

Rancho Corral de Tierra- Palomares



Biological Report & Study Compilation

July, 2001

Peninsula Open Space Trust

Rancho Corral de Tierra-Palomares Biological Report

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I. Overview

As the morning mist clears along Hwy. 1, residents who commute daily and first-time travelers experience wonder as the breathtaking views are revealed around the last curve and rocky outcropping that begin the descent into Montara from Devil's Slide. Mountain cliffs meet crashing waves as vistas of sea and mountains whiz by. Most coastside visitors, blissfully unaware of the efforts to preserve such beauty stretching along the Pacific Coast, lack an identification and understanding of this special area and the flora and fauna it supports. To enjoy and appreciate its stunning views are enough without delving into the past and its legacy.

This report for the Peninsula Open Space Trust draws upon previous studies, reveals the latest findings and surveys, and presents a clearer image of the area's unique biological resources and the land that provides the spectacular backdrop to a Hwy. 1 scenic drive. Comprised of the 823-acre Ocean View Farms (part of the original McNee Ranch) and the 3,437-acre Cowell Torello, these 4,262 acres in San Mateo County known as Rancho Corral de Tierra-Palomares begin approximately six miles south of Pacifica and stretch to six miles north of Half Moon Bay. Following the signs and milestones observed by countless others, this report seeks to promote understanding and highlight the value of the important and unique aspects of the coastal landscape.

Land areas encompassed by Rancho Corral de Tierra-Palomares are significant in many ways, not the least of which is their relationship to adjacent parks and land parcels. Taken together, the preservation of this open space combined with already established McNee Ranch State Park and San Pedro Valley County Park would offer 6,700 acres of contiguous land from Pacifica to Pillar Point Harbor. An entire coastal mountain habitat preserved for public use within 20 miles of the Golden Gate Bridge.

Many old trails and farm roads throughout the foothills and ridge would allow potential access and valuable future links from the Coastal Trail corridor to the Bay Area Ridge Trail. Hikers, mountain bikers and nature lovers enjoy the trails in the two existing parks. Numerous threatened, rare and endangered plant and animal species live in the region. The property includes three major MidCoast watersheds (Montara, Vicente and Denniston creeks). A fourth watershed (Martini creek) is shared with state parklands to the north.

Rancho Corral de Tierra-Palomares is the scenic backdrop to coast-hugging Hwy. 1 in the San Mateo County MidCoast area, spreading a curtain of green slopes that drape the landscape above the beaches.

◆ INTRODUCTION



*a seep-spring riparian valley
on Montara Mountain*

Physical Description

The inhabitants and rich history of the land now known as Rancho Corral de Tierra-Palomares left a biological footprint on today's landscape. Traces of these impressions remain on the land and environment long after the evidence of former inhabitants has disintegrated. Future researchers will attempt to reconstruct today's primitive way of life and document the imprint left by current land use practices.

One of the only remaining historic tracts still largely intact on the Peninsula, this property includes land grants given to early Mexican settlers in 1839 throughout San Mateo County. Prior to its "discovery" by the first Europeans in the 1700s, the native inhabitants adapted the land for their use and survival. Today's residents would not recognize the landscape during the time of the Native Americans and early explorers. Plants, animal life, the abundance of food and water and the very shape of the earth and shoreline have all changed dramatically over centuries and continue to be affected by weather, earthquakes, land use and development.

Today the property supports numerous rare, endangered and threatened plant and animal species and much of the land has been virtually untouched since historic times because of its relative inaccessibility or the limits imposed by private landowners. No meaningful biological studies on privately held lands have been done in the last 20 years. Portions of Rancho Corral de Tierra-Palomares are being leased for agriculture with more than 200 acres bordering Hwy. 1 in active production. Leased private horse stable operations are also present and foothills throughout the property are used for equestrian purposes.

LANDSCAPE HISTORY ♦



Lupinus eximius – Montara Mountain blue bush lupine in bloom with San Pedro Mountain in the distance.

