SELECTED EXCERPT FROM

POINT SAL RESERVE

REVISED MANAGEMENT PLAN

ADMINISTRATIVE DRAFT

JULY 2002


Prepared For
Santa Barbara County Parks Department
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Santa Barbara, CA 93105



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SECTION I. INTRODUCTION

Point Sal is located in the northwestern corner of Santa Barbara County, on the coast of the Pacific Ocean, south of the Santa Maria River estuary and the Guadalupe-Nipomo Dunes. The nearest city to Point Sal is the City of Guadalupe, located about six miles to the northeast. The City of Santa Maria is approximately twelve miles to the east, and the town of Casmalia is roughly ten miles to the southeast. Vandenberg Air Force Base is located to the south (Figures 1 and 2).

SECTION IV. NATURAL RESOURCES

In a regional context, Point Sal is unsurpassed in terms of its natural and cultural resources. The diversity and integrity of the area's geologic formations, biotic habitats and prehistoric sites are unprecedented in mainland California. Point Sal's scenic values and recreational potential are superb because of its environmental attributes.

The area's distinctive geologic formations are the best representations of their kind in California. The coastal dune community supports several species of rare plants, including eleven species that in 1991 were candidates for federal listing under the federal Endangered Species Act. The remote wind-swept dunes and bluffs, wetland habitats and nearshore waters sustain an abundance of wildlife. Point Sal's cultural heritage includes 9,000 years of prehistory and a historic past that typifies the settlement of coastal California during the last two centuries. Each of these resources (geology, botany, wildlife, and archaeology) is discussed below, with particular emphasis given to the exceptional aspects of the study area.

Geological Resources

Point Sal lies in the Coast Ranges Geomorphic Province and is composed of Mesozoic and Cenozoic age rocks and structures. It is in the Point Sal and Casmalia Hills region that the lowest level or "basement", Jurassic age rocks outcrop as an ophiolite remnant. These are some of the oldest exposed rocks in the Central Coast and are usually associated with the Jurassic Franciscan Formation. They are deformed igneous, sedimentary, and metamorphic rocks that are believed to have originated during sea floor spreading along a divergent boundary (spreading ocean ridge), far removed from land and any active volcanic area. Thus, Point Sal is a well preserved record of the birth of ocean plate material. Figure 4 illustrates the geologic formations in the Reserve.

Considerable plate tectonic movement brought this piece of ocean plate to the edge of the continent. It was emplaced, along with other ophiolite fragments, in an active trench, at the convergent boundary located along the western margin of North America. Following emplacement, sediments known as the Great Valley Sequence (Juc on Figure 4) derived from the nearby continent, began covering these trench accumulates. An unconformity marks the late Mesozoic to Early Tertiary time, when erosion removed all rocks down to the ophiolite surface in the south near Point Sal Beach (Figure 4). Only small remnants of the overlying Jurassic rocks further north of Point Sal and in Corralitos Canyon remained. The Lospe, Point Sal, Monterey, and later Tertiary Formations blanket the Mesozoic rocks, and isolate them from other exposures to the north and east. This photo illustrates a unique caliche formation within the proposed Preserve boundary.

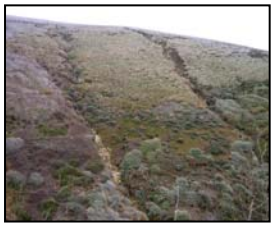
It is important to remember, when attempting regional correlations, that this area was formed hundreds of miles to the south and has been translated more than two hundred miles to the northwest in the last 25 million years by the right lateral strike slip motion of the San Andreas Fault.

A third factor that defines the geology in the Point Sal area is the number of unusual soil types in the Point Sal area. The ridge soils are derived from Franciscan volcanics. This type of soil is not found on the southern California mainland or even in northern Baja California. Volcanically derived soils are found however, on the Channel Islands, and Point Sal is botanically more similar to the offshore islands than any other mainland location. Besides these unusual volcanic soils, the Point Sal area includes ancient dune soils: the Orcutt Sands. These stabilized yet highly erodible soils often hold aquifers perched on impervious layers (most likely of calcium carbonate) that lie well below the surface. Maritime Chaparral, an unusual assemblage of species that includes several endemics, is found on these ancient, sandy soils. In addition to ancient sands, active, modern sand dunes occur along the coast, with their characteristic suite of plant species.

