenberg Air Force Base, 2000 Final Report, January 2, 2001

C. Environmentally Sensitive Habitat. Section 30240(a) of the Coastal Act provides that:

Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

In evaluating the project for consistency with the Environmentally Sensitive Habitat Area (ESHA) policy of the Coastal Act, the Commission must determine if the habitat affected by the proposed activity is an ESHA. In March 1993, the U.S. Fish and Wildlife Service listed the Pacific Coast population of the Western snowy plover as a threatened species. The snowy plover is a small pale colored shorebird with dark patches on either side of the upper breast. Snowy plovers forage on invertebrates in the wet sand, surf-cast kelp within the intertidal zone, dry sandy areas above high tide, on salt pans, dredge spoil sites, and along the edges of salt marshes and salt ponds. The plover nests in loose colonies along beaches that provide on flat open areas with sandy or saline substrates. The nest areas are normally devoid of vegetation and driftwood. The plover nests on sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths. In publishing the Final Rule designating the threatened status of the species, U.S. Fish and Wildlife Service describes the status of the species as follows:

*Poor reproductive success, resulting from human disturbance, predation, and inclement weather, combined with permanent or long-term loss of nesting habitat to encroachment of introduced European beach grass (*Ammophila arenaria*) and urban development has led to a decline in active nesting colonies, as well as an overall decline in the breeding and wintering population of the western snowy plover along the Pacific coast of the United States.⁵*

Vandenberg provides important habitat for the snowy plover. The sandy beach and lagoons within the base provide both nesting and wintering habitat. There are approximately 12.5 miles of beach used by the plover on the base and the Service has listed all of these beaches as critical habitat for the snowy plover. In its most recent biological opinion, the Service described the importance of Vandenberg to the recovery of the snowy plover as follows:

Since the first comprehensive surveys for western snowy plovers in western North America in the late 1970s, Vandenberg AFB has consistently held one of the largest concentrations of breeding western snowy plovers

⁵ Federal Register, Vol. 58, No. 42, March 5, 1993, pp. 12864-12874.

along the west coast of the United States (Page and Stenzel 1981, Page et al. 1991). Vandenberg AFB accounted for 242 of 1371 adult western snowy plovers on a 1991 breeding-season survey of the California coast and had the highest number of adults of any area in California in the 1991 survey (Page 2001). Although no coast-wide surveys were attempted between 1992 and 1994, Vandenberg AFB supported a mean number of 223 adult western snowy plovers during the 1994 breeding season, indicating continuing high numbers (Persons 1995). In 1995, a coalition of researchers counted western snowy plovers in mid-breeding season in California coastal areas covered on previous state-wide surveys. They tallied a total of 974 adults; the highest regional total, 213 birds, was again at Vandenberg AFB (Page 2001).

Vandenberg AFB provides one of the greatest opportunities for recovery of the western snowy plover throughout its range because it has consistently supported one of the largest concentrations of breeding individuals throughout the species' range, has the largest continuous mainland coastal habitat under Federal ownership, and is expected to be able to support 400 adult birds during the breeding season.⁶ (Emphasis Added)

Within the Vandenberg, Surf beach provides some of the most important nesting habitat for the plover. The snowy plover nests along the entire length (approximately 4 miles) of Surf Beach. In a 1995, environmental assessment, the Air Force described the status of the bird at Surf Beach (which is sometimes referred to as Ocean Beach, named after the County Park adjacent to the Santa Ynez River estuary) as follows:

Vandenberg Air Force Base supports approximately 200 breeding snowy plovers (USFWS 1994). In 1993, 82 of these nested on Ocean Beach. The remainder is on beaches on the northern portion of the base which are restricted to base personnel. The Ocean Beach population represents 6 percent of the entire California population of the threatened coastal population of the western snowy plover.⁷

In the Vandenberg snowy plover monitoring report for the 2000 nesting season, there were 71 nests identified on Surf Beach,⁸ which represented approximately 50% of the nests on the base (Surf Beach provides approximately 33% of the nesting habitat on Vandenberg). In addition, approximately 50 chicks hatched on

⁶ U.S. Fish and Wildlife Service Biological Opinion, *March 9, 2001*

⁷ Draft Environmental Assessment, Modification of Public Access Routes at Ocean Beach Vandenberg Air Force Base, California, March 1995.

⁸ Western Snowy Plovers on Vandenberg Air Force Base, 2000 Final Report, January 2, 2001.

Surf Beach,⁹ which represents over 60% of the chicks hatched on the base. In other words, a 1/3 of the nesting habitat on the base provided for over half the nests and hatchlings during the 2000 nesting season.

Clearly, Surf Beach is an important component of the nesting habitat on Vandenberg, which is one of the most important breeding and nesting habitats on the Pacific Coast. Additionally, the Service has designated the sandy beaches on the base as Critical Habitat¹⁰ for the snowy plover. Thus, the Commission finds that the sandy beaches on Vandenberg that provide nesting habitat for the snowy plover are ESHAs under the Coastal Act.

As described in the access section above, the Commission is concerned that a proposal to restrict access that does not also include other necessary management efforts, especially predator control, is not consistent with the access policies of the Coastal Act. However, in evaluating consistency with the ESHA policies, the primary question, in this case, before the Commission is whether the interim restrictions are consistent with the ESHA policies of the CCMP. Section 30240 of the Coastal Act restricts the types of uses within an ESHA to activities that are dependent on the sensitive resources. In this case, the Air Force proposes to restrict beach recreation activities in order to protect the snowy plover. As described in the access section above, the Pacific Coast population of the western snowy plover has declined over the last few years and continues to decline. In response to this significantly declining population on Vandenberg, the Air Force, in coordination with the Service, proposes to implement stronger protection measures for the plovers. The primary snowy plover protection measure proposed by the Air Force at this time is restriction of beach use. In its biological opinion, the Service discusses impacts of recreational activities on the snowy plover:

The Pacific coast population of the western snowy plover has experienced widespread loss of nesting habitat and reduced reproductive success at many nesting locations due to urban development and the encroachment of European beachgrass. Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Indirect impacts from these activities include disturbance of western snowy plover adults to the extent that they abandon nests or interference with incubation to the point that eggs become buried by sand or fail to hatch because of exposure to cold or heat (Warriner et al. 1986). Western snowy plovers do not usually abandon their nests because of wind without another compounding factor such as human disturbance (Page, pers. comm.). Human activities can also interfere with

⁹ Ibid.

¹⁰ Federal Register Vol. 64, December 7, 1999, p. 68508

foraging activities by disrupting the ability of adults and chicks to get to the wet beach to feed and return to the dunes or their nest (Burger 1993). Chicks can also become separated from their parents as a result of human disturbance of broods. Such disturbance could cause or contribute to chick mortality by interfering with essential chick-rearing behaviors or by causing intolerable stresses directly to the chicks (Caims and McLaren 1980). For example, separation of chicks and their parent can lead to lethal exposure to wind and cold temperatures or disturbance that interferes with foraging could result in the starvation of western snowy plover chicks. In some instances, disturbance associated with these types of recreational activities is expected to temporarily flush western snowy plovers and not affect the birds in such a substantial manner. In other cases, such disturbance could interfere with the metabolism and thermoregulation of western snowy plover chicks and migrating or wintering adults such that they starve or egg production is impaired during the subsequent nesting season (Caims 1982). The available information regarding the energetics of western snowy plovers is inadequate to assess the likelihood that such injury or mortality would result. In 1998, a pattern of increased chick loss over weekends (when increased human use of beach areas occurs) was observed by western snowy plover researchers at Point Reyes National Seashore. In response to this observation, a protocol for collecting data on chicks was standardized in 1999 and 2000. Chicks were observed on Fridays and then again on Mondays (or the day after a holiday). Chick loss over weekends was over 1.5 times the weekday loss. Data from 1999 and 2000 show almost identical trends (Page, pers. comm.).¹¹

The Service's biological opinion demonstrates that recreational activities on the beach adversely affect the snowy plovers and, based on this opinion, the Air Force determined that it is necessary to significantly reduce beach recreational activities in order to prevent continued decline of plover numbers. While the proposed project does not address all of the possible causes of the population decline, it is a reasonable management measure that is likely to improve nesting habitat on Vandenberg. As a management measure improving habitat quality, it is dependent on the resource it is intended to serve. Therefore, the Commission finds that the proposed project is dependent on the sensitive resources.

Section 30240 of the Coastal Act also requires activities within an ESHA to avoid significant disruption to the sensitive habitat. The proposed project will reduce the beach recreation activities within the ESHA. As described above, these activities can adversely affect snowy plover reproductive success. Therefore, the proposed

¹¹ Ibid.

beach restrictions will reduce the existing disruptions to the plover, and thus, the Commission finds that the project will not significantly disrupt snowy plover habitat.

As discussed in the access section above, the community members affected by the beach restrictions argue that recreational use is not the primary cause of the decline in the plover population. The community members argue, and provide substantial evidence to support this conclusion, that predation is the main culprit. However, the question before the Commission in this part of the analysis is not whether public use is to blame for snowy plover population declines, but whether beach recreation restrictions provide additional protection for the plover. Since the population has significantly declined in recent years, it is clear that the Air Force should adopt all measures to protect the bird.

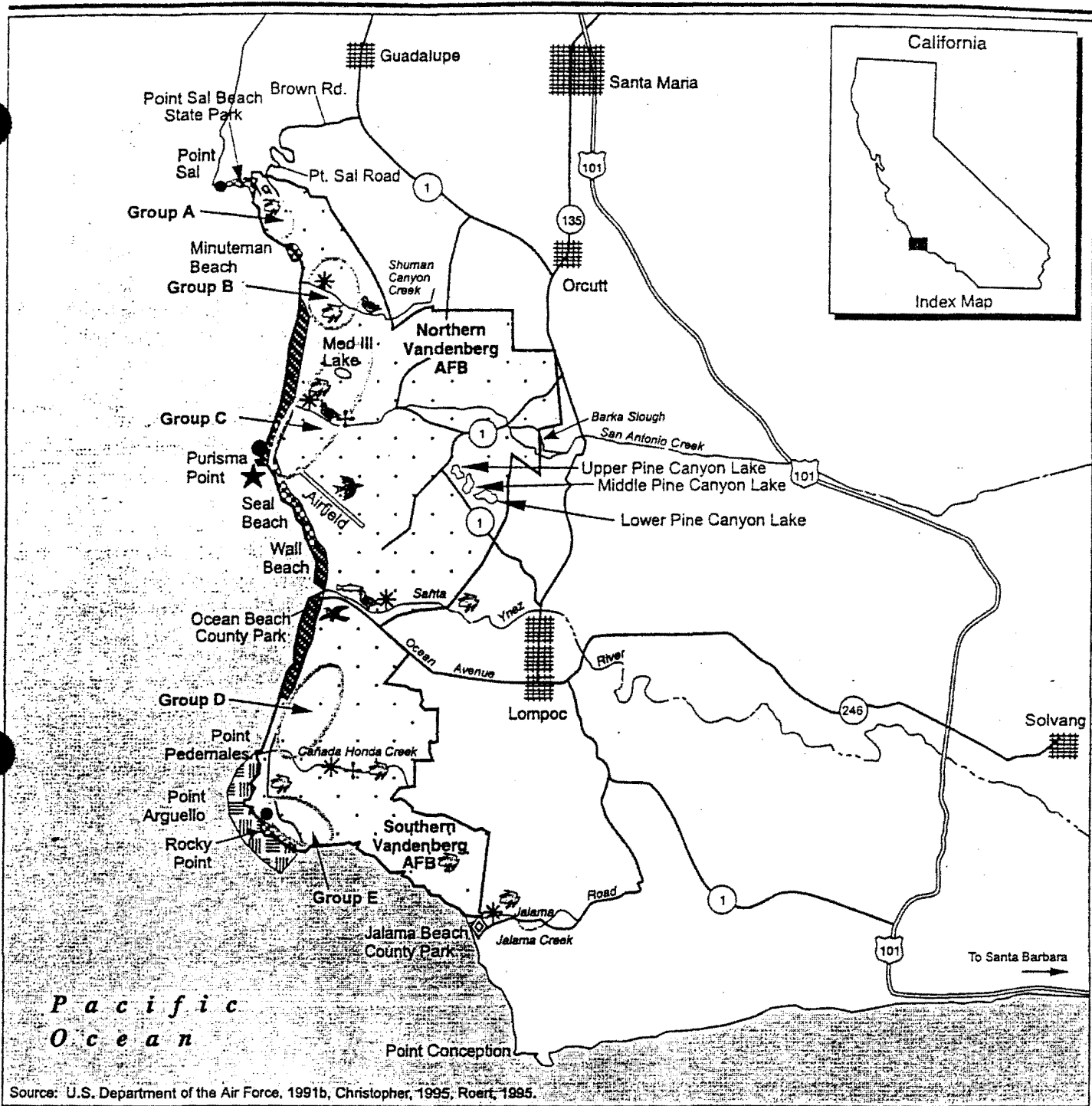
In conclusion, the sandy beaches on Vandenberg support nesting snowy plovers, a federally listed threatened species. In addition, the Service has designated these beaches as "Critical Habitat" for the snowy plover. Therefore, the snowy plover habitat on Vandenberg is an ESHA. The purpose of these access restrictions is to provide better management of the sensitive resource and, as such, is an activity that is dependent on the sensitive habitat resources. Finally, since the beach restrictions will reduce human disturbances, the activity would not significantly affect the ESHA. Therefore, the Commission finds that the project is consistent with Section 30240 of the Coastal Act.

IX. SUBSTANTIVE FILE DOCUMENTS.

1. Consistency Determination No. CD-67-95 (Air Force, Public access restrictions for snowy plover); Consistency Determination No. CD-19-00 (Air Force, Public access restrictions for snowy plover); Negative Determination No. ND-87-99 (Air Force, after-the-fact emergency beach closure to protect snowy plover; Negative Determination No. ND-20-00 (Air Force, "immediate" (i.e., March 1-March 15, 2000 beach closure); Negative Determination No. ND-19-01 (Air Force, Immediate closure of all sandy beaches between March 1, 2001 and April 13, 2001).
2. Designation of Critical Habitat for Pacific Coast Population of the Western snowy Plover; Federal Register Vol. 64, No 234, page 68508 et seq., December 7, 1999.
3. Final Report - Western Snowy Plover Monitoring in 1993 at Vandenberg Air Force Base, February 2, 1994.
4. Final Rule for Determination of Threatened Status for the Pacific Coast Population of the Western snowy Plover; Federal Register Vol. 58, No 42, page 12864; March 5, 1993.
5. Page, Gary W., et al., Distribution and Abundance of the Snowy Plover on its Western North American Breeding Grounds; Journal of Field Ornithology, 62(2): 245 - 255.
6. Consistency Determinations: CD-21-82 (Air Force, Space Shuttle Facility), CD-5-89 (Air Force, Titan IV at SLC-7), CD-28-90, (Air Force, Titan IV at SLC-6), CD-65-90 (Air Force, Acquisition of development rights on Bixby Ranch), and CD-12-94 Air Force experimental seasonal beach closure, Ocean Beach).
7. Draft Environmental Assessment, Modification of Public Access Routes at Ocean Beach Vandenberg Air Force Base, California, February 22, 1994.
8. Draft Environmental Assessment, Modification of Public Access Routes at Ocean Beach Vandenberg Air Force Base, California, March 1995.
9. U.S. Fish and Wildlife Service, Biological Opinion on the proposal to modify recreational beach access, Ocean Beach, Vandenberg Air Force Base, February 3, 1995.
10. Preliminary Findings, Snowy Plover Reproductive Success on Ocean Beach, Vandenberg Air Force Base, California, U.S. Air Force, prepared for the California Coastal Commission, July 1998.

11. Draft Environmental Assessment, Beach Management and the Western Snowy Plover at Vandenberg Air Force Base, October 30, 2000.
12. Western Snowy Plovers on Vandenberg Air Force Base, 2000 Final Report, January 2, 2001.
13. Biological Opinion for Beach Management and the Western Snowy Plover at Vandenberg Air Force Base for the 2001 Breeding Season (1-8-01-F-13), March 9, 2001.





Source: U.S. Department of the Air Force, 1991b, Christopher, 1995, Roert, 1995.