A landscape history includes descriptions of its location, boundaries, soil, climate, vegetation and terrain. It is also about how the land, people and time come together to create a place. A hundred years ago, mountains isolated this portion of the coast from the rest of the San Francisco Peninsula. Montara Mountain to the north soars from the shoreline to 1,900 ft. at the summit. To the east the Coast Range separates the property from the lands of the San Francisco bay.

Two centuries ago vast herds of elk, antelopes, deer and other four-legged creatures roamed what is now the Bay Area. Fish, birds and game were abundant because their habitats were rich with plentiful food, sustained by great marshes that spread inland from the shoreline. Fed by fresh water streams from hillsides covered with forests of oak-bay trees and stands of redwoods, the landscape was lush and green.

Costanos, as Spanish explorers named the Native Americans, (later they called themselves Ohlones) had been shaping the coastal landscape for thousands of years by annually burning the native dried grasses to prepare the soil for seed crops the following year. The fires also stunted the growth of native vegetation, resulting in vast meadowlands, dotted with clumps of low-growing shrubs and trees, a familiar coastal landscape today. The Spanish explorers and Mexican missionaries introduced hardy plant and animal life from foreign lands, later settlers raised crops, and the fabric of the landscape changed, evolving in order to survive.

In the time of the Ohlones, the Bay Area looked entirely different—a moist, swampy land in contrast to today’s semi-arid countryside. In 1769, the year before Spanish explorers rode on horseback into this land, the Native Americans who had lived here for at least 5,000 years, shaped the land to their needs. The Spaniards found the landscape virtually treeless, without even enough firewood to keep themselves warm and dry during the winter rains.

Native Americans gathered shellfish, hunted rabbits, deer and birds, picked California blackberries, huckleberries and hazelnuts in the canyons and harvested grass seeds from the broad coastal terrace. By torching the coastal grasses every fall, native plant growth was limited to native bunch grasses and fire-resistant shrubs.

For most Ohlone groups, acorns provided the food they ate nearly every day. Live oaks covered the Santa Cruz Mountains. An acorn harvest marked the beginning of a new year. From the acorns, gathered in the fall and dried over the winter, the kernels were ground into flour, resulting in a highly nutritious food source. This diet staple helps explain why central California Indians never adopted the farming practices of other North American tribes.

For the Ohlones, life was a series of treks from one harvest to another. They wandered to the seashore for shellfish, to the rivers for salmon, to the marshes for ducks and geese, to the oak groves for acorns, to the hills and meadows for seeds, roots and greens.

◆ NATIVE AMERICAN LANDS



Castilleja franciscana – Franciscan paintbrush

Paintbrushes, a semi-parasitic plant, will only thrive in the right kind of soil and in the right combination of associated plants.

SPANISH/MEXICAN LANDS ♦



Stachys bulluta – Wood mint

Often called “hedge-nettle”, this member of the mint family is known for its colonizing ability: it will often be one of the first native plants to return to a disturbed site, especially in wet areas.

With the Native American’s regular burning of the landscape, the Spanish explorers found the land to be fertile with abundant wildlife, but they bemoaned the lack of trees and firewood, calling the landscape barren.

The Spanish colonists who followed valued the coastal grasslands and the abundance of water for prime grazing land. The Franciscan fathers also grazed longhorn cattle near Pillar Point and mission cattle roamed freely until they were herded into Medio Creek Canyon near present-day Miramar for slaughter. The legacy of this natural corral—an area from Pilarcitos Creek to Montara Mountain became known as Corral de Tierra.

Native American life changed drastically under the benevolent guidance of the missionaries. Although their quest to establish a Christian utopia by converting the heathens was well meaning, the Indian way of life dissipated as the monks trained them in the art of European living, farming, and blacksmithing. Forced to live at the missions, many died of disease, and their native arts and skills vanished during the 60 or so years of the mission period.

After Mexico won its independence from Spain, the new government ordered all mission lands turned over to the state and the immense herds owned by mission fathers were replaced by herds belonging to Mexican colonists. The governor granted 7,766 acres of Corral de Tierra coastal lands to Francisco Guerrero-Palomares with the natural boundaries of Montara Mountain to the north, the first ridge of the Coast Range to the east, Medio Creek to the south and the Pacific Ocean to the west. His widow married J.G. Denniston, believed to be the first American to own the land, and after his death, the original land grant, Denniston Ranch, was split among his wife and her two sons.