Geological Resource Constraints

The geologic evaluation emphasizes land use constraints rather than resource sensitivities. These are based on physical features such as geologic hazards which have the potential to affect future recreational use and development of the property. The primary geological constraints on development in the Point Sal region are landsliding, active sand dunes, and coastal wave activity. Of secondary concern are availability of potable water and seismic activity by the nearby Hosgri fault and the San Andreas System. Finally, some geological features should be protected from damage by overuse or abuse (notably exceptional mineral or fossil sites).

Landslides. Further development of roads, trails, parking lots, and structures in this area must consider the hazard posed by this active slide area. The late 1980s and early 1990s were drought years in the Central and South Coast areas of California, and there had not been much slide activity at the time that the first Management Plan was written in 1991, due to low rainfall.



The 1991 plan did predict however, that when rainfall levels increase and the slide-prone Point Sal Formation becomes water saturated, renewed slide activity would be expected. In fact, severe erosion did occur as a result of the El Nino rainfall events of the mid to late 1990s, particularly on several sections of Point Sal Road. The erosion is now so extreme in fact, that these roads are only passable on foot (see Figure 4 and the photographs on this page). In some cases the erosional feature in the road is 10 to 15 feet wide and 6 feet deep. Other areas noted on Figure 4 are passable with a vehicle now, but slumping and/or headcutting are threatening to take out these sections of Point Sal Road as well.

At the bottom of Point Sal Road, near the lower parking area, a landslide, exacerbated by undercutting at the toe (bottom) of the slide, has completely washed away the road. As shown in the photo at right, what now remains is a 100-foot wide gap between road surfaces with a drop of 6 to 10 feet as the road turns southeast toward

the military installation. Landslides, erosion and headcutting along these sections of Point Sal Road are likely to be chronic issues, but they can be managed with funding and early rather than postponed maintenance.

- Sometimes movement can be curtailed by draining water from the slide mass. Sealing the surface to stop infiltration and use of perforated pipe to drain subsurface water have aided in stabilizing slides. Any road or parking lot development in the slide area should consider methods to drain the surface and subsurface water off the slide materials. A professional engineering geologist should be consulted for specific suggestions concerning planned developments in this slide area.

Specific Areas of Geologic Concern

- **Steep Slopes between the Old Landing and Point Sal**
  The steep slopes along the south side of Point Sal Ridge between the Old Landing at the State Beach and the Point are unstable and promote debris flows and other colluvial activity such as talus accumulation.

- **Foot Trails between Point Sal and the State Beach: Wave Action**
  Wave activity is treacherous along the rocky coastline and quite dangerous for boating. Hiking along the wave cut platform (sea level) is dangerous at any time, but particularly dangerous during high tides, and extreme during storm wave activity. Setting the foot trails further back away from the wave action is probably not feasible given the nearly vertical slope and instability of the sand on the slope.

- **Trails Through the Dunes**

Removal or destruction of vegetation covering stabilized dune sand results in the sand becoming active. Serious erosion problems from wind deflation and running water would ensue if roads were built or if increased and unrestricted hiking occurred in the dunes.

Foot trails through the dune sand would require a stable surface to support increased foot traffic while avoiding deterioration of the trail area. Access in these areas could be accomplished

through the construction of boardwalks in the dune areas that would serve as trails in these sensitive areas. The boardwalks, if elevated approximately 2 feet above the ground and limited in width to about 4 to 5 feet, would have minimal impact to dune vegetation and wildlife and minimal visual impact as well.

Although there would be some impact to dune vegetation, the overall effect would be greater protection of the much larger surrounding area, and therefore be a net benefit to the dune system. This is consistent with County policies cited in this document. However, such boardwalks, such as those at Oso Flaco, are difficult to maintain, since the wind is constantly depositing sand on top of the boardwalks, quickly covering them. They would need to be continually maintained, in order to render them useful.