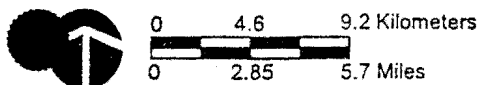
EXPLANATION

- | | | |
|--|---|---|
| Nesting Location of California Least Tern/ Western Snowy Plover | Tidewater Goby | California Least Tern (CLT) Foraging Areas |
| Haulout Location of California Sea Lion, Northern Elephant Seal, and Pacific Harbor Seal | Unarmored Threespined Stickleback | California Red-legged Frog (Wide Distribution Also Includes Ponds and Vernal Pools) |
| Marine Ecological Reserve | Roosting Location of California Brown Pelican | Steelhead Trout |
| | Southern Sea Otters | Mountain Plover (Winters Only) |
| | Launch Site Areas | Southwestern Willow Flycatcher |
| | | Snowy Plover (Winters Only) |

Sensitive Habitat for Listed Faunal Species on Vandenberg AFB

Western Range Candidate Test Area

EXHIBIT NO. 1
APPLICATION NO. CD-23-01



Cdr/030lance

Preliminary Final TBM Targets EA

California Coastal Commission

Air Force

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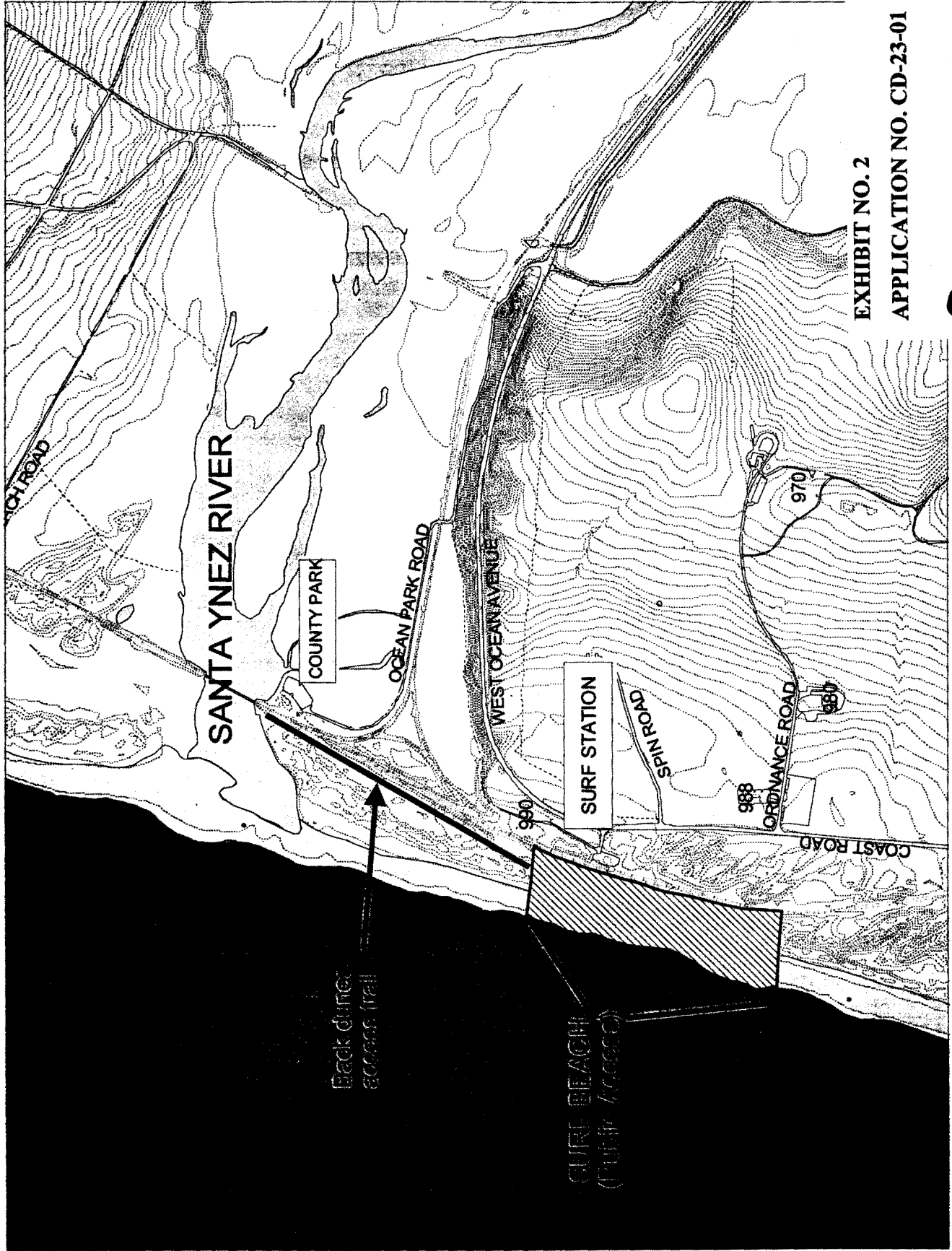


EXHIBIT NO. 2

APPLICATION NO. CD-23-01

California Coastal Commission

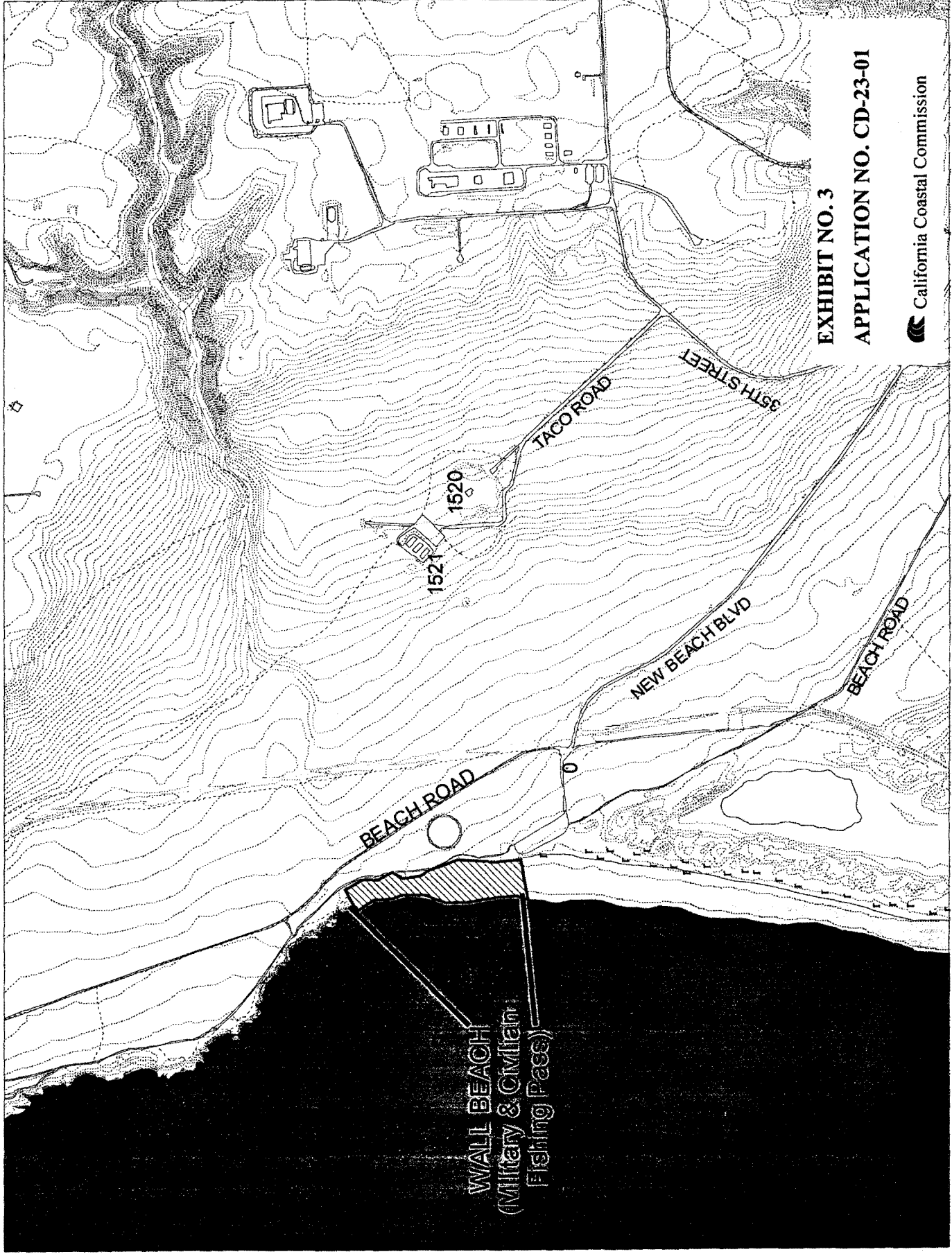
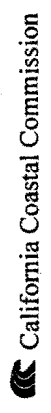


EXHIBIT NO. 3
APPLICATION NO. CD-23-01



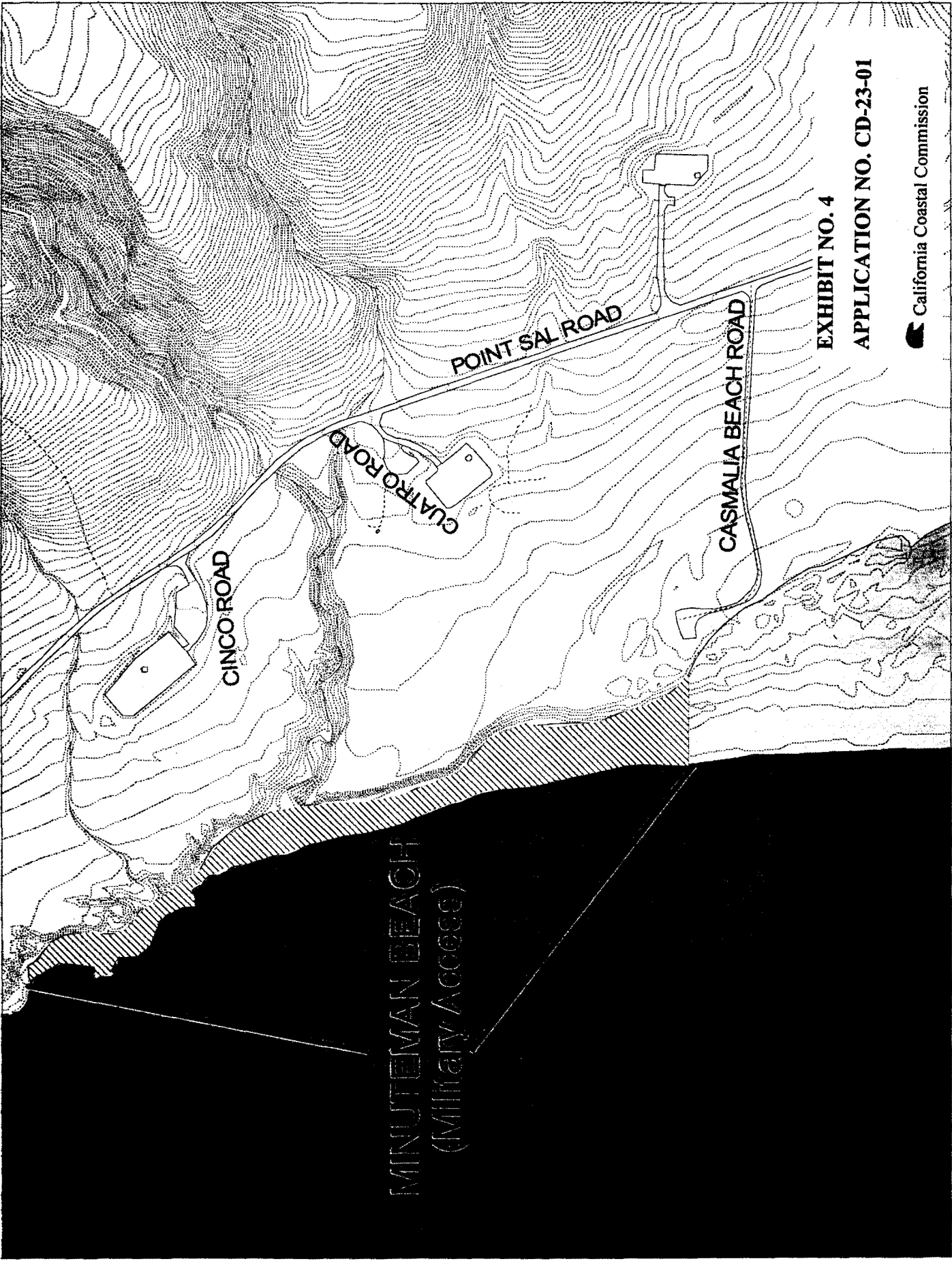


EXHIBIT NO. 4

APPLICATION NO. CD-23-01

California Coastal Commission



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish and Wildlife Office
 2493 Portola Road, Suite B
 Ventura, California 93003

March 9, 2001

Colonel Stephen L. Lanning
 Commander
 30 Space Wing
 747 Nebraska Avenue, Suite A200
 Vandenberg Air Force Base, California 93437-6261

Subject: Biological Opinion for Beach Management and the Western Snowy Plover on Vandenberg Air Force Base for the 2001 Breeding Season (1-8-01-F-13)

Dear Colonel Lanning:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the effects of the Air Force's proposed beach management plan on the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*) and its critical habitat in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). This biological opinion is in response to your February 26, 2001, letter requesting formal consultation.

This biological opinion is based on information contained in your request for formal consultation, meetings held in our office on February 12 and March 1, 2001, the draft environmental assessment for beach management and the western snowy plover at Vandenberg Air Force Base (AFB)(Air Force 2000), informal consultation between our staffs, and our files. A complete administrative record for this consultation is on file at the Ventura Fish and Wildlife Office.

CONSULTATION HISTORY

The Service issued a biological opinion to the Air Force for modification of recreational beach access and security patrol routes on Vandenberg AFB on February 3, 1995 (1-8-94-F-15). The proposed action was to limit recreational access during the western snowy plover nesting season (March 1 to September 30) to specific areas and access routes on Ocean Beach, Wall Beach, and Surf Beach; extend the existing seasonal restrictions on a portion of Vandenberg AFB's northern beach to include the western snowy plover nesting season; and designate all-terrain vehicle (ATV) access and patrol routes to be used by the Air Force game wardens and security personnel during routine enforcement and security activities. The specific areas that received protection from recreational access were the high beach and dune areas. Signs were placed along the length

EXHIBIT NO. 5

APPLICATION NO. CD-23-01

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Atch 1

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of the beach prohibiting public access into western snowy plover nesting habitat during the nesting season. The 7.0-foot tide level was the approximate lower limit of the area. Thus, a portion of the beach was closed in a linear manner. The biological opinion required biological monitoring to be conducted on a regular basis to document the effectiveness of the linear closure in protecting nesting western snowy plovers.

The report on the monitoring results on the effectiveness of the linear closure concluded reproductive success of the western snowy plover, combined for 1994 through 1997, was substantially lower on South Beaches, where the linear closure was used, than on North Beaches, which were fully closed (Persons 1998). South Beaches consist of 4.8 miles of continuous sandy beaches and extends from the rocky headland at the north end of Wall Beach, south to the rock cliffs jutting to the ocean at the south end of Surf Beach. North Beaches encompass 6.4 miles of sand beach and dune habitat that extends from the rocky headlands at the north end of Minuteman Beach south to the rocky shore that extends north from Purisima Point. Human disturbance of breeding western snowy plovers and their young was considered an important factor in limiting reproductive success on South Beaches. Human use also appeared to influence differences in western snowy plover reproductive activity on different sectors of Surf Beach, where a linear closure was used. The report recommended closure of South Beaches to all recreational and nonessential military use from March 1 through September 30, continued closure of North Beach south of Shuman Creek between March 1 through September 30, and continued monitoring of the western snowy plover to evaluate the effectiveness of the closure of South Beaches. At the same time, monitoring indicated that people were not abiding by the linear restrictions and numerous violations were recorded by the biological monitors in the field (Persons and Applegate 1997).

As a result of the new information provided in the monitoring reports, the Service repeatedly recommended by phone and in meetings that the Air Force reinitiate consultation. Correspondence between the Service and the Air Force continued but, as of June 1999, the Air Force had not reinitiated consultation. On June 25, 1999, the Service sent the Air Force a letter requesting emergency action to protect the western snowy plover from recreational beach use during the July 4, 1999 holiday. The Air Force responded by fully closing nearly three miles of Surf Beach to public access on July 6, 1999, after the heavy recreational use during the July 4 weekend. The Air Force did not take any additional action to protect western snowy plovers on the other 3.2 miles of base beaches used by western snowy plovers that were open to recreational access.

On December 7, 1999, critical habitat for the western snowy plover was designated (64 *Federal Register* 68508). All beaches used by western snowy plovers on Vandenberg AFB were designated as critical habitat.

In a letter dated January 21, 2000, the Service again advised the Air Force to reinitiate consultation on recreational beach access to protect the western snowy plover during the 2000 breeding season and future breeding seasons. On February 8, 2000, the Service sent another

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letter to the Air Force further clarifying its need to reinitiate consultation. The Air Force responded with a letter, dated February 11, 2000, initiating formal consultation on a modified proposal for recreational beach access for a portion of the year 2000 breeding season. However, as a result of the City of Lompoc's public meeting, the Air Force sent a letter to the Ventura Fish and Wildlife Office on February 28, requesting modification of the proposed enforcement actions to remove the condition that, after a prescribed number of violations were recorded, beach access would be eliminated. The Air Force assured the Service in a letter, dated February 28, 2000, that its enforcement would be adequate to protect the western snowy plover. On February 29, 2000, the Service issued a biological opinion to the Air Force for beach recreation activities for the entire year 2000 breeding season (1-8-00-F-23). The Air Force requested that the consultation be limited to the year 2000 breeding season because it was engaged in the National Environmental Policy Act (NEPA) process regarding a long-term proposal. Upon completion of the NEPA process, the Air Force would reinitiate consultation with the Service on a proposed action identified in the NEPA document.

In addition, on May 18, 2000, the Air Force initiated formal consultation on a temporary access trail, for the year 2000 breeding season only, through the back dunes to connect Ocean Park to Surf Beach to alleviate the safety issue of crossing the railroad tracks at Surf Station. Freight trains stop in the area blocking pedestrian passage. On May 25, 2000 the Service issued a biological opinion to the Air Force for this access trail (1-8-00-F-46).