The Spaniards and Mexicans changed the look of the landscape by allowing herds of cattle to roam freely through the creeks and hillsides. Alien plants were introduced that crowded out native bunch grasses and the cattle left barren trails in search of pristine grasslands for grazing.

After the discovery of gold, the Bay Area population exploded and those who returned without a nugget to their name became squatters on land owned by Californios, California-born speakers of Spanish.

The coastal ranches became farms with dairy cattle, grain fields and vegetable gardens. In the 1860s, Americans divided the land into smaller parcels to accommodate the potato and cabbage patches of the Irish immigrants, and the Italian immigrants introduced irrigation and planted artichokes and other vegetables. Because the old foot-trails over Montara Mountain were impractical for bushels of wheat and sacks of potatoes, James Denniston built the first wharf on Half Moon Bay in 1858 so farmers could get their produce to market.

Shortly after the first passenger trains of the Ocean Shore Railway arrived over Montara Mountain, farmers shipped their harvests via railcar. In the 13 years, the train operated—with the slogan ‘*Reaches the Beaches*’—it changed the San Mateo County coast forever. More than 55 suburban tracts were planned along its route from Edgemar in Pacifica to Lobitos, south of Half Moon Bay. On the coastside, Montara, Moss Beach, Princeton-by-the-Sea, El Granada and Miramar are legacies of the railroad’s vision. With the coming of the train, farmers converted grain fields to vegetable gardens and when the railroad ceased operation in 1920, more than 95 percent of the country’s artichokes were grown along this narrow coastal belt between Pacifica and Santa Cruz. Today, Hwy. 1 follows much of the same route as the Ocean Shore Railway.

In 1935, road construction began on Hwy. 1. Some of the first drivers on the road in 1937 were those who had driven the Coastside Boulevard in 1915 and ridden the first Ocean Shore trains in 1908, 29 years earlier. Each new route over and around Montara Mountain promised growth and prosperity to the land north and south.

A landscape is always changing in color, texture, and variety. Each new element added or taken away produces an effect. A landscape history cannot describe what was if its presence left no trace. A tree, plant or animal unique to a habitat that no longer exists is lost forever and its biological impact on the environment remains unknown.

◆ **EARLY AMERICANS**



Cynoglossum grande – Hound’s tongue

GEOGRAPHIC LOCATION ♦



An aerial view of the coastal towns of Montara and Moss Beach, with the Half Moon Bay airport at the bottom of the picture. The Ocean View Farms parcel of Rancho Corral de Tierra is just above Montara, and the farm field near the airport is part of the South Cowell Torello parcel.

Devil's Slide on Montara Mountain is an appropriate beginning and end to a leisurely coastside drive along Hwy. 1. Clinging to the sea, this route offers ocean, mountain and valley vistas with little development between established communities to the outskirts of Santa Cruz. The cruise into Pacifica from Devil's Slide to the north opens access to a network of freeways and Hwy. 1 soon becomes entangled in routes that lead to major urban centers such as San Francisco, San Jose, Oakland, and Marin County. Less than an hour's drive from these metropolitan areas, the treacherous face of Devil's Slide serves as a reminder that Montara Mountain, the majestic guardian of the northernmost entry to this portion of San Mateo's coast, has throughout history protected the area from early 18th and 19th century development and today's urban sprawl.

Before the arrival of Europeans, Native Americans walked the ridges of Montara Mountain and their crossing, named the "Indian Trail" by the first American mapmakers, was the likely route the Spanish explorers followed north across the mountain's Saddle Pass. The coming of the Spanish Mission fathers to Half Moon Bay resulted in a southern crossing over the Santa Cruz Mountains that today follows the route of Hwy. 92.

The northern entrance to the Ocean Views Farms parcel is located on Hwy 1 across from Montara State Beach and approximately six miles south of Pacifica. The southern entry to the Cowell Torello parcel is also bordered by the highway and is located six miles north of Half Moon Bay directly across the road from Half Moon Bay Airport. The expanse ranges from the foot of Devil's Slide and Montara Mountain in the north to near the town of El Granada to the south. It surrounds the coastal towns of Montara and Moss Beach and, from its peaks the first trickles of San Vincente and Denniston creeks flow down toward the Pacific Ocean.