- **Seismic Activity**

  Point Sal is located less than 100 miles from the San Andreas Fault which is an active fault capable of producing a quake of magnitude 7 or larger. The Hosgri Fault is another active fault that lies about six miles offshore to the west of Point Sal. Numerous other small active faults in the Central Coast could produce moderate earthquakes of 4 to 5 magnitude. Seismic activity could activate some of the slides and potential slide areas in Point Sal.

- **Drinking Water**

  Any further development of Point Sal should consider the availability of potable water in the area. A Water Source Inventory for the Point Sal Area was done on September 20-21, 1986 by the BLM, but has not been conducted since then. Of 24 springs sampled, primarily along the coast north of Point Sal and south of Mussel Point, none contained potable water. The springs come from the interface between the bedrock below and the dune sand above. Four representative samples all showed contamination by fecal coliform from animal droppings.

  The water can be treated with chlorine or iodine before drinking. The waters are slightly too saline to meet the standards of Title 22 of the California Safe Drinking Water Act, but could probably be made potable. The potential for digging a well to supply drinking water and the potential for harnessing solar power for electricity to pump water from the well is unknown. Backpackers and other visitors typically bring their own water.

Botanical Resources

Fourteen distinct plant communities are in the Reserve, illustrated in Figure 5. These are: active coastal dunes; foredunes; coastal bluff scrub; central dune scrub; central coastal sage scrub; chamise chaparral; central maritime chaparral; needlegrass grassland; ehrharta grassland; non-native (annual) grassland; freshwater seeps; central coast arroyo willow riparian forest; dune slack pond; and freshwater marsh. The distribution of these communities and the locations of some of the rare plants are shown in Figure 5, as mapped by Katherine Rindlaub in 1990. The 1990 botanical technical report by Rindlaub describes the aspect and composition of these communities in detail, and summarizes the status of rare plant species known at that time to occur in the Point Sal area.

Compared to adjacent areas, it appears that the Point Sal region has been subjected to relatively little disturbance. Its' isolation and inaccessibility have doubtless contributed to the low number of introduced and invasive species, although some exotics certainly occur and are of concern.

Botanical Resource Sensitivities

Sensitive botanical resources within the management area include both individual species and rare or particularly vulnerable plant communities. Point Sal supports a number of species that are designated as legally protected or are of particular regional interest. Eleven of these are candidates for federal listing as threatened or endangered. An additional 17 species are considered to be of local or regional concern because of their restricted distribution and/or susceptibility to population decline.

- **Vulnerable Plant Communities**
  Four plant communities recognized as sensitive occur within the project area. These are central dune scrub, central maritime chaparral, native

grasslands and wetlands. These are assemblages of plants whose collective distribution is very limited. Such habitats are especially prone to decline and degradation. Each is identified as environmentally sensitive in Santa Barbara County's Local Coastal Plan and the Comprehensive Plan.

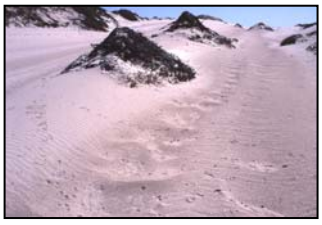
- **Dunes**

Fifteen of the sensitive plant species occur exclusively or primarily in dune habitats. Active dunes occur mainly along the northern and western portions of the Reserve. These dunes are near the southern end of the vast Guadalupe-Nipomo dune system that extends northward to Pismo Beach and occurs again at Montana De Oro and Morro Bay. This entire system is one of the few remaining in California, and is the only well-developed one remaining on the southern and central California coastal mainland. This photo illustrates the Guadalupe Dunes in the foreground and Point Buchon in the distance.

- **Vulnerability of the Dunes**

Although encompassing a large area, the dunes in San Luis Obispo County, north of the Reserve, and the species that occur within them are threatened across most of their range by off-road vehicles, and are fragmented by oil and gas development. This contributes to the significance of the dunes within the Point Sal Reserve. This photo shows the oilfield immediately north of the Santa Maria estuary.

The dune community is vulnerable to destruction by nature of its composition. As shown in this photo from within the nearby Guadalupe Dunes, its sandy soils are extremely unstable and are subject to the natural forces of wave, wind, and storm erosion. Vegetation loss accelerates this process by exposing the underlying sands to erosive



processes. Damage to vegetation can be caused by vehicles, excessive foot traffic, and livestock browsing and trampling.