Throughout the year 2000 breeding season, people continued to disregard restrictions on beach recreation access and numerous violations were recorded by the Air Force's game wardens and biological monitors in the field. On May 11, 2000, staff from our office met with representatives from the Air Force to discuss the issue of an increasing number of violators. The Air Force proposed to allow the City of Lompoc begin a program where docents in the open area at Surf Beach would hand out flyers, answer questions, and reinforce the beach closures. The docent program seemed to help educate the beach-going public, but did not result in a sufficient reduction of violations to consider the enforcement program to be effective. On August 14, 2000, we sent the Air Force a letter again requesting additional enforcement of the closures after Service staff witnessed six people and two dogs violating the closures with no response from the Air Force's enforcement personnel, even after being telephoned by the docent and Service staff.

On September 29, 2000, we sent a letter to the Air Force requesting adequate protection of wintering western snowy plovers. As a result, on October 1, 2000, the Air Force closed the area around the Santa Ynez River mouth by posting signs prohibiting entry to protect threatened and endangered species and removed the fencing used to implement the breeding season closures. The area was randomly patrolled by the Air Force's game wardens who were only authorized to issue warning letters to violators. However, a staff biologist from the Ventura Fish and Wildlife Office visited the Santa Ynez River mouth on October 19, 2000 and found the closure and the Air Force's enforcement of the closure to be inadequate to achieve its intended purpose.

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On November 1, 2000, the Air Force released a draft environmental assessment (EA) to evaluate a long-term plan for beach access and protection of the western snowy plover. The Air Force denied our office's verbal and written requests for the opportunity to participate in development of the draft EA. The Service provided the Air Force with detailed comments on the draft EA on November 30, 2000.

In addition, the Service sent a letter to the Air Force on November 1, 2000, requesting a meeting, describing our concerns, and emphasizing the need for a fence and strict, consistent enforcement to control public access into closed areas of the river mouth. We also expressed our disappointment that the Air Force had chosen a preferred alternative in the draft EA that would allow unregulated access to essential nesting areas for the western snowy plover, which would likely compromise the viability of this important area and preclude the recovery of the species. The letter reiterated our desire to meet with the Air Force to discuss the draft EA and assist the Air Force in selecting an alternative that would substantially advance the recovery of the western snowy plover while allowing the Air Force to carry out its mission.

On January 5, 2001, the Air Force requested formal consultation on the preferred alternative in the draft EA. On January 19, 2001 the Service issued a draft biological opinion that concluded the proposed action would likely jeopardize the continued existence of the western snowy plover and adversely modify its critical habitat by reversing the management actions needed to protect the western snowy plover, protect the physical and biological features essential to the conservation of western snowy plover critical habitat, result in a continued decline of the species at Vandenberg AFB, and prevent this essential area from contributing to the conservation of the species. This is because The Air Force's proposed action would compound the adverse effects of last year's loss of western snowy plovers and its habitat by doubling the amount of nesting area open to unrestricted recreational use. Recreational use of Vandenberg AFB beaches can be high and is easily accessible by car. Thus, the proposed recreational access was expected to result in the loss of all 44 nests which the area historically supported (35 percent of all nests on Vandenberg AFB according to the Air Force's letter dated January 5, 2001). In addition, the Air Force did not propose enforcement measures that would ensure the closed areas remain closed to the public and a predator control program sufficient to reduce predation on western snowy plovers.

On February 12, 2001, and on March 1, 2001, we met with Air Force representatives to discuss a beach management plan that would provide for the conservation of the western snowy plover and allow recreational access on Vandenberg AFB beaches during the western snowy plover breeding season.

The Air Force has suspended the NEPA process until the completion of this consultation. However, it has a consistency determination hearing scheduled with the California Coastal Commission in April 2001.

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BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Vandenberg AFB is located on the south-central coast of California, approximately half way between San Diego and San Francisco. The base covers approximately 98,000 acres in western Santa Barbara County. The Air Force's primary missions at Vandenberg AFB are to launch and track satellites in space, to test and evaluate America's intercontinental ballistic missile systems, and to support aircraft operations in the western range. In addition, as a non-military facet of operations, the Air Force is committed to promoting commercial space launch ventures.

The western snowy plover nests from March to September on approximately 12.5 miles of Vandenberg AFB's coastal sand beaches and adjacent dunes (Figure 1). The Air Force's proposed action would allow unrestricted recreational beach access to 1.25 miles of western snowy plover nesting habitat during the 2001 breeding season (the same area that was open to recreational access during the year 2000 breeding season). During the 2001 breeding season and for any year thereafter that the Air Force and the Service agree to extend this biological opinion, public access would be available to approximately 0.5 mile of Surf Beach, military access would be available at the northernmost 0.25 mile of Wall Beach and the northernmost 0.5 mile of Minuteman Beach (Figure 2). Military access in this context includes active duty military and their dependents, retired military and their dependents, Department of Defense and Vandenberg AFB contractor employees and their dependents, and authorized limited public access for saltwater fishing.

The open 0.5-mile section of Surf Beach would extend from the closure fence that was installed at south Surf Beach in July 1999 and continue north approximately 0.5 mile. The northern boundary would be established to avoid the cluster of several nests that typically occurs near this boundary. Access to Surf Beach would be through the Surf Station parking lot and by a trail through the back dunes from the Santa Barbara County Ocean Beach parking lot to Surf Station (Figure 3). A public access road through Vandenberg AFB, Ocean Avenue, makes Ocean Park and Surf Station accessible to the general public.

Access to Wall Beach would be provided from the new access trail beginning at the northern corner of the parking area and continuing northward along the bluff-backed beach to protect all dune-backed habitat on Wall Beach. Access to Minuteman Beach would be to the bluff-backed beach north of the existing access trail where western snowy plover nesting has not been known to occur to date. Minuteman Beach south of the access trail will be closed. A paved access road connects to the Wall Beach parking lot.

All other sandy beaches designated as western snowy plover critical habitat on Vandenberg AFB would be closed during the breeding season. The closed sections of beach would be fenced and signed indicating the reason and timing of the closure. Fences would run perpendicular to the ocean from the back dunes to at least the mean high tide line. Fencing would be removed

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seasonally at the end of the closed period. Snow fencing, wire and plank, or some other appropriate material would be used and, as in the past, the fencing materials would be kept at least 12 inches above ground level to allow for movement of birds and natural sand drift.

In addition, the Air Force would implement a year-round closure of the Santa Ynez River mouth. Symbolic fencing, posts with plastic coated wire or plastic chain, would be constructed on both sides of the closure at the Santa Ynez River mouth. Signs would indicate the area closed and the purpose of the closure. This closure would extend 0.3 mile to the north of the river mouth and on the south extend from a point approximately 650 feet west of the Ocean Park beach access point proceeding southwesterly below the foredunes to the shoreline. The southern closure area would likely range from 0.2 to 0.4 mile based on the position of the river mouth in any given year.

To offset the adverse effects of recreational access on 1.25 miles of western snowy plover nesting habitat, the Air Force proposes to eradicate non-native dune vegetation, control predation, and strictly enforce the closures. European beachgrass (*Ammophila arenaria*) and iceplant (*Carpobrotus edulis*) will be eradicated by chemical and/or mechanical means within closed areas. An eradication plan to accomplish this while ensuring minimal disturbance to nesting western snowy plovers will be developed in consultation with the Service. Project elements will include removal of European beachgrass and ice plant, revegetation with native dune species, and annual maintenance as needed to prevent re-establishment of the non-native species. A draft plan will be submitted to the Service for review by August 1, 2001.

A predator management plan is being developed by the Air Force in coordination with the Service. The goal of the plan will be to control predation on western snowy plovers sufficiently to allow these birds to attain a reasonable level of recruitment into the population. Predation control will focus on those species, coyotes (*Canis latrans*) and American crows (*Corvus brachyrhynchos*), that have historically been found to have a substantial effect on western snowy plover breeding and fledging success in the past. Individual problem animals will be targeted for lethal removal. Predatory birds, such as American kestrels (*Falco sparverius*), loggerhead shrikes (*Lanius ludovicianus*), and merlins (*Falco columbarius*), found to be preying on western snowy plovers at Vandenberg AFB will be captured and relocated when possible. The Air Force and the Service intend to complete a predator management plan by April 1, 2001. Aspects of predator management agreed to by the Air Force and the Service will be implemented as soon as possible after issuance of this biological opinion. The predator management plan will be subject to change based on information learned as the plan is implemented.

To prevent intrusion into closed areas to the maximum extent practicable and to minimize effects from the presence of people in open beach areas, the Air Force will implement the following measures:

- 1) Snow fencing and bilingual (English/Spanish) signs will be placed to delineate closed beach and dune areas. Fencing in beach areas will be erected perpendicular to the shoreline and will extend from as close to the water as practical to the upper dunes.

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- 2) Fences will be inspected on at least a weekly basis throughout the breeding season to assess the need for maintenance. People charged with repairing damaged fences will coordinate with the biological monitors to avoid adversely affecting western snowy plovers during fence maintenance activities.
- 3) Nixalite® will be installed on all posts and fencing where practicable to minimize the attraction of these structures to avian predators.
- 4) All beach areas where snow fencing is impracticable (*i.e.*, where the ocean will destroy the fence) will be posted as closed with bilingual (English/Spanish) signs.
- 5) Trash containers will be provided near entrances to all open beach areas in convenient locations.
- 6) Biweekly beach inspections will be made to remove any trash from open beach areas.
- 7) An educational program will be developed that will:
 - A) describe and illustrate the habitats of the western snowy plover and its distribution and habitat on Vandenberg AFB;
 - B) describe the threats to the western snowy plover;
 - C) explain seasonal access restrictions to certain areas;
 - D) show examples of signs describing beach restrictions;
 - E) explain the penalties for not obeying restrictions;
 - F) provide maps showing restrictions; and
 - G) identify the proper contact if an injured or dead western snowy plover is found.
- 8) A kiosk will be installed by April 1, 2001, at the entrance to Surf Beach to educate the public about the western snowy plover and beach restrictions.
- 9) An educational brochure for distribution to the public will be developed and copies submitted to the Service for review prior to the opening of the beaches to recreational access.
- 10) The following beach rules will remain in effect for all Vandenberg AFB western snowy plover breeding beaches on a year-round basis:
 - A) overnight camping is prohibited;
 - B) pets must be on a leash at all times;
 - C) littering is prohibited;
 - D) recreational off-road vehicles are prohibited; and
 - E) fireworks are prohibited.

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- 11) The following additional beach rules will be in effect for all Vandenberg AFB western snowy plover breeding beaches during the March 1 to September 30 breeding season:
 - A) beach fires are prohibited;
 - B) pets are prohibited;
 - C) horses, except for those used for enforcement of the beach access rules, are prohibited; and
 - D) kite flying is prohibited.
- 12) Enforcement of beach access restrictions will be accomplished using three enforcement officers assigned at open beaches from dawn to dusk every day. One person will be stationed at Surf Beach, another at Ocean Park, and a third person will patrol both Wall and Minuteman beaches. Periodic night patrols will be conducted. Enforcement will be conducted by foot or horseback and will be restricted to the wet sand in closed areas to the maximum extent practicable. ATVs will only be used to for emergency purposes. ATVs will be restricted to the wet sand to the maximum extent practicable.
- 13) The Air Force's enforcement officers will issue citations to all persons found violating the beach access restrictions.
- 14) If more than 25 violations of the closed area of Surf Beach are documented by the Air Force in any one breeding season, Surf Beach will be closed to all recreational access for the remainder of the western snowy plover breeding season. If more than 10 violations of the closed area of Wall Beach are documented by the Air Force in any one breeding season, Wall Beach will be closed to all recreational access for the remainder of the breeding season. If more than 5 violations of the closed area of Minuteman Beach are documented by the Air Force, Minuteman Beach will be closed to all recreational access for the remainder of the breeding season.

Violations of beach closures will be determined by the Air Force based on either individuals found in closed areas or by evidence of such based on footprints in closed areas. Air Force wardens or Service Special Agents will investigate suspected violations and report their findings to the Environmental Flight Commander, 30CES/CEV, for final determination of an incident being considered a violation.

Violations of beach closures will be determined based on the following:

- 1) Each individual found in a closed beach area will be counted as a single and separate violation. Multiple persons in a closed area will count as multiple violations.
- 2) Documentation of entry into closed beach areas based on footprints shall be considered a violation for each set of footprints. Footprints found in the interior of a closed area that likely did not significantly disrupt normal western snowy plover behavioral patterns

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should not be investigated nor documented as a violation if the act of investigating the suspected violation could adversely affect breeding western snowy plovers.

- 3) Evidence of persistent activity (lasting more than a few minutes) in a closed area, such as a fire, camping, resting or other similar activity, will be investigated as a violation. An investigation will be conducted to attempt to determine the following: the number of people that entered the closure, the type of activity and duration, and the potential effects to western snowy plovers. Investigations of potential violations will be conducted so that western snowy plovers will not be injured as a result of the investigation. The Air Force will coordinate with and be escorted by western snowy plover monitors to prevent injury to birds. Western snowy plover monitors should assist the investigating official to help determine potential effects of the incident being investigated on the western snowy plover.

STATUS OF THE SPECIES

The Pacific coast population of the western snowy plover was federally listed as threatened on March 5, 1993 (58 *Federal Register* 12864), and critical habitat was designated on December 7, 1999 (64 *Federal Register* 68508). A recovery plan is currently being prepared. The final rule listing the western snowy plover as threatened describes its biology and reasons for its decline.

The western snowy plover is a small shorebird that forages for invertebrates in intertidal zones, the wrack line, dry sandy areas above the high tide line, salt pans, and the edges of salt marshes. The Pacific coast population nests near tidal waters along the mainland coast and offshore islands from southern Washington to southern Baja California, Mexico. Most nesting occurs on unvegetated to moderately vegetated, dune-backed beaches and sand spits. Other less common nesting habitats include salt pans, dredge spoils, and salt pond levees. Nest site fidelity is common. Nesting and chick rearing generally occur between March 1 and September 30. Both males and females incubate eggs which take about 27 days to hatch. Double brooding with polyandry (*i.e.*, the female successfully hatches more than one brood in a nesting season with different mates) is common in coastal California (Warriner *et al.* 1986). Western snowy plover chicks are precocial, leaving the nest within hours after hatching to search for food. They are not able to fly for approximately four weeks after hatching. Females generally desert males and broods by the sixth day after hatching and thereafter the chicks are typically accompanied by only the male. While males rear broods, females obtain new mates and initiate new nests.

During the non-breeding season, western snowy plovers may remain at breeding sites or may migrate to other locations, with most wintering south of Bodega Bay, California. Many birds from the interior population winter on the central and southern coast of California.

The California population of western snowy plovers represents at least 90 percent of the listed Pacific Coast population (Page, pers. comm.). Historically, western snowy plovers bred at 53 coastal locations in California prior to 1970. Between 1970 and 1981, western snowy plovers

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stopped breeding in parts of San Diego, Ventura, and Santa Barbara counties, most of Orange County, and all of Los Angeles County (Page and Stenzel 1981). By 1991, 78 percent of the remaining California coastal breeding population nested at only 8 sites. These sites are San Francisco Bay, Monterey Bay, Morro Bay, the Callendar-Mussel Rock dunes area, the Point Sal to Point Conception area (Vandenberg Air Force Base), the Oxnard lowland, Santa Rosa Island, and San Nicolas Island (Page *et al.* 1991). Western snowy plovers have abandoned all Santa Barbara County breeding sites south of Point Conception (Page and Stenzel 1981), presumably due to disturbance or habitat destruction (Lafferty 2000). In Santa Barbara County, western snowy plovers have completely abandoned or rarely use Goleta Beach, Goleta Slough, Carpinteria beaches, Coal Oil Point, and Jalama Beach as breeding sites (Lafferty 2000).

In 1991, 1371 adult western snowy plovers were estimated to breed in coastal California (Page *et al.* 1991). However, by 1995, this number was estimated at 969. Current census data on the coastal California breeding population of western snowy plovers demonstrate a 29 percent decline in the breeding population of western snowy plovers from 1371 in 1991 to 976 individuals in 2000 (Page 2000).

The most important breeding areas on the for the listed population are (not in order of importance): San Francisco Bay, Monterey Bay, Morro Spit/Atascadero State Beach, Vandenberg AFB, and Naval Base Ventura County (formerly Point Mugu Naval Air Station). These areas are recognized as particularly important breeding areas based on their ability to support 80 to 100 or more breeding adults (Page, pers. comm.).

Table 1. 2000 Western snowy plover nesting success at important breeding areas (Page, pers. comm.).

Breeding Area	Clutch Hatching Rate	Fledging Rate
San Francisco Bay	59%	N/A
Monterey Bay	85%	39 - 40%
Morro Bay/Atascadero State Park	N/A	N/A
Vandenberg Air Force Base	31%	31%
Naval Base Ventura County	81%	N/A

The constituent elements of critical habitat for the western snowy plover have been defined as those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, roosting, and dispersal or the capacity to develop those habitat components. The constituent elements are found in areas that support or have the potential to support intertidal beaches, associated dune systems, and estuaries. Important components of the beach/dune/estuarine ecosystem include surf-cast kelp, sparsely vegetated foredunes, interdunal flats, spits, washover areas, blowouts, intertidal flats, salt flats, and flat rocky outcrops. Several of these components (sparse vegetation, salt flats) are mimicked in artificial habitat types used less commonly by western snowy plovers (*i.e.*, dredge spoil sites, salt ponds, and adjoining

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levces). The suitability of areas containing the features listed above is also contingent upon isolation from human disturbance and predation. These attributes are considered essential to the conservation of the coastal population of the western snowy plover (64 *Federal Register* 68508).