The property borders McNee Ranch State Park and San Pedro Valley County Park to the north and San Francisco Bay watershed lands on the east. The land is currently zoned for agriculture and resource management and falls entirely within the "rural" designation of the San Mateo County Coastal Zone.

Comprising the majority of the property, Cowell Torello, once known as the Denniston Ranch, lies to the south. The northern property is adjacent to Golden Gate National Recreational Area, the largest urban national park in the world.

The varied topography and unique siting of this property have contributed to its rich and diverse biological value. For the purposes of this report, physical descriptions of the parcels of property collectively called Rancho Corral de Tierra-Palomares are defined as follows on the accompanying topography and aerial photo maps:

Ocean View Farms, approximately 223 acres

Located to the south of Devil's Slide, it sits adjacent to Montara State Beach and McNee Ranch State Park. The lower waters of Martini creek form its northern boundary. On the broad coastal terrace, 20 acres is in active agricultural production and there is a small stable operation on the north side. To the east from the near-sea-level terrace, the land rises to the foothills of Montara Mountain at an elevation of 500 ft. A county-owned road (Old San Pedro Road) crosses the parcel from north to south, linking the town of Montara with McNee Ranch State Park. A spring fed seep drainage and a small creek cross the property east to west.

Montara Mountain, approximately 600 acres

This parcel to the east and upland from Ocean View Farms has terrain ranging from narrow valleys to foothills to mountain peaks. The valley floors at lower elevations consist of abandoned agricultural fields and recovering coastal prairie. At the east end of the Martini Creek Valleys, the land rises dramatically in less than a mile to more than 1500 feet at three of the four peaks of Montara Mountain. It is adjacent to McNee Ranch State Park and San Pedro Valley County Park to the north, and the San Francisco Watershed to the east. The parcel contains the headwaters of Montara creek and the South Fork of Martini creek.

◆ **PARCEL DESCRIPTION & TOPOGRAPHY**



The topography of the Denniston creek watershed.

Cowell Torello (North and South), approximately 3,437 acres

The 1710 acres of the Cowell Torello North parcel lies to the south of the Montara Mountain parcel and adjacent in part to the San Francisco Watershed to the east. The ridge of the mountain continues along the northeast corner of this property at an elevation of approximately 1500 feet, from which emerges the headwaters for San Vicente and Denniston creeks. These creeks have carved deep canyons down the mountain-side and through the lower foothills, emerging onto the coastal terraces some 1200 below.

The southeastern part of this parcel, rugged, steep and with no road access, contains some of the least disturbed and still unexplored natural habitat on the San Mateo County coast.

The 1727 acre Cowell Torello South parcel consists of foothills that gently roll out into the rich alluvial fans on the coastal terraces. The parcel stretches between the communities of Moss Beach on the north and El Granada to the south. Two smaller watersheds, Deer creek and Arroyo de en Medio, flow from sources on the eastern leg of the parcel. The agriculture operations is situated on the lower terrace, and land is leased for three horse stables There are established reservoir systems on the lower parts of Denniston and San Vicente creeks.



View of the mountain peaks of Rancho Corral de Tierra Palomares from McNee Ranch State Park.

Montara Mountain is the northern-most spur of the Santa Cruz Mountains, a chain that comprises the main geological separation of the Peninsula Coast from the bayside lands. The ridge extends to the northwest to San Pedro Mountain, and then drops dramatically to the ocean at Devil's Slide and San Pedro Point.

Rancho Corral de Tierra sits primarily on a large unique formation known as Montara Mountain Granitic Rock, an ancient medium-to-coarsely crystalline foliated granite of mostly quartz diorite that is deeply fractured and weathered. Outcrops of this material are common at the upper elevations, providing unique conditions for specialized plant and animal communities. The soil in these higher elevations is typically type 128 Scarper-Miramar soils.