Established trails and roads through the dune system may indirectly facilitate erosion of adjacent areas, if improperly designed. Coastal dunes are also prone to invasion by non-native plant species, particularly following removal or disturbance to the native vegetation. Many exotic plants have superior colonizing capabilities and are detrimental to the native flora. Conspicuous examples of this at Point Sal are the widespread occurrence of iceplant and veldt grass.

- **Maritime Chaparral**

Maritime chaparral, a regionally restricted plant community is found at Point Sal. This community contains several regionally endemic plants including species of manzanita, ceanothus, and bush monkey flower. In addition to the shrubs, herbaceous plants of special concern are also present. These include Blochman's larkspur and two species of Monardella and Blochman's leafy daisy.

In general, chaparral tends to be less susceptible to human disturbances than dune scrub because it occurs on more stable soils. At Point Sal, the most evident impact to this community is erosion within and near established dirt roads.

- **Native Grasses**

Perennial native grasses are found along the crest of Point Sal Ridge, in open stands on the north slope of the ridge, and as an understory component of the scrub habitats throughout the area. Perennial grassland has been replaced throughout most of its range by exotic annual species of Mediterranean origin. Ecologists have long observed that sizable stands of native grassland, intermixed with associated herbaceous flowering species have become increasingly uncommon throughout California (See Odion 1989 for discussion).

Native grassland along the central coast is often called "coastal terrace prairie" (Holland 1986) that is comprised of a mix of native grass species as well as other herbs. In or adjacent to the Point Sal Reserve, there are

probably several excellent examples of native coastal terrace prairie that are composed entirely of native species. One such example is on the south side of Point Sal Road near the junction with the ranch road. Further studies should be made of the area to determine if other areas of coastal prairie occur and if so added to the vegetation map in this document.

In other parts of the Reserve and adjoining areas, livestock grazing and (possibly) historic intentional seeding with aggressive introduced annuals, appears to have affected the distribution and character of native grasslands or coastal prairie. This effect appears when comparing the western and southern ungrazed portions of the project area with areas to the north and east that receive substantial grazing pressure in an uncontrolled manner. Vegetative development, particularly with regard to native species, is far superior in ungrazed portions of the Reserve.

- **Wetlands**

Wetland communities at Point Sal are represented by: 1) the tributary streams to Happy Valley, 2) the ephemeral pond at the lower end of the southern tributary, and 3) the series of freshwater seeps along the coastal bluff between Point Sal and Mussel Point. These habitats contain assemblages of hydrophytic (water loving) plants that are confined to water. Portions of the streams are lined with extensive willow riparian woodland. Emergent aquatic vegetation (e.g. cattails and rushes) is present at a few locations in the stream bottoms.

The ephemeral pond was dry at the time of the 1991 and 2002 field surveys (both dry years), but had water in the summer of 1997 (a wet year), as seen in aerial photographs. The 1991 survey noted that it was severely impacted by cattle at that time. The seeps support a rich diversity of annual and perennial plants. These are particularly well-developed where they issue from the bluff face. Many non-native plants are present here as well, a factor which detracts somewhat from the seeps' overall botanical value.

Wildlife Resources

Geographically, the North Coast Region of Santa Barbara County is recognized as a transitional zone for both marine and terrestrial life. Many species reach the northern or southern limits of their distributional range here. Its coastal location has resulted in the evolution of specialized vegetation that is adapted to sandy soils and a maritime climate. To a great extent, the aspect and composition of the vegetation determines the make-up of the local faunal community. (See Figures 5 and 6.) In addition, Point Sal's juxtaposition of marine and terrestrial habitats plays an important role in the composition and distribution of wildlife.

The mingling of two major ocean currents creates thermoclines and coastal upwelling which in turn has important consequences on the distribution and abundance of marine birds. This oceanographic boundary also influences the occurrence of various species of marine mammals. For example, the Steller sea lion and northern fur seal range from the north, while the Guadalupe fur seal and northern elephant seal (such as those seen in this photo from nearby San Miguel Island) are more southerly distributed.