The Pacific coast population of the western snowy plover has experienced widespread loss of nesting habitat and reduced reproductive success at many nesting locations due to urban development and the encroachment of European beachgrass. Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. Indirect impacts from these activities include disturbance of western snowy plover adults to the extent that they abandon nests or interference with incubation to the point that eggs become buried by sand or fail to hatch because of exposure to cold or heat (Warriner *et al.* 1986). Western snowy plovers do not usually abandon their nests because of wind without another compounding factor such as human disturbance (Page, pers. comm.). Human activities can also interfere with foraging activities by disrupting the ability of adults and chicks to get to the wet beach to feed and return to the dunes or their nest (Burger 1993). Chicks can also become separated from their parents as a result of human disturbance of broods. Such disturbance could cause or contribute to chick mortality by interfering with essential chick-rearing behaviors or by causing intolerable stresses directly to the chicks (Cairns and McLaren 1980). For example, separation of chicks and their parent can lead to lethal exposure to wind and cold temperatures or disturbance that interferes with foraging could result in the starvation of western snowy plover chicks. In some instances, disturbance associated with these types of recreational activities is expected to temporarily flush western snowy plovers and not affect the birds in such a substantial manner. In other cases, such disturbance could interfere with the metabolism and thermoregulation of western snowy plover chicks and migrating or wintering adults such that they starve or egg production is impaired during the subsequent nesting season (Cairns 1982). The available information regarding the energetics of western snowy plovers is inadequate to assess the likelihood that such injury or mortality would result. In 1998, a pattern of increased chick loss over weekends (when increased human use of beach areas occurs) was observed by western snowy plover researchers at Point Reyes National Seashore. In response to this observation, a protocol for collecting data on chicks was standardized in 1999 and 2000. Chicks were observed on Fridays and then again on Mondays (or the day after a holiday). Chick loss over weekends was over 1.5 times the weekday loss. Data from 1999 and 2000 show almost identical trends (Page, pers. comm.).

Kites flown by people may be perceived by western snowy plovers as potential predators. The reaction of western snowy plovers to kites at Ocean Beach in San Francisco, California "ranged from increased vigilance while roosting in close proximity to the kite flying, to walking or running approximately 33 to 82 feet away and resting again while remaining alert" (Hatch 1997). Stunt kites may cause a greater response from western snowy plovers than traditional, more stationary kites. Stunt kites include the soaring-type, two-string kites with noisy, fluttering tails, and often exhibit rapid, erratic movements. Other kite-like instrument or sails, such as parachutes used to wind-surf or para-surf, can have the same adverse effect on western snowy

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plovers as kites, especially if parachutes are raised over the beach or in the surf near the shoreline.

Hoopes *et al.* (1992) found that piping plovers (*Charadrius melodus*), an east coast species that is behaviorally and ecologically similar to the western snowy plover, are very intolerant of kites. Compared to other human disturbances (*e.g.*, pedestrian, off-road vehicle, and pets), kites caused piping plovers to flush or move at a greater distance, to move the longest distance away, and to move away for the longest duration from the disturbance. Piping plovers responded to kites at an average distance of 279 feet, moved an average distance of over 328 feet, and responded for an average duration of 70 seconds.

Predator density is an important factor affecting the quality of western snowy plover nesting habitat (Stenzel *et al.* 1994). Predation can result in the loss of adults, chicks, or eggs; separation of chicks from adults is also caused by the presence of predators. Predation by both native and non-native species has been identified as a major factor limiting western snowy plover reproductive success at many Pacific coast sites. Non-native predators include eastern red foxes (*Vulpes vulpes regalis*), domestic and feral dogs (*Canis familiaris*), and Virginia opossums (*Didelphis marsupialis*). Coyotes, American crows, common ravens (*C. corax*), American kestrels, and several gull species (*Larus*) are native predators of the western snowy plover. Substantial evidence exists that human activities are affecting numbers and activity patterns of predators.

The need for increased management of Pacific coast western snowy plovers and their habitats is recognized in a population viability analysis conducted for the western snowy plover (Nur, *et al.* 1999). This analysis was conducted to aid the recovery team for the western snowy plover in developing recovery criteria. Its authors conclude that "Under status quo scenarios, even with intensive management in some areas, the population is almost certain to decline" and "ceasing current management practices including area closures, predator control, and predator exclosures would be disastrous for the Pacific coast population." The recovery team has also identified population growth as a prerequisite to the recovery of the species.

Gary Page of the Point Reyes Bird Observatory has identified several concepts important to the conservation of the western snowy plover:

1. The extent of their current range must be retained;
2. A target population size at which recovery would be achieved must be determined by evaluating current and historical numbers; and
3. Long-term reproductive success of 1.2 fledged chicks per breeding male is needed for population growth. If this growth rate is achieved, the metapopulation of western snowy plovers could increase to 3000 individuals within 25 years. With intense management and population growth, recovery is plausible (Nur *et al.* 1999).

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ENVIRONMENTAL BASELINE

The western snowy plover nests from March to September on approximately 12.5 miles of Vandenberg AFB's coastal sand beaches and adjacent dunes. Three geographically separate beach and dune complexes, informally named "South," "North," and "Purisima" Beaches, are recognized in annual monitoring reports.

All sandy beaches at Vandenberg AFB have been designated critical habitat for the western snowy plover. The area is cited in the final rule as providing both nesting and wintering habitat for western snowy plovers. Winter censuses have documented up to 486 western snowy plovers on Vandenberg AFB beaches (1994-1995 survey data). Observations of individuals, identifiable by color bands, at specific times of year indicate that Vandenberg AFB is used in the winter by western snowy plovers that breed elsewhere. A majority of the birds congregate on estuarine sand flats at the Santa Ynez River and San Antonio River (Read, pers. comm.).

Western snowy plovers nest on at least five different habitat types on Vandenberg AFB: bluff-backed beaches; wide open beaches with no low dunes; narrow beaches backed by bluffs with less wind; estuarine with low dunes; and dunes on top of coastal bluffs. An equal representation of all types of beaches are needed to adequately protect western snowy plovers because one particular habitat type can be critical to maintaining the species through randomly occurring natural events (Applegate, pers. comm.).

Since the first comprehensive surveys for western snowy plovers in western North America in the late 1970s, Vandenberg AFB has consistently held one of the largest concentrations of breeding western snowy plovers along the west coast of the United States (Page and Stenzel 1981, Page *et al.* 1991). Vandenberg AFB accounted for 242 of 1371 adult western snowy plovers on a 1991 breeding-season survey of the California coast and had the highest number of adults of any area in California in the 1991 survey (Page 2001). Although no coast-wide surveys were attempted between 1992 and 1994, Vandenberg AFB supported a mean number of 223 adult western snowy plovers during the 1994 breeding season, indicating continuing high numbers (Persons 1995). In 1995, a coalition of researchers counted western snowy plovers in mid-breeding season in California coastal areas covered on previous state-wide surveys. They tallied a total of 974 adults; the highest regional total, 213 birds, was again at Vandenberg AFB (Page 2001). Table 2 provides the data collected at Vandenberg AFB from 1994 to 2000.

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Table 2. Western snowy plover population size and number of nests at Vandenberg AFB (based on Applegate and Schultz (2001)).

Year	Mean Number of Plovers	Total Number of Nests	Total Number of Nests Hatched
1994	223	260	72
1995	211	223	84
1996	224	286	149
1997	238	411	77
1998	132	150	49
1999	78	104	52
2000	105	140	41

Vandenberg AFB provides one of the greatest opportunities for recovery of the western snowy plover throughout its range because it has consistently supported one of the largest concentrations of breeding individuals throughout the species' range, has the largest continuous mainland coastal habitat under Federal ownership, and is expected to be able to support 400 adult birds during the breeding season.

A substantial decline in the mean number of western snowy plovers nesting on Vandenberg AFB between 1997 and 1998 may initially be due to the El Niño conditions in 1997 and an off-shore oil spill that contaminated Vandenberg AFB beaches in late September and early October of 1997. However, while the range-wide population of the western snowy plover has decreased by 29 percent (1371 to 976) from 1991 to 2000, the population at Vandenberg AFB has declined by 56 percent from 242 adult birds in 1991 to 106 adult birds in 2000. Thus, the cause of the continued population decline in 1999 cannot be clearly tied to El Niño, other climatic conditions, or a stochastic event, such as an oil spill.

The hatch rate of western snowy plover nests at Vandenberg AFB has often been lower than rates reported from other locations (Page and Persons 1995)(See Table 1). In 2000, the base-wide hatch rate for known-fated nests was 32 percent. The hatch rate on the North Beaches was 47 percent, but only 28 percent on the South Beaches (Applegate and Schultz 2001) where more recreational use occurs. Hatch rates of around 85 percent were reported for western snowy plovers in southern Monterey County and a hatch rate of at least 60 percent should be achievable on Vandenberg AFB (Page, pers. comm.). However, because of the very high predation rate of nests in the past, an average of 37 percent annually, the predator management program is essential to gain the potential to achieve a hatch rate over 60 percent.

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The fledging rate of western snowy plover chicks at Vandenberg AFB has also been at the low end of the range historically compared to other coastal locations (Page and Persons 1995). Fledging rates remained low from 1995 to 2000. The fledging rate in 2000 was lower (31 percent) than in 1999 (53 percent), even though the number of western snowy plover adults on Vandenberg AFB was slightly higher in 2000 than in 1999. Beginning July 6, 1999, the Air Force invoked a beach-wide closure about 0.25 mile south of the Surf Station Beach access point on Surf Beach. For the remainder of that breeding season, beach visitors largely complied with the closure. After the closure, the fledging rate for chicks from nests located within the closed area was 69 percent while areas on Vandenberg AFB outside the closure had a 38 percent fledge rate (Applegate and Schultz 2000). In 1997, a study funded by the Air Force found a significantly higher fledging rate (44 percent higher) for those chicks that were banded on closed beaches versus those banded on partially closed beaches (linear restrictions, where the beach below the high tide line is open to recreation) (Persons 1998).

We cannot evaluate the productivity of western snowy plovers on Vandenberg AFB because we do not know the number of chicks fledged per adult male. However, with an estimated 34 chicks fledged in 2000 and a season high of 61 adult males, western snowy plovers on Vandenberg AFB beaches have not reproducing successfully enough to generate growth of the population.

The following human activities have occurred within western snowy plover nesting habitat on Vandenberg AFB: sitting; sunbathing; dragging driftwood; digging; storing personal belongings; walking; children playing; riding horses; riding bicycles and ATVs; walking dogs on and off leash; littering; urinating; defecating; and building driftwood structures. Direct impacts from these activities can result in the crushing or burying of nests, eggs, or chicks. Recreational use of Vandenberg AFB beaches is frequent and the number of visitors can be high during weekends and holidays. The accessibility of the beach by car contribute to the frequent use of these areas and the threat to western snowy plovers because the parking lots are only a short walking distance to the sand.

A common response of western snowy plover chicks to threat or disturbance is to stand or lie motionless on the sand. This behavior, combined with the cryptic coloration of western snowy plover chicks, can render avoidance difficult. Individuals untrained and unpracticed in detecting the chicks of this species, are unlikely to see and avoid stepping on western snowy plover chicks. As a result, western snowy plover chicks within areas open to recreational use could be crushed.

Three nests were known to be lost on South Beaches in 1999 directly due to human disturbance. However, up to 20 nest losses were due to unknown reasons; at least a portion of these losses could have been due to human disturbance. In addition, many more adults, chicks, and eggs were likely lost due to indirect effects of human activity.

Recreational use of beaches draws predators to the beach, where they search for food or waste left behind by people. A high correlation exists between human use of nesting habitat and predation on western snowy plovers. South Beaches receive the majority of human use while the

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6.6 miles of North Beaches (Minuteman, Shuman and San Antonio Beaches) are closed to human access. During the 2000 breeding season, 74 percent of all nests lost to predators were on South Beaches while North Beaches accounted for only 18 percent of nests lost to predators. Of the nests lost to predation on South Beaches, 20 were destroyed on Surf North, 24 were destroyed on Surf South, and 5 were destroyed on Wall Beach. More than twice as many nests (59 percent) were lost to predation on Surf North and South than hatched on those beaches (44 predated, 18 hatched). An equal number of nests were lost to predation and hatched on Wall Beach (5). The type of habitat found on North Beaches is substantially different from that found on South Beaches. The width of the beach, for example, may play a role in predation, as nests would be more concentrated on a narrow beach and easier for a predator to find. Regardless of differences in beaches, the correlation between human use and predation remains strong.

The high level of predation at Vandenberg AFB has proven to be a substantial threat to western snowy plovers at this site. Predation has been predominately by coyotes. Sixty-six nests were known to have been lost to predators in 2000 (Applegate and Schultz 2001). Coyotes destroyed at least 34 nests (52 percent). American crows were the only other documented predators in 2000, destroying six nests (9 percent). An unidentified avian predator destroyed 1 nest and another 25 nests (38 percent) were lost to unidentified predators. Seventy-nine percent of the nests lost to coyotes occurred on South Beaches, which were open to recreational access. Even though coyote tracks were abundant throughout the North Beaches only 5 nests (15 percent) were lost to coyotes in these areas. In addition, five of the six nests (83 percent) lost to crows were on South Beaches (Applegate and Schultz 2001).

For the past several years, the Air Force has not attempted to control mammalian predators to protect western snowy plovers. Over past 7 years, at least 247 nests have been lost to coyotes at Vandenberg AFB, the Air Force has removed one coyote to protect western snowy plovers during this time. An additional 153 nests were lost to unidentified predators and 94 nests were lost to American crows. The Air Force has selectively removed crows to protect breeding western snowy plovers. These three groups account for 93 percent of all nests known to have been lost to predation. Because coyotes destroyed at least 46 percent of all nests lost to predation over this period, they likely destroyed a large number of the nests that were lost to unidentified predators.

American kestrels and other predatory birds are known to have a potentially devastating effect on nesting shorebirds, including western snowy plovers. These avian predators can take large numbers of chicks, often without detection by land managers, and dramatically reduce the fledging rate for an area. The Air Force has captured and relocated avian predators to protect breeding California least terns (*Sterna antillarum brownii*) with beneficial results.

Fishermen allowed access to specific areas of Vandenberg AFB's coast have been documented to violate closures and other beach restrictions, most notably the litter law (Applegate and Shultz 2000). Fishermen have been found to use western snowy plover nesting habitat as a toilet area

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and to leave bait and fish remains on the beach. These activities attract predators to the beach that may prey on western snowy plovers.

In past years, closed beaches on Vandenberg AFB have not truly been closed to recreational use. Over the past 5 years, monitoring of nesting habitat has shown that the public does not comply with beach closures. During last year's breeding season, Air Force enforcement personnel documented 194 violations. These violations included 176 people trespassing into closed areas and 18 people violating the leash law by allowing their dogs to run free on the beach. Given the low level of enforcement in 2000 (a minimum of five hours per day to patrol all three open beach access areas), many other violations likely went unwitnessed by Air Force enforcement personnel.

Air Force enforcement personnel reported 18 violations of their leash law in western snowy plover breeding habitat during the 2000 breeding season. Dogs on and off leashes cause breeding western snowy plovers to flush off their nests when approached. Dogs off leash will often chase shorebirds, including western snowy plovers. This can flush birds off nests, separate adults and broods, crush eggs and chicks, kill individual birds, preclude foraging activities, and result in an increase energy expenditure by western snowy plovers.

Western snowy plovers are known to roost and forage at the Santa Ynez River mouth on Vandenberg AFB in large numbers during the winter (Read, pers. comm.). The Santa Ynez River mouth is considered one of the best wintering habitat areas on Vandenberg AFB. Winter storms, low temperatures, and possibly reduced food resources combine to make winters physiologically stressful to the western snowy plover. Consequently, suitable wintering habitat is essential to the survival of the subspecies in an area. However, the Santa Ynez River mouth has received constant recreational traffic funneled under the rail road tracks along the water's edge (Page, pers. comm.). People walking or jogging, with or without dogs, and sun-bathing adjacent to the estuary can disturb wintering western snowy plovers, causing them to leave preferred roosting and foraging areas and possibly displace other western snowy plovers (Page *et al.* 1995). Any human and dog activity within sight of western snowy plovers could result in a disturbance response (Lafferty 2000).

EFFECTS OF THE ACTION

Human Disturbance

Human activity is believed to be a key factor in the ongoing decline in western snowy plover coastal breeding sites and breeding populations (Air Force 2000). Western snowy plovers have been found to be disturbed more than twice as often by human activities than by all other natural causes combined (Page *et al.* 1977). The effects of human activities, most of which are associated with recreation, have occurred within nesting habitat of western snowy plovers on Vandenberg AFB and have been summarized above in the previous two sections of this opinion.

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The Air Force's proposal to limit public and military use of western snowy plover nesting habitat should increase the rate of nest survival and decrease impacts on brood rearing and foraging activities in the proposed closed areas on beaches at Vandenberg AFB. Such positive results were found during the period of full closure of South Surf Beach after July 6, 1999. Western snowy plovers that hatched and were reared in the closure had the highest fledging rate on the base (Applegate and Schultz 2000). In addition, a comparison study of beaches that received linear restrictions and beaches that were fully closed between 1994 and 1997 showed similar results of significantly higher reproductive success on closed beaches (Persons 1998).