Where the creeks have cut into the rock, deposits of loose, unsorted sand, silt, clay, gravel and organic material line the creek beds, leading to rich, older alluvial deposits on the terraces to the west that form the rich loamy soils prized by coastal agriculture. The terraces at the north and south ends of Rancho Corral de Tierra, where the agricultural operations are located, are of Soil type 130 Typic Argiustolls and rated as Prime Agricultural Lands.

The unique combination of mountain terrain and close proximity to the Pacific Ocean help create a cool but temperate climate for the western slopes of Montara Mountain. The moderating influence of the ocean waters and the high ridgeline that blocks the more variable inland temperatures keep the area cooler in the summer and warmer in the winter than most of the Bay Area.

Aside from the sometimes fierce winds at the higher elevations, this climate, with a very short winter season, almost no frost or excessive heat, and a regular supply of moisture from fog and condensation, encourages a rich diversity of plant and animal life.

◆ GEOLOGY AND SOILS

◆ CLIMATE



Cirsium occidentale – cobweb thistle
on the Montara Mountain parcel
overlooking Sweeney Ridge

Current Biological Status Summary

The world of the Native Americans was unchanging for 5,000 years. Their stewardship did change the landscape with the annual torching of the grasslands, but as hunters and gatherers, they only took what they needed to survive. After the arrival of the Spaniards and later the Mexicans, the coastal grasslands became vast grazing grounds for herds of cattle. American ranchers who arrived in the 1860s also grazed cattle and grew grain and hay. It was the 19th century American farmers who changed the landscape from open ranges to fenced pastures, grain and vegetable fields. The casual natural boundaries of Mexican land grants became survey lines dividing parcels into more plots and smaller pieces. The farmers planted trees, especially eucalyptus, and other non-native grasses and plants were introduced over time. In the early 1900s, the Ocean Shore Railroad changed the landscape from sparsely populated farmland to small townships and resorts and the boundaries between parcels of land became more rigid and a valuable commodity.

◆ **BIOLOGICAL IMPORTANCE**



Lupinus arboreus – Yellow Bush Lupine

An essential element in the biological importance of Rancho Corral de Tierra is the extent of its undisturbed habitats. Healthy and dynamic natural systems develop over long periods of time to gain the genetic diversity and adaptability to thrive and survive.

Many of our parks and preserves have, unfortunately, at some time in the past, been cleared, harvested, grazed or developed. Their natural areas are in recovery, and have not yet re-established the complex interdependencies of mature ecological systems.

The natural habitats of Rancho Corral de Tierra, and much of Montara Mountain, have existed for thousands of years before humans came on the scene. They have developed into associations and communities not found anywhere else in the world. Species that have been driven to extinction elsewhere thrive here, in a balanced yet adaptable and dynamic biosystem.

The value of this maturity can be seen in the wide variety of species and the deep diversity of habitats and adaptations found on the property. Its scientific importance is obvious, as a natural laboratory for learning about the dynamics of a thriving natural habitat. But more important is the legacy of preserving such a substantial tract of the undisturbed natural world for the experience and learning of generations to come.

Ecological systems are not easily contained by property lines, and property lines do not always isolate fragile resources from outside influences. This may be a problem in a natural preserve that is surrounded by development, but in this case, it is an extremely fortunate characteristic.

Rancho Corral de Tierra is an integral part of the larger Montara Mountain complex. Surrounded by McNee Ranch State Park and San Pedro Valley County Park to the north, the San Francisco Watershed to the east, and the undeveloped rural lands to the south, this property is part of the protection and preservation of an entire, natural mountain ecosystem.

The diversity of life throughout the entire mountain remains connected: water can flow, plants can cross pollinate with others of their species miles away, insects will travel in their fashion, birds will fly and nest, animals will have room to migrate and hunt. The distribution of life throughout the mountain means that a greater diversity of adaptability is possible – a species need not die out completely because of harsh conditions on their side of the slope.

Montara Mountain is also part of a larger system that has become known as the Santa Cruz Mountains Bioregion. Stretching for nearly 70 miles from Pacifica to Santa Cruz, this region is the connection of the coastal mountain ridge to the waters of the Monterey Bay National Marine Sanctuary. It supports a variety of life and habitats: from elephant seals to mountain lions, from kelp flies to scarab beetles, from deep hidden redwood canyons to exposed wind-swept granite outcrops.