While harbor seals and sea lions are much more common in the region than the Guadalupe fur seal or northern elephant seal, the fact that both species use the site for haul outs is significant, and is partially attributable to the lack of sustained human disturbance at Point Sal (Storrer 1991). Sea otters, who were not observed in the 1991 surveys, have expanded their range southward, returning to areas where they were previously abundant. Ottters were observed during one of the 2002 field visits.

On land, extensions of range for one or more animal species are less common. Point Sal is a breeding location for three species of land birds whose regional distribution is very restricted: the rufous-crowned sparrow, sage sparrow and grasshopper sparrow. Each of these is considered a summer or resident breeding species in the vicinity of Point Sal. The rufous-crowned sparrow has been found in moderate abundance at Point Sal. They are otherwise uncommon and local, or absent from coastal Santa Barbara County.

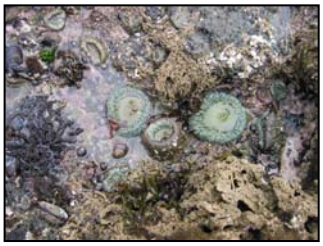
Sage sparrows more typically nest in the interior desert scrub areas of the County. This coastal population represents a significant breeding range extension for the species. Grasshopper sparrows are relatively common at Point Sal but regionally their populations are disjunct and appear to be declining. In addition, a resident subspecies of white-crowned sparrow is restricted to the immediate coastline in

Santa Barbara County from Point Conception, north. The terrestrial mammals and herpetofauna of Point Sal are characteristic of a broader geographic range.

The remoteness of the study area greatly enhances its value to resident wildlife. Point Sal is bordered by largely undeveloped agricultural lands and undeveloped federal property (VAFB). Human visitation is at present relatively light, and the lack of development has enabled the preservation of much of the area's natural resource values.

Many species show distinct affinities for one or more habitat types. For some species, specific requirements for food, shelter, or breeding result in their confinement to certain habitats. Other species tend to be habitat generalists and make use of several vegetative communities within a much larger territory. Primary wildlife habitat communities are indicated on Figure 5 and specialized features are shown in Figure 6. The 1990 wildlife technical report contains general habitat preferences and relative abundances for each species expected to occur within the study area as well as narratives regarding their status at that time.

Wildlife Resource Sensitivities



Wildlife, resource sensitivities are considered on both the habitat and individual species level. Six critical habitat areas in the project area are: wetlands; coastal sand dunes; black shouldered kite habitat; native grassland, marine mammal hauling grounds; rocky points and intertidal areas; and seabird nesting and roosting areas.

- **Threatened or Endangered Wildlife**
  Eleven wildlife species listed as threatened or endangered are known to inhabit the coastal waters and shoreline at Point Sal. Eight of these species are marine mammals; three are birds. In 1990 there were ten candidate species for federal listing (four herptiles and six birds) were also known or expected to occur. An additional seventeen wildlife species of special concern had been recorded or were likely to reside in the project vicinity. This last category includes one herptile, two mammal, and fourteen bird species.

- The vulnerability of wetland and dune habitats has been discussed under botanical resource sensitivities and will not be repeated in detail here. Impacts to these habitats affects both plants and animals.

- **Wetlands**
  In relation to wildlife, wetland habitats are particularly important. The presence of surface water provides for aquatic species like frogs and turtles. Marsh vegetation supports a particular faunal assemblage. Willow thickets are an excellent resource for land birds. Drainages are used by many wildlife species as corridors for dispersal and in accessing various portions of their territory. Ten of the species that had special status in 1990 prefer or are restricted to wetland habitats for breeding. This photo depicts a nesting heron at nearby Oso Flaco Lake, a dune slack pond.

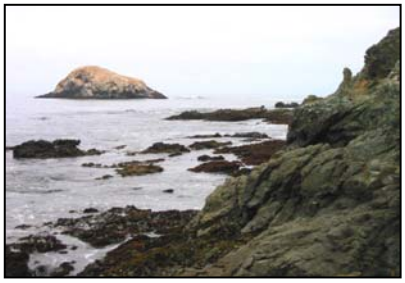
- **Dunes**
  The dune system at Point Sal sustains a number of reptiles, mammals, and birds. Although its faunal composition does not compare with wetlands in terms of diversity, the dunes support a particular assemblage of species including the coast horned lizard.