The three open areas will have no protective measures in place for western snowy plovers. In these areas, adverse effects could result in both direct and indirect injury and mortality of western snowy plover adults, chicks and eggs. We expect that most, if not all, nests in these areas would be lost either directly or indirectly due to the recreational use.

The approximately 0.5 mile of Surf Beach that will be open for beach use, with access through Surf Station, has supported lower numbers of nesting western snowy plovers than any location on Surf Beach, although the habitat is comparable to the dune-backed beach to the north. Nest totals in this area from 1994 to 2000 have ranged from a low of zero in 1998 to 8 in 1994 (0 to 3 percent of all western snowy plover nests on Vandenberg AFB).

The northernmost 0.25 mile of Wall Beach that will be open to military only access has supported even lower numbers of nesting western snowy plovers. Nest totals in this area from 1994 to 2000 have ranged from a low of zero in 1995, 1996 and 2000 to a high of 3 in 1998 (0 to 2 percent of all western snowy plover nests on Vandenberg AFB).

Military access will be provided to the northernmost 0.5 mile of Minuteman Beach. Since intensive nesting season monitoring began in 1994, this section of beach has received little or no use by nesting western snowy plovers. Thus, mortality of western snowy plovers in this area is unlikely based upon historical use by the birds.

Nest numbers in the areas proposed for access are shown in Table 3. Available data on hatching success in these areas are shown in Table 4.

Table 3. Western Snowy Plover Nests by Year on Areas Proposed for Recreational Beach Access

Location	Year							Range
	1994	1995	1996	1997	1998	1999	2000	
North Wall 0.25 mile	1	0	0	1	3	1	0	1-3 (0-2% of all nests)
North Surf 0.5 mile	8	5	2	6	0	3	3	0-8 (0-3% of all nests)
North Minuteman 0.5 mile	0	0	0	0	0	0	0	0 (0%)
TOTAL	9	5	2	7	3	4	3	2-9
% of All Nests	3%	2%	1%	2%	2%	4%	2%	1-4%

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Table 4. Historical Hatching Success on Areas Proposed to be Open to Recreation, 1995-2000*

Year	Wall Beach North 0.25 Mile*			Wall Beach Total 1.1 mile			Surf Station 0.5 Mile*			Surf Beach Total 3.7 Miles		
	No. Nests	No. Hatched	%	No. Nests	No. Hatched	%	No. Nests	No. Hatched	%	No. Nests	No. Hatched	%
1995	0	0	NA	27	14	52	5	3	60	61	23	38
1996	0	0	NA	32	21	66	2	0	0	95	37	39
1997	1	0	0	36	7	19	6	0	0	172	16	9
1998	3	1	33	31	10	32	0	0	NA	38	9	24
1999	1	0	0	16	4	25	3	3	100	44	16	36
2000	0	0		16	5	31	3	0	0	71	18	25

** 1994 not included because data not yet available on Vandenberg's GIS database. Minuteman Beach not included due to lack of nesting activity. Distances for proposed open areas are approximate.

Use of ATVs for emergency use on Vandenberg AFB beaches could adversely affect western snowy plovers through disturbance and direct injury or mortality. Furthermore, western snowy plover chicks may also become trapped in tire tracks which could reduce their opportunity to escape threats (Melvin *et al.* 1994). Medical emergencies on Vandenberg AFB beaches have been rare.

People recreating on Vandenberg AFB's beaches occasionally drag driftwood around the beach and build structures from this material (Applegate and Schultz 2000). Driftwood provides cover for chicks and the invertebrate prey of the western snowy plover often concentrates around it. Driftwood in the vicinity of the wrack line probably is more attractive to invertebrates because of the moisture associated with the more mesic sand. Dragging driftwood from the wrack line is likely to reduce the concentration of invertebrates and cause western snowy plovers to spend more time and energy foraging. The structures often built out of driftwood can serve as hunting perches for avian predators of western snowy plovers.

Walking, jogging, horseback riding, and other recreational activities within nesting habitat destroys cover and shelter sites through trampling. Additionally, normal behavior associated with feeding and breeding can be repeatedly disrupted by humans recreating in nesting habitat of the western snowy plover. The Air Force's proposed action would provide western snowy plovers with 11.25 miles of undisturbed habitat to support breeding, nesting, foraging, roosting, and rearing young in areas closed to recreational access.

Activities on the three open beach access areas will adversely affect critical habitat by the direct physical alteration of the constituent elements associated with recreational impacts associated with human disturbance, promotion of unnatural rates or sources of predation from both human generated litter and human disturbance, and installation and maintenance of closure fences.

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Enforcement of Restrictions

Impacts associated with human disturbance can also occur in the closed beach areas if people trespass. In the past, the Air Force has posted restrictions, yet security has not always been able to enforce the closures before impacts to listed species have occurred. Last year, the Air Force dedicated a minimum of five hours per day to enforcement of beach access restrictions for all Vandenberg AFB beaches. With the dedication of one enforcement person at Surf Beach, another at Ocean Park, and a third patrolling both Wall and Minuteman Beaches during all daylight hours, the amount of time it would take to respond to people violating the closure would be greatly reduced and impacts to the western snowy plover from trespassers should be minimized. Furthermore, people should be less likely to violate the closures with the constant presence of enforcement personnel at Surf Beach, the area with the highest number of violations during the 2000 breeding season. The issuance of citations to violators of beach access rules on all three open beaches should also provide a deterrent to people who might violate the rules. The installation of an educational kiosk at Surf Beach with information about the western snowy plover and beach restrictions, the distribution of educational brochures to the public, and bilingual signs should help to further reduce violations of the beach access rules. In addition, with the proposed cap on the number of violations in any beach area, after the prescribed number of violations are recorded, the beach will be closed to all recreational access, further limiting the potential for mortality of western snowy plovers in closed areas and reduced reproductive success.

The Air Force has proposed to install boundary fencing and signs that clearly indicate which areas are closed to beach recreation. Impacts to breeding western snowy plovers are not expected from the installation of fencing because it will occur prior to the start of the breeding season.

Both fences and signs delineating closed areas can provide perches that predatory birds could use when preying on western snowy plovers. Consequently, constructing fences and signs in breeding habitat may increase avian predation on western snowy plovers. However, the Air Force will install Nixalite® or other appropriate material to deter perching to lessen the adverse effect of fencing and signs, where practicable, minimizing this threat to western snowy plovers.

Maintenance of the fencing and signs would likely be needed during the breeding season. This maintenance activity could potentially disturb nesting western snowy plovers or destroy nests, eggs, or chicks in the immediate vicinity of the work site. The Air Force proposes to coordinate all fence and sign maintenance activities with the biological monitors to reduce potential impacts to breeding western snowy plovers.

Enforcement activities associated with patrols by security personnel could potentially affect western snowy plovers by walking or riding horses in the closed areas. The security personnel would ride horses in the wet sand to the maximum extent practicable and no more than four security personnel are likely to be in the closed areas at any one time. When conducting investigations of a violation, security personnel would be escorted by the biological monitors, when needed, to avoid unnecessarily affecting western snowy plovers. When unauthorized

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individuals enter closed areas, security personnel would follow the trespasser into closed areas to remove and cite the individual. Security personnel would minimize any disturbance to breeding western snowy plovers by staying out of nesting habitat whenever possible. Thus, the impact to western snowy plovers from enforcement activities is considered minimal or avoidable.

The presence of law enforcement personnel will likely have similar effects on critical habitat of the western snowy plover as would that of recreational users. However, the magnitude and frequency of these effects would be substantially less because the number of enforcement personnel will be much less than that of the recreational users, they will stay on wet sand whenever practicable, and they will be educated on the presence of the western snowy plover. In addition, an increased presence of law enforcement personnel over that dedicated to beach management in the past would likely reduce the number of incidents in which recreational users degrade the constituent elements of critical habitat in the closed areas. Consequently, the enforcement program should preserve the value of critical habitat at Vandenberg AFB.

Predator Management

As described in the Status of the Species and Environmental Baseline sections of this biological opinion, predation is a substantial threat to western snowy plovers on Vandenberg AFB. Predation causes abandonment of nests when breeding adults are lost; additionally, broods would likely be lost if the chicks were not close to fledging when the adult was captured by a predator. Unsuccessful attempts to prey on western snowy plovers can result in injury to the bird and a subsequent inability to incubate eggs or care for chicks, separation of adults and chicks, and excessive energy demands resulting in the abandonment of the nest (Warriner *et al.* 1986).

An effective predator management plan would likely result in an increase in nesting and fledging success, as has been evident elsewhere. For example, in Monterey Bay, trapping the non-native red fox and non-lethal removal of avian predators during the 2000 breeding season helped account for a dramatic increase in the number of nests hatched (86 percent) and chicks fledged (40 percent) (Page, pers. comm.).

The Air Force and the Service are working cooperatively to develop a predator management plan that will reduce the high rate of predation on breeding western snowy plovers, eggs, and chicks at Vandenberg AFB. The predator management plan will include selective lethal removal of coyotes that are suspected to be preying western snowy plovers and an avian component that will include selective capture and relocation of individuals documented to have preyed on western snowy plovers. The predator management plan will recognize that some level of predation by native predators is part of a healthy, dynamic environment. The goal of predator management is to reduce predation to a level that would allow western snowy plovers on Vandenberg AFB to contribute to the recovery of the species.

Implementation of a predator management plan may have short-term adverse effects on western snowy plover critical habitat by potential disturbance of breeding, feeding, and sheltering of

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western snowy plover by people conducting predator control walking in western snowy plover habitat areas. However, the predator management plan will have measures to reduce adverse affects to western snowy plovers during predator management activities and the long-term effects are expected to increase the value of critical habitat for western snowy plovers.

Beach Restoration

The Air Force has also proposed to remove non-native vegetation from areas within potential nesting habitat of the western snowy plover. We support this effort as a component of a general recovery strategy and agree that removal of these exotic plants, in itself, would enhance the value of western snowy plover critical habitat. We recognize that it would take many years before exotic plants could be eliminated from critical habitat areas and western snowy plovers may never move into these areas for nesting. Implementation of the restoration program may cause some short-term degradation of the constituent elements of critical habitat by disturbance from either human or mechanical activity to western snowy plovers. However, in the long-term, improving western snowy plover critical habitat by removing exotic plants and restoring the area with native species may lead to higher productivity on Vandenberg AFB and eventually allow for relaxed restrictions on some Vandenberg AFB beaches.

Removal of exotic vegetation by either use of herbicides or mechanical methods during the breeding season would likely have adverse effects on breeding western snowy plovers. Birds nesting near these activities may flush from nests and could be kept off their nests so long that the nests fail. Heavy equipment could crush nests and chicks or separate adults from broods. If these activities are only done in the non-breeding season, effects to western snowy plovers would be greatly reduced. However, disturbance to both open beach and vegetated dunes could destabilize the beach and dunes resulting in increased sand movement, which could substantially alter the beach and nesting activity.

The use of herbicides in western snowy plover breeding and wintering habitat could have as yet unknown adverse effects on western snowy plovers. The Air Force has proposed to provide the Service with a draft restoration plan by August 1, 2001. We anticipate working cooperatively with the Air Force will result in a restoration plan that will benefit the western snowy plover and have few, if any, adverse effects.

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. Because the Air Force manages the land within the action area, we do not anticipate that any non-federal actions are reasonably certain to occur.

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CONCLUSION

After reviewing the current status of the western snowy plover, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that implementation of the Air Force's beach management plan is not likely to jeopardize the continued existence of this species nor destroy or adversely modify its critical habitat. We find that the proposed action is not likely to jeopardize the continued existence of the western snowy plover nor destroy or adversely modify its critical habitat because:

1. Implementation of the proposed action will strengthen management actions at Vandenberg AFB needed to protect the western snowy plover. As a direct result of these management actions, nesting success and fledging success are expected to increase substantially in the areas closed to recreational access;
2. The three areas proposed open for beach recreation have historically only supported between zero to three percent of all western snowy plover nests at Vandenberg;
3. The constituent elements of critical habitat within 90% of the habitat of the western snowy plover at Vandenberg AFB would not be adversely affected by recreational use; and
4. The Air Force's proposal to restore degraded habitat and commitment to develop a sound predator management plan are likely to improve the status of the western snowy plover and increase the value of its critical habitat at Vandenberg AFB.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations promulgated pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by the Air Force for the exemption in section 7(o)(2) to apply. The Air Force has a continuing duty to regulate the

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activity covered by this incidental take statement. If the Air Force fails to assume and implement the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Air Force must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(1)(3)].

Western snowy plovers are small, cryptically-colored birds that are difficult to detect, except when they move. Finding dead or injured individuals is difficult. The patterns of seasonal presence of this species are complex. Breeding individuals and their young are present in spring and summer; migratory or wintering individuals augment the resident population in fall and winter. Changes in numbers of western snowy plovers at Vandenberg AFB can be attributed to several factors, not solely to the activities at Vandenberg AFB, although instances of take (e.g., resulting from humans and ATVs) have been observed or inferred from monitoring. Determining whether a nesting effort succeeded or failed is difficult; ascribing a reason for the failure of a nest when it does occur is also often difficult. Consequently, anticipating the precise number of western snowy plovers that may be taken as a result of the Air Force's beach management program in any given year is not possible. As should be expected, we are also unable to anticipate the precise number of western snowy plovers that may be taken over the course of several years of beach management.

Beaches open to recreational use

We anticipate that the Air Force's beach management program is likely to result in the take of all nesting western snowy plovers in the open access areas through harassment, harm, or mortality as a result of humans crushing chicks, nests, and eggs; causing individuals to flush; disrupting foraging behavior; causing adults to abandon nests; increasing the likelihood of predation and exposure to adverse weather conditions; and altering habitat features necessary for successful breeding and foraging. The greatest number of nests that has been recorded in any year since 1994 in the combined 1.25 miles of Surf, Wall, and Minuteman Beaches open to recreational access is 11.

Beaches closed to recreational use

We anticipate that maintenance of signs and fencing during the breeding season may result in harassment of western snowy plovers near these structures. We are unable to estimate the number of individuals that may be harassed because we cannot predict the frequency or extent of maintenance that will be required or the number of western snowy plovers that may nest or attempt to raise broods in the vicinity of these structures. However, given the fairly limited area where signs and fencing are located, we anticipate that few western snowy plovers would likely be taken through harassment associated with this activity.

We anticipate that enforcement activities on both closed and open beaches may result in mortality or injury of western snowy plovers. Enforcement personnel either on foot or horseback would stay on the wet sand, when practicable, where western snowy plovers do

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not nest. For this reason, we anticipate that few western snowy plovers would likely be killed or injured as a result of enforcement activities.

We anticipate that implementation of a Service-approved predator management plan may result in mortality or injury of western snowy plovers on both open and closed beaches. Capture and removal or lethal removal of individual problem predators may result in loss of nests and chicks from crushing by people implementing predator management and abandonment of nests associated with removal of predators. However, implementation of the approved plan by wildlife professionals will likely limit injury or mortality to few, if any, western snowy plovers.

The take of any western snowy plovers by recreational beach users in the areas closed to beach recreation as a result of non-compliance with beach access restrictions is not exempted from the prohibitions against take contained in section 9 of the Act because these actions are in violation of posted or stated prohibitions on Vandenberg AFB. Any take resulting from these activities may be considered a violation of section 9 of the Act.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the western snowy plover:

1. An education program shall be implemented for all base personnel likely to use base beaches, including outside contractors and visitors who may use beaches for recreation, to improve awareness of the western snowy plover on Vandenberg AFB and the protective measures that are being implemented to conserve it.
2. The Air Force shall limit, to the maximum extent practicable, the adverse effects of recreational access in open areas.
3. The Air Force shall monitor breeding western snowy plovers to determine effectiveness of the beach access restrictions.

The Service's evaluation of the effects of the proposed actions includes consideration of the measures developed by the Air Force, and repeated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects of ongoing actions to the western snowy plover. Any subsequent changes in the minimization measures proposed by the Air Force may constitute a modification of the proposed action and may warrant re-initiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that were proposed by the Air Force as part of the proposed action.

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TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Air Force must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure 1:
 - a. The Air Force shall provide its educational program described in this biological opinion to all base personnel and contractors who may use beaches for recreation.
 - b. Copies of information developed to satisfy term and condition 1.a. shall be provided to the Service's Ventura Fish and Wildlife Office by April 1, 2001.
 - c. The Air Force shall develop signs that clearly describe the reasons for the closure, the biological needs of the western snowy plover, all beach access restrictions, and penalties for violating beach access restrictions. The Air Force shall ensure that bilingual (English/Spanish) signs containing this information are posted in areas clearly visible to beach users at all beach access points.
 - d. Information on the adverse effects of feeding wildlife, particularly coyotes, and littering shall be incorporated as part of the Air Force's educational program for beach users. Prohibitions on feeding wildlife shall be included as part of the beach access rules.
 - e. Any information provided to beach users shall clearly state that violators will be cited and that recreational access will be terminated if the number of violations exceeds specified limits.
2. The following terms and conditions implement reasonable and prudent measure 2:
 - a. Trash containers placed for use by beach users shall have permanent lids that will prevent animals from gaining access to the contents of the trash containers. Trash containers shall be emptied and clean as needed to minimize attracting predators.
 - b. Para-surfing, or use of any parachute-like sail used to sail on the ocean in a manner similar to wind-surfing, shall not be allowed to originate from any Vandenberg AFB beach during the western snowy plover breeding season.
 - c. The Air Force shall contact the Service immediately if two or more nests are found in any open beach area to determine if a protection strategy is necessary. The Air

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Force shall take additional measures to protect nests if, during discussions with the Service, we deem these measures necessary and appropriate.