- **Raptors**

A golden eagle, red-tailed hawks, northern harriers, American kestrels, barn owls and great-horned owls, and turkey vultures were observed foraging in the Reserve in 1990. Two active red-tailed hawk nests were found at that time. Raptor roost sites were also noted. Black-shouldered kites were not seen during the 1990 or 2002 field surveys but they are known to occur in the vicinity. The greatest impact to these birds is caused by disturbances of nesting and roosting sites.

- **Marine Mammals**

Rocky shelves north and south of Point Sal are used as habitual haulout sites by harbor seals, and to a lesser extent by elephant seals and sea lions (Figure 6). In addition Lion Rock, offshore (shown in the photographs), is an established haulout site for California sea lions and harbor seals. As many as 600 sea lions have been recorded at this site. Lion Rock has also occasionally been used as a haulout by Steller sea lions and elephant seals. Northern fur seals and Guadalupe fur seals possibly occur as infrequent visitors to the rock. Harbor seal haulouts are established in close proximity to Point Sal, both north and south of the point. Sea otters, on the other hand, stay in the water. This species was not observed in the 1991 surveys, but have since expanded their range southward, returning to areas where they were previously abundant. Otters were observed in the 2002 field visits.



Haulouts, such as the one shown here, on the north side of Point Sal, are of critical importance in terms of the behavioral cycle of resting, foraging, and breeding for pinnipeds. When frightened, seals typically respond by rushing to the water. These sorts of disturbances are disruptive to normal activity patterns and repeated incidents could cause permanent abandonment of haulout sites. The animals' tolerance to disturbance at haulout sites depends on several factors; including the location of the site, season, weather conditions, tides, and physical features of the substrate (such as beach, rock, or rock ledge).

Harbor seals are particularly wary animals and are easily startled by people on foot.

- **Trails and Seal Haulouts**
  Two established trails are located extremely close to the northern and southern haulouts near Point Sal itself (Figures 6 and 8). Harbor seals at Point Sal and other localities often vacate their haulouts in response to hikers nearby. The escape response is usually cued by visual contact. Another, more destructive form of harassment that was seen during the 1990 study consisted of unlawful shooting of guns from Point Sal. This apparently occurs less now, probably due to the lack of vehicular access for most individuals.

- **Rocky Shoreline and Intertidal Habitats**
  The rocky shoreline and intertidal habitats at Point Sal are extremely well-developed containing a tremendous diversity of marine invertebrates and plants, as shown in several of the photographs. These resources are particularly fragile and vulnerable to people inadvertently trampling them and also to people over harvesting.

- **Seabird Roosting Areas**
  Seabird roosting areas are found on both expanses of sandy beach, at both Point Sal and Mussel Point (shown below), and on Lion Rock. Aggregations of shorebirds, gulls, pelicans, and cormorants sometimes number in the hundreds. Thousands of cormorants have been seen on Lion Rock. Pelagic cormorants and western gulls were observed nesting in limited numbers at Mussel Point in 1990. Marine bird roosting and nesting areas are unusual on the mainland; they are almost always located along remote, isolated stretches of beach.

- **Disturbances to Seabird Roosting Sites**
  Disturbance to roosting sites is disruptive to normal patterns of feeding and resting. During the nesting season, reproductive processes can be severely curtailed in response to repeated human presence near the nests.

These birds usually choose protected, vertical cliff faces on the south side of the point for roosting (such as this nearby roosting site just down coast from Point Conception). Increased access to Point Sal and to Mussel Point without the presence of a ranger and perhaps selectively placed educational signage and trail markers could cause disturbance to roosting and nesting birds. Illegal shooting is highly disruptive and was fairly common practice in the late 1980s (Storrer and Semonsen 1991). It appears to be less common now, probably due to the lack of vehicular access for most people.

- **Peregrine Falcon Nesting**
  Point Sal is a historic nesting site for peregrine falcons.