3. The following terms and conditions implement reasonable and prudent measure 3:
 - a. All nesting activity of western snowy plovers on Vandenberg AFB shall be monitored throughout the breeding season (March 1 to September 30). This monitoring shall be conducted by biologists specifically approved by the Service for monitoring at Vandenberg AFB and shall be performed in a manner consistent with the monitoring effort conducted over the past several years. The Air Force shall submit the credentials of individuals it wishes to conduct these activities to the Service for our review and approval at least 15 days prior to the onset of these activities.
 - b. A monitoring plan shall be submitted to the Service for our approval within 30 days of issuance of this biological opinion. Any proposal to alter monitoring methodology or data collected shall be subject to the review and approval of the Service.

REPORTING REQUIREMENT

The Air Force shall provide the following reports to the Service:

1. An annual report for each western snowy plover breeding season for which this biological opinion is in effect, per the terms and conditions described above. The report shall document the number of western snowy plovers killed or injured by the activities evaluated in this biological opinion. The report shall also contain a discussion of activities that disturbed nesting birds; the results of biological surveys and sighting records; and any other pertinent information as required by this biological opinion. The report shall follow the format and include at a minimum the same type of data as the 2000 breeding season report, unless otherwise approved by the Service. In addition, the report shall document compliance with all of the protective measures being implemented to conserve western snowy plovers and recommendations to better protect western snowy plovers on Vandenberg AFB. This document will assist the Service and the Air Force in evaluating future measures for the conservation of the western snowy plover at Vandenberg AFB. The annual reports are due December 31 of each year this biological opinion is in effect.
2. An annual report on wintering western snowy plovers at Vandenberg AFB. This report shall include, at a minimum, results of winter surveys, effectiveness of the winter closure at the Santa Ynez River mouth, recommendations to better protect wintering western snowy plovers at Vandenberg AFB, and any other pertinent information that may be useful in protecting wintering western snowy plover.

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3. A written report from the base security personnel shall be provided to the Service at least monthly. This report shall document the hours spent in the field monitoring beach access restrictions and the following per violation: 1) day, time, and location of the violation; 2) description of the violation; 3) potential impacts to western snowy plovers; 4) action taken (citation, removal from base, etc.); 5) name of the individual cited and affiliation with the Air Force (military personnel, contractor, or not affiliated); 6) the city where the individual resides; 7) a copy of the citation; and 8) evidence that violations occurred (*i.e.*, photographs, written description of footprints) that did not result in a citation or suspected violations that were not counted as a violation. In March and April of each year, weekly notification shall be made to the Service. These weekly reports shall document the total number of violations verified for each beach segment. The Air Force shall keep the Service informed if the number of violations is approaching the maximum allowed for each beach segment and shall notify the Service within one business day if the maximum number of violations is reached or exceeded. Notification or reporting requirements may be modified if agreed to by the Air Force and the Service.
4. A report shall be provided to the Service by April 15 of each year describing the areas where fencing has been installed and where fencing and signs have been fitted with Nixalite® or other appropriate material.

DISPOSITION OF INJURED OR DEAD SPECIMENS

Upon locating a dead or injured western snowy plover, initial notification must be made to the Service's Division of Law Enforcement by facsimile at (310) 328-6399 and the Ventura Fish and Wildlife Office at (805) 644-3958 immediately, and in writing within three (3) working days. Notification must include the date, time, and location of the carcass; cause of death, if known; and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. The finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed, unless to remove it from the path of further harm or destruction. Should any treated listed species survive, the Service should be contacted regarding the final disposition of the animals.

The remains shall be placed with the Santa Barbara Natural History Museum, Vertebrate Zoology Department (Contact: Paul Collins, Santa Barbara Natural History Museum, Vertebrate Zoology Department, 2559 Puesta Del Sol, Santa Barbara, California 93105, (805-682-4711 ext.321), unless otherwise agreed to by the Service. Arrangements regarding proper disposition of potential museum specimens shall be made with the Santa Barbara Natural History Museum by the project monitor prior to implementation of the action.

In the case of take or suspected take of western snowy plovers not exempted in this biological opinion, the Ventura Fish and Wildlife Field Office and the Division of Law Enforcement shall be notified within 24 hours.

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CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use 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.

The Air Force should attempt to work with the Santa Barbara County Department of Parks and Recreation to ensure trash at Ocean Beach County Park is managed to prevent foraging by wildlife known to predate on western snowy plovers.

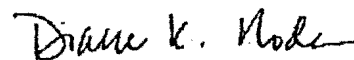
The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the Air Force's proposed management plan for the western snowy plover on Vandenberg AFB. 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. More specifically, the Air Force shall reinitiate consultation with the Service if enforcement levels prove to be inadequate in preventing a substantial number of beach closure violations. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your interest in and efforts to protect western snowy plovers on Vandenberg AFB. We look forward to working with the Air Force on the implementation of this beach management plan and assisting you in your efforts to provide for the recovery of the western snowy plover. If you have any questions regarding this biological opinion, please contact Steve Henry of my staff at (805) 644-1766.

Sincerely,



Diane K. Noda
Field Supervisor

Enclosures

**Figure 1. Vandenberg Air Force Base
Beaches & Landmarks**

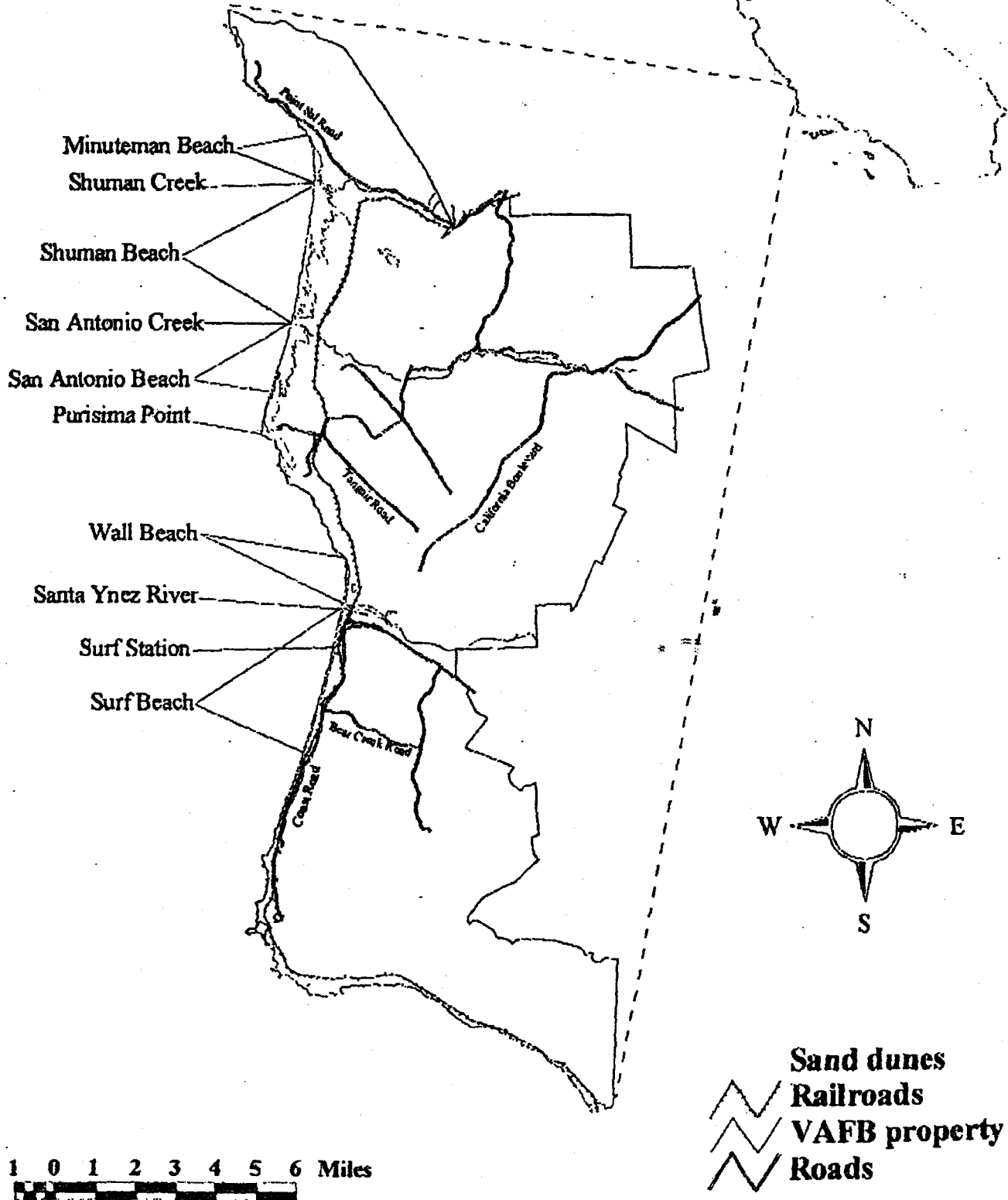


Figure 2. Diagram of the Proposed Action

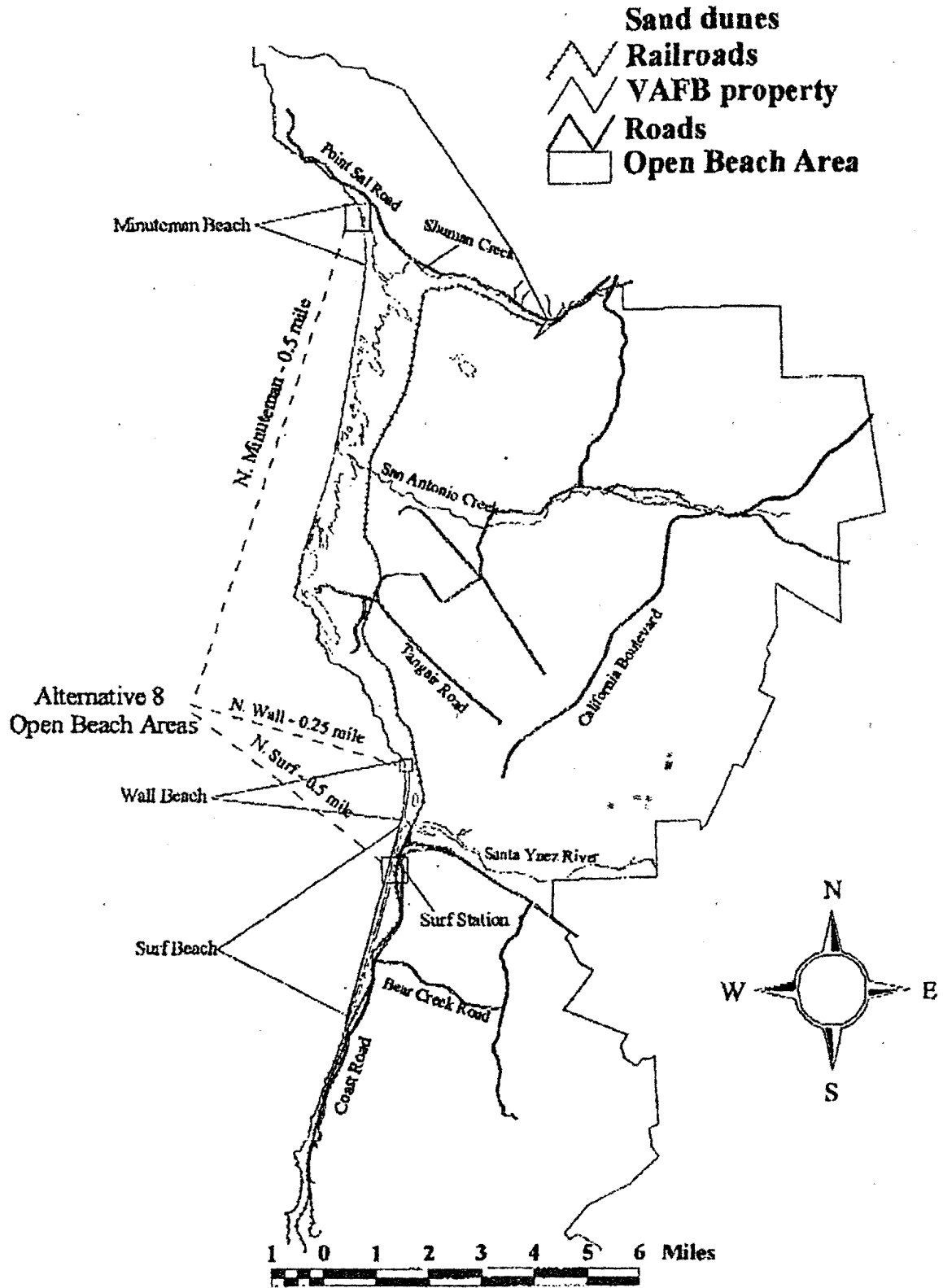
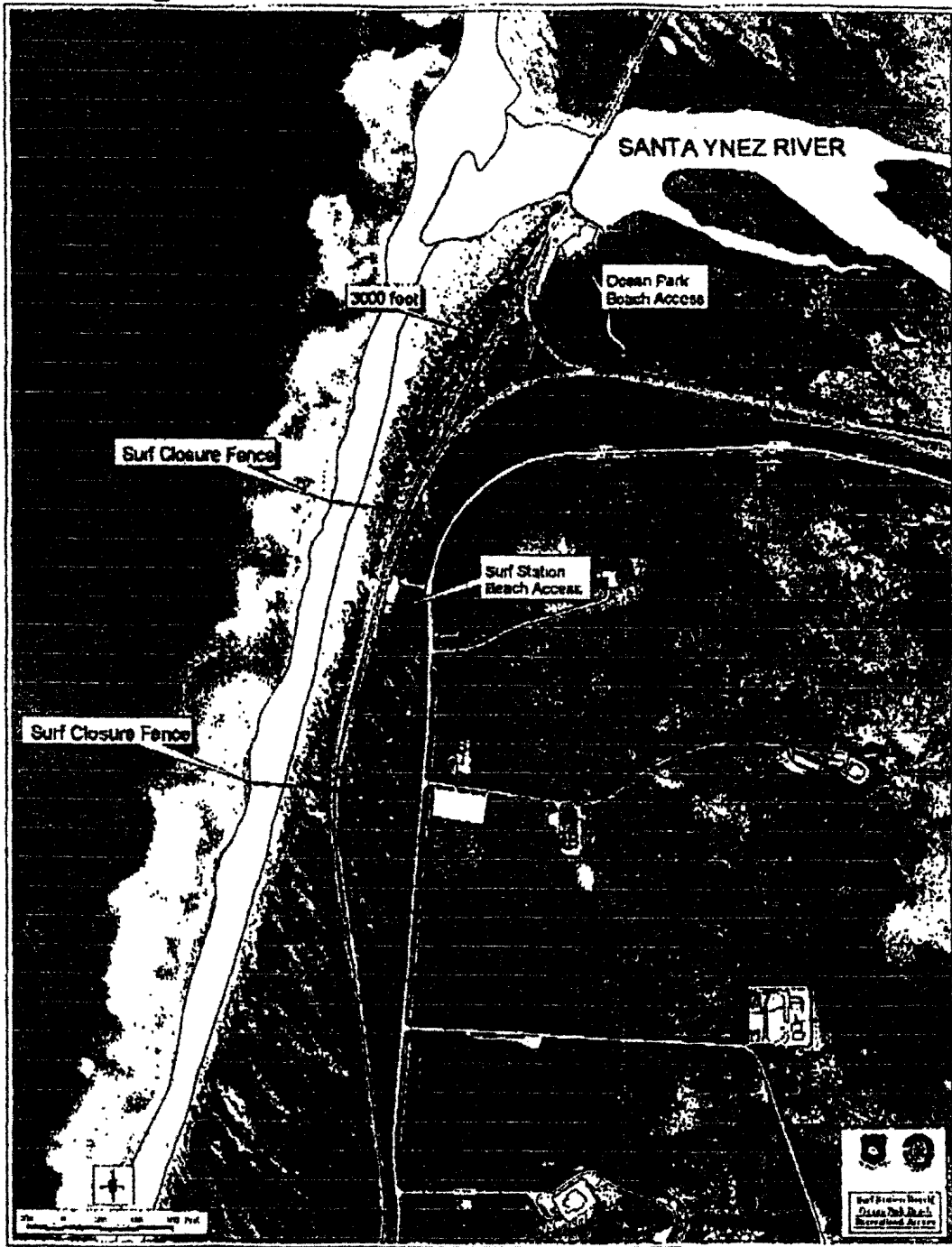


Figure 3



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March 3, 2001

James Raives
Federal Consistency Coordinator
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

James,

I have been involved since Vandenberg's first beach closures were announced, I have been involved in the issues of public access to local beaches and protection for the Western Snowy Plover. It's my belief that environmental extremism and gross negligence committed by Federal Agencies has resulted in ineffective and wasteful management policies that threaten Western Snowy Plover recovery. Since 1993, the Air Force has collected data on the fate of Western Snowy Plovers. The data is very clear as to the level of impact each item has on Western Snowy Plover success. In spite of this data, Federal Agencies have focused their resources almost exclusively on blaming and controlling humans, and have frequently made deceitful use of statistics to improperly justify their heavy-handed actions. This inappropriate behavior has resulted in the harm and harassment of humans while wasting tremendous resources on issues that are insignificant to the recovery of the Western Snowy Plover. The following table identifies the fate of all nests from 1994-1999 and shows that humans are responsible for only a small fraction (0.6%) of nest losses.

Snowy Plover Nest Fate 1994-1999								
Nest Fate	1994	1995	1996	1997	1998	1999	Total Nests	Percent of Nests
Hatch	72	84	149	77	49	52	483	33.7%
Destroyed Predator	82	41	55	206	63	20	467	32.6%
Destroyed Unknown	53	39	27	89	9	5	222	15.5%
Unknown	29	28	15	13	16	7	108	7.5%
Destroyed Surf & Wind	17	24	35	17	5	9	107	7.5%
Abandoned	6	7	3	8	6	8	38	2.6%
Destroyed Human	1	0	2	1	2	3	9	0.6%
Total Nests	260	223	286	411	150	104	1434	100.0%

For monitoring purposes, Vandenberg's Western Snowy Plover nesting areas have been divided into three beach segments known as North Beach, Purisima Beach, and South Beach. Each beach segment is further subdivided into sectors.

The following are composite images made from 1994 NOAA photographs of the North Beach, Purisima Beach, and South Beach areas of Vandenberg. Purisima North and Purisima Colony sectors are areas where nest success rates have been high and fledgling success rates have been low. Fledgling Success data collection on the Purisima sectors was stopped after 1997, but Nest Success data collection continued.

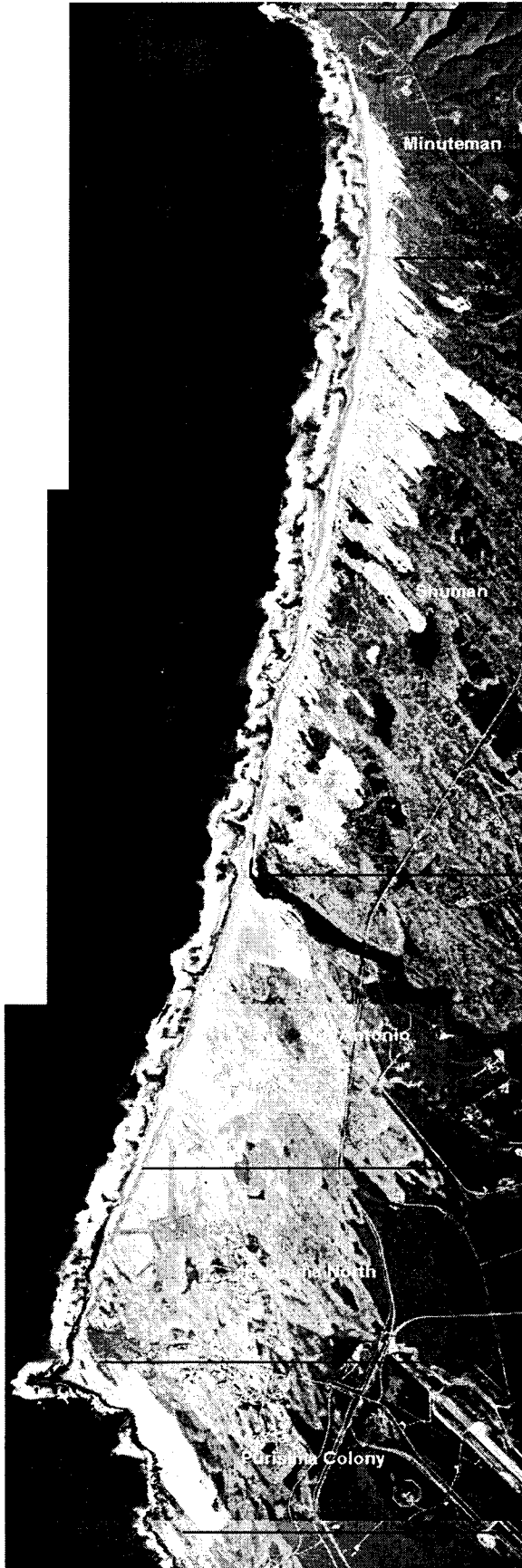
EXHIBIT NO. 6

1

APPLICATION NO. CD-23-01

7 Pages

 California Coastal Commission



North Beach

North Beach sectors include Minuteman, Shuman and San Antonio.

Shuman and San Antonio sectors provide Vandenberg's best Western Snowy Plover habitat. According to Vandenberg's 1994 Snowy Plover Monitoring Report "the two most important areas for Snowy Plovers (Shuman and San Antonio) are completely closed to humans".

Differences in quality of habitat are ignored in Vandenberg's 1993-1999 Western Snowy Plover Monitoring Reports when comparing Western Snowy Plover success rates on recreational use versus non-recreational use beaches. Monitoring personnel regularly use selective statistics to support anti-human theories and consistently overlook facts that support human beach access.

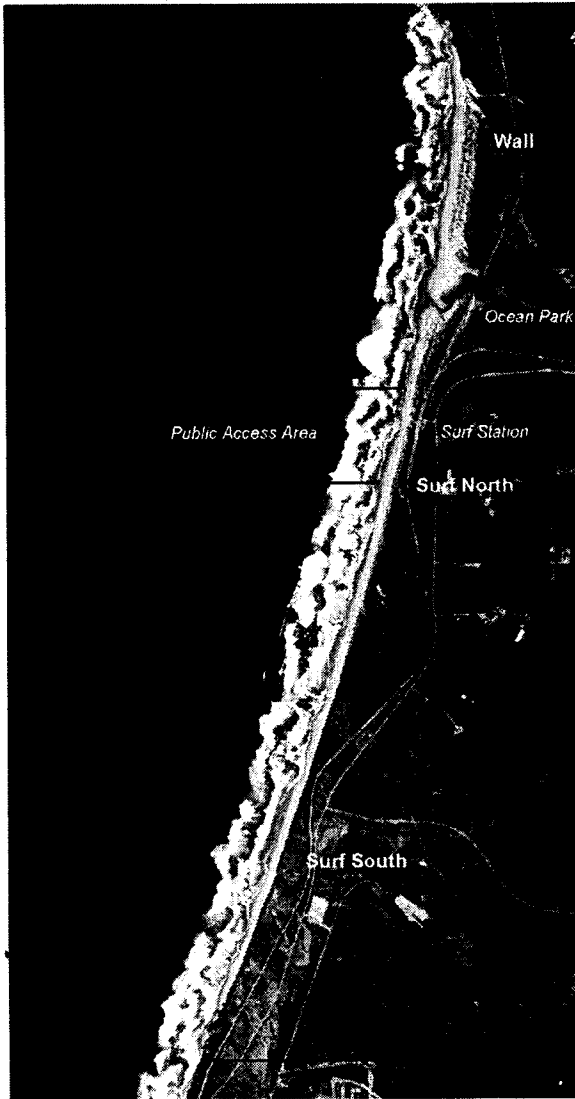
Anti-human bias has been a key element in the Western Snowy Plover's decline. Focusing on the "human problem" instead of the primary factors responsible for the Western Snowy Plover's population decline has diverted resources away from addressing the real problems and wasted valuable time. Beach management recommendations presented in 1993 - 1999 monitoring reports focus almost exclusively on controlling and punishing humans.

Purisima Beach

Purisima Beach sectors include Purisima North and Purisima Colony.

Through 1999, limited fishing was allowed on portions of Purisima North. Even though it's partially open, Purisima North has the second highest nest success rate among all the sectors

Predator control and fencing are used on Purisima Colony to protect the Least Tern colony. Predator control measures have resulted in a tremendous improvement in Nest Success rates. From 1994-1999, only 7.7% of Purisima Beach nests were destroyed by predators compared to 33.2% for North Beach and 31.3% for South Beach.



South Beach

South Beach sectors include Wall, Surf North, and Surf South.

To gain California Coastal Commission support for closure of Vandenberg's beaches, Snowy Plover success rate comparisons were made between North Beach sectors that are closed to recreational use (Shuman and San Antonio) and South Beach sectors that are open to recreational use (Wall, Surf North and Surf South). These photographs demonstrate the dramatic advantage the wide open North Beach habitat provides for Snowy Plover success when compared to South Beach.

South Beach includes much narrower beaches than North Beach or Purisima Beach. Extensive non-native vegetation was planted in the early 1900's to protect the railroad from blowing sand. On Surf North and Surf South, the Santa Ynez mountains collide with the Pacific Ocean, creating narrow beaches bounded by high-backed dunes or bluffs that result in many nests being swept away by tides and provide a narrow corridor for predators to hunt Snowy Plovers.

Nest success rate data indicates that habitat quality and protection from predators are the most important factors for nest success on Vandenberg. I estimate that over 80% of human activity occurs on Surf North. If human disturbance was responsible for lower nest success rates, Surf North should have the lowest Nest Success Rate by a wide margin, but it doesn't. As shown in the South Beach photograph, South Beach habitat quality decreases going from North to South. The Nest success rates on South Beach can be directly correlated to the habitat quality each sector provides.

Nest Hatch Rates										
Sector	Accessibility	1994	1995	1996	1997	1998	1999	Total Hatched Nests	Total Nests	Percent Hatched
Minuteman	open	2	1	3	0	1	4	11	77	14.3%
Shuman	closed	15	17	45	18	16	11	122	345	35.4%
San Antonio	closed	12	12	29	22	8	10	93	246	37.8%
Purisima North	limited fishing	5	4	1	1	1	0	12	20	60.0%
Purisima Colony	closed & fencing	7	13	12	13	5	7	57	71	80.3%
Wall Beach	open	5	14	22	7	10	4	62	164	37.8%
Surf North	open	12	10	17	5	4	8	56	213	26.3%
Surf South	open	14	13	20	11	4	8	70	298	23.5%
Total		72	84	149	77	49	52	483	1434	33.7%

Wall Beach has the highest quality habitat of any open beach and also has nest success rates that equal or better Shuman and San Antonio. Human activity on Surf South is extremely minimal due to the long walk involved. The northern edge of Surf South is 1.15 miles from the closest access point (2.3 miles round trip) and the southern edge is 2.95 miles away (5.9 miles round trip).

The Air Force included fledgling success rate data in their reports beginning in 1995. Fledgling success rates for South Beach almost equaled North Beach even though North Beach provides superior habitat. The USFWS has claimed that human activity results in dramatically lower fledgling success rates, but the data doesn't support their claim. The data demonstrates that the level of human disturbance on Vandenberg's public access beaches does not have a significant impact on fledgling success. Curiously, the collection of fledgling success data for Purisima Beach was stopped after 1997. Purisima Beach is the most restrictive of Vandenberg's three Western Snowy Plover beaches. Humans are not allowed on Purisima Beach and predators are controlled to protect the Least Tern colony. Failure to collect Purisima Beach Fledgling Success data, which is extremely supportive of human beach use, demonstrates a strong anti-human bias.

Fledgling Success Rate						
Area	95	96	97	98	99	Average
North Beach	19.0%	47.5%	33.5%	0.0%	53.0%	30.6%
Purisima Beach	0.0%	12.0%	25.0%	no data	no data	12.3%
South Beach	35.0%	32.0%	12.0%	6.0%	53.0%	27.6%

In 1999 the Air Force closed part of Surf North and all of Surf South for most of the breeding season in an ill-conceived effort to aid species recovery. On multiple occasions, Air Force and USFWS personnel have waged a campaign of misinformation by claiming a higher fledgling success rate for the closed area of Surf North than the open area. The misinformation wasn't in what they said, but in what they didn't say. The closed area of Surf North had low nest success and high fledgling success. In contrast, the open area of Surf North had moderate nest success and moderate fledgling success. In the end, both areas took different paths to achieve the exact same reproductive success rate. It would be just as easy and just as deceptive for someone to use the same data to claim that closing beaches increases nest

destruction.

The linear restriction and public education regarding Western Snowy Plover protection has been deemed a failure by the Air Force and USFWS. This claim directly contradicts monitoring report data. 1993 was the only year the Air Force collected data before implementing the linear restriction, and in that year 10 of 70 (14.3%) nests were destroyed by humans. With raised public awareness and the linear restriction in place between 1994 and 1999, 9 of 1434 (0.6%) nests were destroyed by humans. Numerous comments in the monitoring reports regarding the need for increased enforcement of a policy that was working almost flawlessly demonstrates a pervasive anti-human bias. Claims have also been made of higher fledgling success rates on closed beaches, but the data doesn't support that either. Fledgling rates were actually higher on South Beach (27.6%) than the combined rate for North and Purisima Beaches (22.3%). Monitors stopped collecting fledgling success data for the poor performing Purisima Beach after 1997. This raises the question that monitors may be omitting data that does not support their desire to close the beach.

The USFWS claims that trash left by humans attracts predators and increases nest losses. If that were true on Vandenberg, Wall Beach and Surf North should have significantly higher predation rates than the other sectors since they get the highest human use. The highest predation rates actually occur on closed and remote beaches. Predation rates on South Beach can be directly related to how easy predators can hunt on each sector. As the beach narrows the hunting gets easier and the predation rates go up. The data for Purisima Beach show what a difference the Air Force and USFWS could have made if they had focused their efforts on snowy plover recover instead of human harassment.

Nests Destroyed By Predators				
Sector	Human Access	Destroyed Nests	Total Nests	Percent Destroyed
Minuteman	open	26	77	33.8%
Shuman	closed	94	345	27.2%
San Antonio	closed	102	246	41.5%
Purisima North	limited fishing	4	20	20.0%
Purisima Colony	closed & fencing	3	71	4.2%
Wall Beach	open	35	164	21.3%
Surf North	open	81	213	38.0%
Surf South	open (remote)	135	298	45.3%
Total		480	1434	33.5%

It's been widely speculated that El Nino was responsible for the sharp population downturn that started in 1997. Nest Fate data shows that predator activity, not El Nino, was the most significant factor. Over 50% of nests were confirmed destroyed by predators in 1997, but the actual percentage may have been as high as 72%. According to the 1994 Snowy Plover Monitoring Report "Predators were responsible for most nest loss in 1994, destroying at least 32% of all clutches and probably many others for which the cause of destruction was not determined". The actual percentage of nests destroyed by predators each year is somewhere between the confirmed percentage destroyed by predators and the confirmed percentage destroyed by predators plus the percentage destroyed by unknown cause.

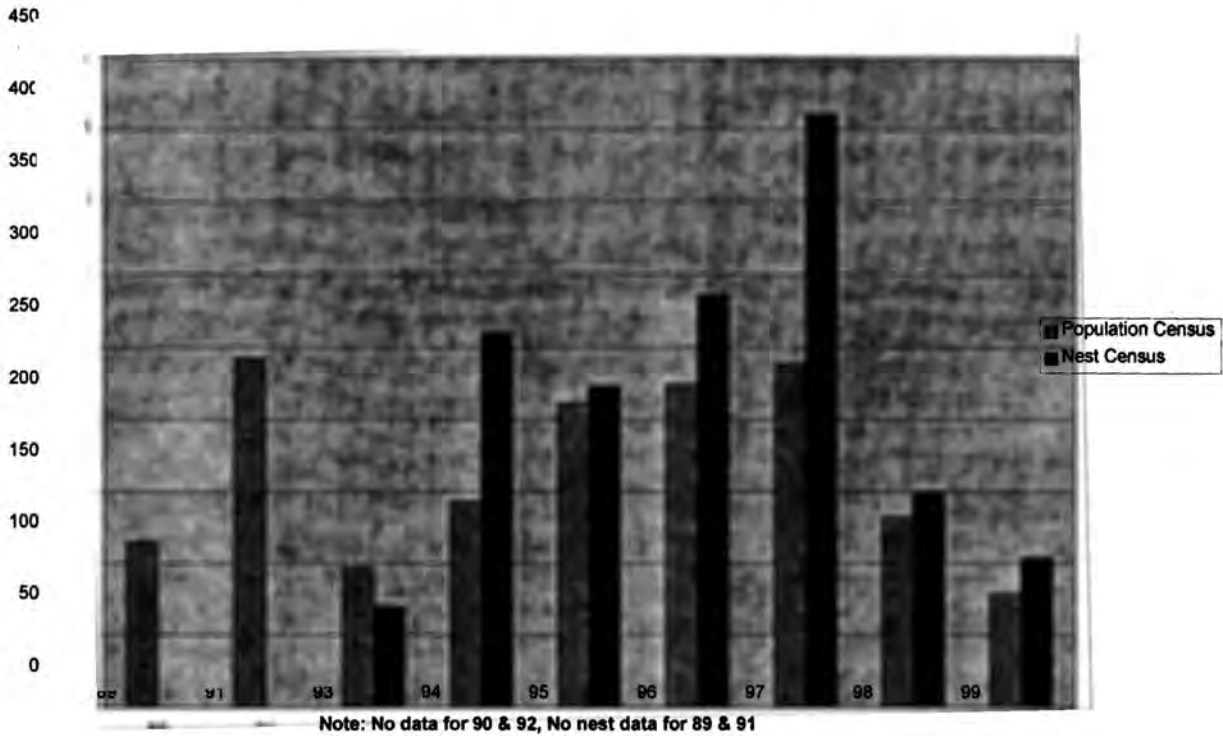
Monitoring predator activity after hatching is difficult, and is not addressed in monitoring reports. The fact that predators continue to prey on Western Snowy Plovers after they hatch combined with high nest predation rates in 1997 & 1998 indicates that predators, not El Nino, were primarily responsible for the population decline that started in 1997. Predators destroyed more nests in 1997 than in all three previous years combined. In what I believe is a display of gross negligence, not even one of the thirteen management recommendations made in the 1997 monitoring report addressed predation. Had monitoring personnel emphasized predation rates in 1997 and 1998 instead of emphasizing controlling and punishing humans, appropriate action could have been taken to address the predator issue before the population reached record low levels.

Nest Fate Percentage						
Year	1994	1995	1996	1997	1998	1999
Total Nests	260	223	286	411	150	104
Hatch	27.7%	37.7%	52.1%	18.7%	32.7%	50.0%
Destroyed Predator	31.5%	18.4%	19.2%	50.1%	42.0%	19.2%
Destroyed Unknown	20.4%	17.5%	9.4%	21.7%	6.0%	4.8%
Unknown	11.2%	12.6%	5.2%	3.2%	10.7%	6.7%
Destroyed Surf & Wind	6.5%	10.8%	12.2%	4.1%	3.3%	8.7%
Abandoned	2.3%	3.1%	1.0%	1.9%	4.0%	7.7%
Destroyed Human	0.4%	0.0%	0.7%	0.2%	1.3%	2.9%

The Air Force and USFWS have dramatically overstated beach usage levels on Vandenberg beaches. Use of Surf North is identified as heavy when compared to Northern Santa Barbara County and San Luis Obispo County beaches. According to traffic counters and observations, Surf North receives under 2,000 visitors on a weekend. According to California State Parks, the Oceano Dunes area receives about 40,000 visitors on a weekend, and the Oceano Dunes is also Western Snowy Plover critical habitat. Jalama Beach, Pismo Beach and Avila Beach all receive many more visitors than Surf North.

The fact that human activity has remained a very constant factor while the plover population has fluctuated dramatically is ignored by the USFWS. Identifying variables and constants is a rudimentary element of scientific analysis that is ignored by the USFWS. In their January 22, 2001 news release, the USFWS stated *"The population of adult plovers declined from 242 birds in 1991 to 106 birds in 2000. Reproduction has remained poor due to predation and consistent violations of Vandenberg beach closures by people and dogs."* This statement is a blatant attempt to deceive the reader by implying that a constant decline in population has occurred, and that the decline is a result of human activity. Over 60% of Vandenberg's 12.5 miles of shoreline that supports plover nests has been closed since 1994, thus humans have no impact on most of the plover's habitat. Also, the plover population has swung wildly on both closed and open beaches. The following graph shows the cyclical nature of Vandenberg's plover population. Data for 1989 and 1991 was collected by the US Geological Survey.

VAFB Western Snowy Plover Population & Nest Census Data



The USFWS has insisted on year-round closure of the Santa Ynez River mouth, but no scientific evidence has been provided to justify this action. The hard-packed sand adjacent to the river mouth provides a path for aging and disabled personnel to reach the ocean. The unjustified taking of this path demonstrates complete disregard for disabled rights.

I hope you have found this information enlightening. Please contact me if you have any questions or comments.

Sincerely,

Carl Walton



March 13, 2001

James Raives
Federal Consistency Coordinator
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

James,

I have been involved Since I wrote you on March 3rd, 2001, I have reviewed the Western Snowy Plovers on Vandenberg Air Force Base 2000 Final Report. After reviewing the report, I believe the 2000 data further justifies human beach use. I have also been exposed to news and information released by the Fish and Wildlife Service, and I find their use of misinformation disturbing. Judging by their actions, I believe the Fish and Wildlife Service has knowingly deceived the public and sacrificed the plover in order to achieve beach closure.

- The 2000 approach to plover protection and recovery failed
 - Predation rates increased dramatically
 - Nest success rates decreased dramatically
 - Fledgling success rates decreased dramatically
- Predation increased in the absence of humans
- The Fish and Wildlife Service is using misinformation to justify beach closures

As you know, in 2000 almost all of Vandenberg's 12.5 miles of plover nesting habitat was closed to humans. This closure was justified by claims that human activity results in increased predation, decreased nest success, and decreased fledgling success. The 2000 data contradicts all of these claims. Predation increased to record levels similar to 1997 when predators decimated the plover population. When compared to 1999, Nest success dropped from 54% to 32% and fledgling success dropped from 53% to 31%. These poor numbers will likely result in record or near-record population lows for Vandenberg's 2001 season.

1999 was the first year since 1996 that the plover population trended upward. The 2000 season reversed this upward trend. In a recent newspaper article, a Fish and Wildlife Service representative misrepresented an increase in Vandenberg's plover population from 1999 to 2000 as justification for beach closures. The 2000 population is largely a factor of how successful the 1999 breeding season was, and therefore is irrelevant when judging 2000 results. This represents a blatant attempt to deceive the public since the relevant numbers did not support the Fish and Wildlife Service's position.

It appears that restricting humans from most of the beach resulted in increased predation. The South Beach area that was open to the public through 1999 is very narrow when compared to the wide-open spaces on Vandenberg's North Beach that has been closed to humans since 1994. South Beach's narrow corridor provides relatively easy plover hunting for coyotes. With no humans to distract them, coyotes and other predators destroyed an all-time high of over 56% of South Beach nests.

I encourage you to judge all involved parties by their actions and not their words. Lompoc residents have demonstrated much more commitment to plover protection and recovery than the Air Force or Fish and Wildlife Service. Lompoc residents acted as docents throughout the 2000 season to protect the plover and beach access. We have devoted tremendous time to researching ways to coexist with the plover, but our efforts have been ignored. Meanwhile, our government has failed to protect both plovers and humans.

Sincerely,

Carl Walton


EXHIBIT NO. 7

APPLICATION NO. CD-23-01

 California Coastal Commission

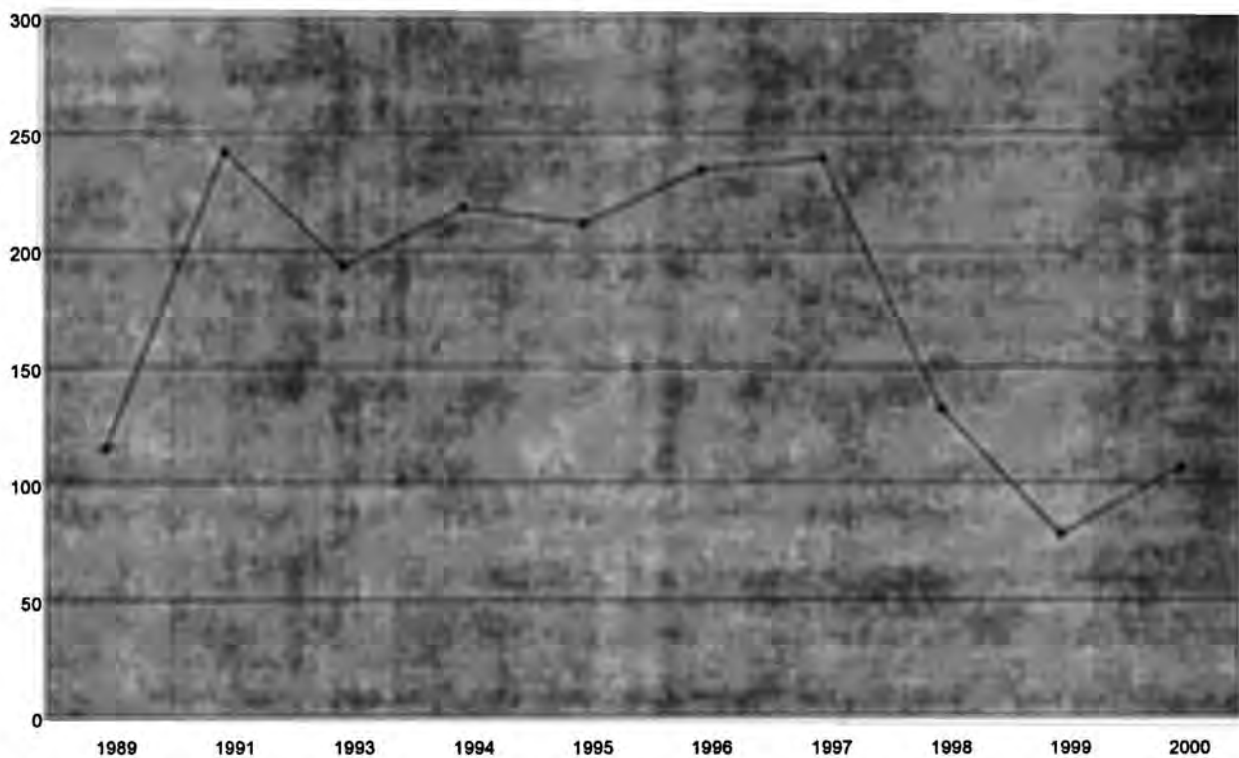
March 21, 2001

James Raives
Federal Consistency Coordinator
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

James,

While reviewing the 2000 Western Snowy Plover Monitoring Report, I noticed discrepancies in the plover population numbers from previous reports. I went back and computed population numbers from each original report and here is an updated population graph:

Snowy Plover Population Census



Population numbers for years 1989 and 1991 were obtained from the U.S. Geological Survey. Population numbers 1993 through 2000 are from the Snowy Plover Monitoring Reports. All population numbers are from the height of the breeding season. Here is the same data in table format:

Snowy Plover Population Census									
1989	1991	1993	1994	1995	1996	1997	1998	1999	2000
115	242	193	218	211	234	239	132	78	107

EXHIBIT NO. 8

APPLICATION NO. CD-23-01

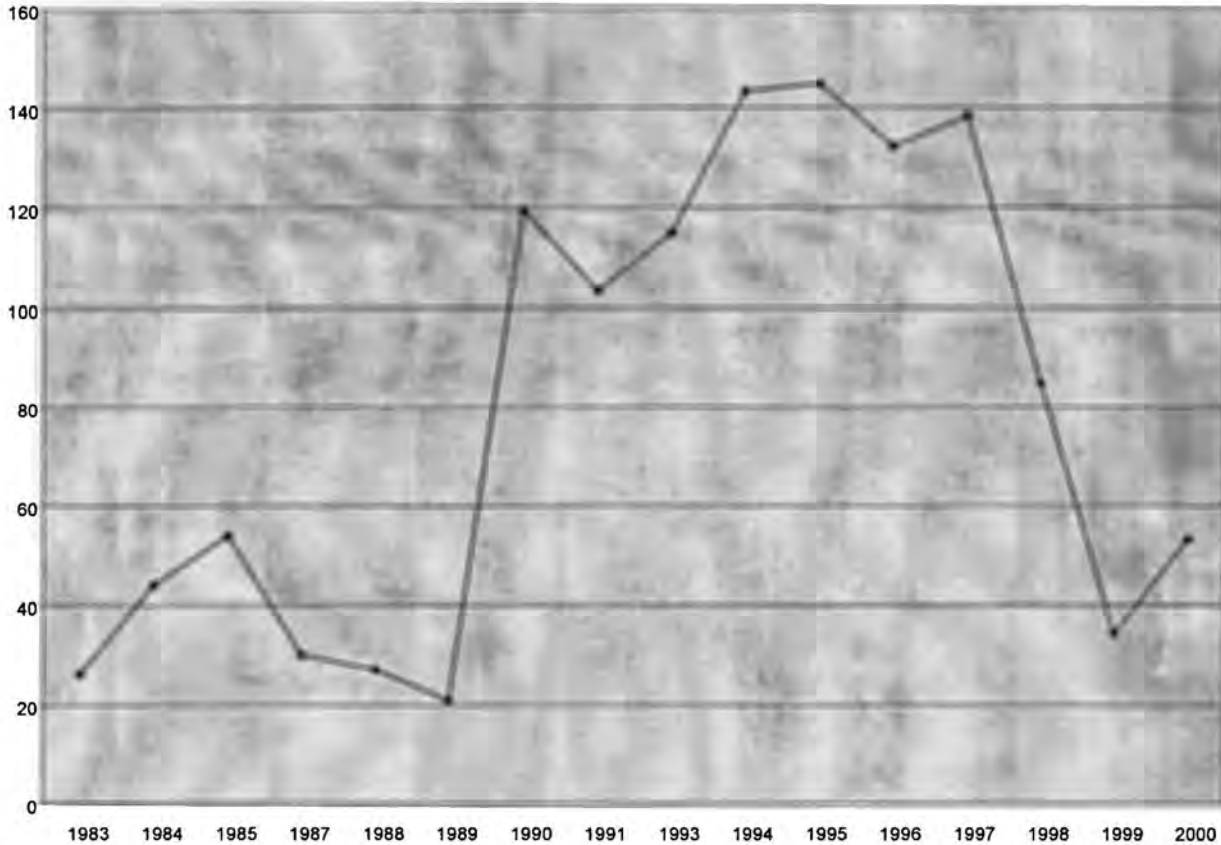
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3 Pages

 California Coastal Commission

While reviewing the population data I discovered something I'd overlooked before. The 1993 report contains population data for North Beach that goes as far back as 1980. Here is a graph of the population of the population trends on North Beach:

North Beach Snowy Plover Population Census

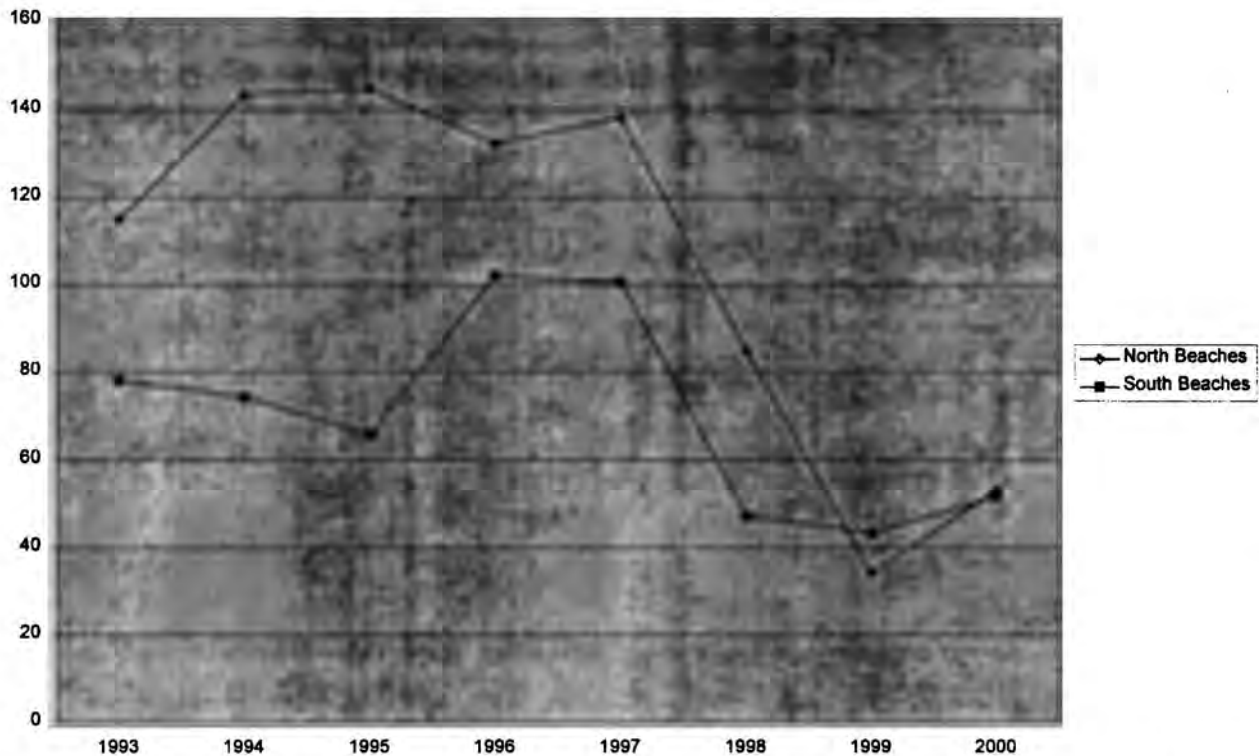


I computed the North Beach population numbers using the same methods used in the monitoring reports which is to take the average population of May and June. This historical data adds a new perspective to plover population trends. It suggests that the plover population has historically been much smaller than it was in most of the 1990s. Here is the same data in table format:

North Beach Snowy Plover Population Census															
1983	1984	1985	1987	1988	1989	1990	1991	1993	1994	1995	1996	1997	1998	1999	2000
26	44	54	30	27	21	120	104	115	143	145	132	138	85	34	53

I also looked at the population trends on North Beach versus South Beach. According to the U.S. Fish & Wildlife Service, the majority of snowy plovers are site-faithful. Given this assumption, it's logical to conclude that yearly changes in the population on a particular beach will be closely tied to breeding results from the previous season. Given the claim that plover reproductive success is higher on North Beach (closed) versus South Beach (open) we should see an ever-increasing gap between the North Beach and South Beach populations but that is not the case. The following graph shows that the plover population has decreased more rapidly in closed areas than open areas:

May-June Snowy Plover Adult Population



The shift in population away from North Beach and to South Beach is even more dramatic than the above graph shows when you consider that North Beach is 7.7 miles long while South Beach is 4.8 miles long, and North Beach habitat is much higher quality than South Beach habitat. It's also notable that after closing most of South Beach in 2000, the plover population started to shift back to North Beach. This is exactly the opposite of what should have happened if humans represent a significant threat to plovers.

Long-term population trends suggest that Vandenberg's plover population was abnormally high during most of the 1990s, and raise the possibility that recent declines in Vandenberg's plover population may just be nature achieving its normal balance.

After further lkdsjfSincerely,

Carl Walton