As we examine the rich diversity of Rancho Corral de Tierra, we should keep in mind the magical duality of isolation and connectiveness that this land brings with it.

◆ BEYOND THE BORDERS



Delphinium californicum – Coast delphinium

Looking out to the next ridge beyond the borders

Unique Biological Resources

The variety of unique species and associations found on Rancho Corral de Tierra is an expression of the extensive range of habitats, climates and geography found on the property: elevations ranging from sea level to 1800 feet, over 17 miles of riparian corridors, and acres of grasslands, meadows, scrub associations, chaparral, rock outcrops and wetlands.

Because of the large areas of the property that have not been fully surveyed, occurrences of interest within 2 miles of the property boundaries that have a high probability of existing on the property have been included, with a notation of where it is likely to be found. Further details & delineations of these communities may be found in the **Unique Biological Communities** section of Part II of this report.

PLANT COMMUNITIES ◆



Ceanothus thrysiflorus – Wild lilac thrives in the coastal scrub associations of Rancho Corral de Tierra

Grasslands and Prairies

Coastal Grassland communities are found at the lower elevations that have not been cleared for agriculture, and prairie communities are found on the exposed ridges of the foothills.

Coastal Scrub Associations

As the predominate vegetative cover on the Montara Mountain, the Coastal Scrub community is one of the largest and most complex on the central California Coast.

Maritime Chaparral

Hardier evergreen plants found at the higher elevations on rockier ground.

Riparian Corridors

Dense and varied riparian habitat is found along the creeks, streams and springs of Rancho Corral de Tierra.

Arabis blepharophylla (coast rockcress).
Montara Mountain parcel

Artostaphylos montaraensis (Montara manzanita)
Montara Mountain parcel

Erysimum franciscanum (Franciscan wallflower)
Ocean View Farms and Montara Mountain parcels, possible
on all four.

Grindelia hirsutula maritima (San Francisco gumplant) -
Possible on Ocean View Farms and Montara Mountain
parcels.

Lupinus eximius (Montara Mountain blue bush lupine): On
Montara Mountain parcel, possibly both Cowell Torello
parcels.



Potentilla hickmanii – Hickman's cinquefoil

◆ SPECIAL STATUS PLANTS



Arabis blepharophylla – coast rockcress

A member of the mustard family, it is also
one of the prime food plants for the San
Bruno elfin butterfly

Lupinus latifolius var. dudleyi
(Dudley's lupine): On South Cowell
Torello parcel.

Lupinus variicolor (varicolored
lupine): Key food plant for San Bruno
elfin Butterfly (see below) – found on
all parcels.

Potentilla hickmanii (Hickman's
cinquefoil): On Ocean View Farms
parcel, possibly on South Cowell
Torello parcel.

Silene verecunda ssp. verecunda
(San Francisco Champion): On North
Cowell Torello parcel, possibly on
Montara Mountain parcel.

ANIMAL COMMUNITIES ♦



Canis latrans – the western coyote
Rancho Corral de Tierra is widely populated with coyote – sometimes, you can hear them howling at sirens coming from Highway 1.

The animal community of Rancho Corral de Tierra includes bobcats, brush rabbits, black-tailed hares, chipmunks, ground squirrels, gray squirrels, wood rats, black-tailed deer, gray fox and an abundance of smaller mammals, rodents, reptiles and amphibians. Mountain lions include the areas around the peaks within their regular ranges, and can occasionally be seen down in the lower valleys.

The environs of the mountain offer ample forage, shelter, and food for an extensive animal community. The networks of riparian corridors and springs provide water, shelter, and migration corridors.

The extensive small mammal and rodent population supply prey for raptors and scavengers. The continuing blooming plant community supports a large population of insects that are in turn fed on by birds, who also depend on the berries and fruits of the various plants.

Birds that are frequently in residence include red-tailed hawks, northern harriers, kestrels, turkey vultures, California Quail, and numerous smaller passerine birds: chickadees, warblers, sparrows, wrens and wrentits.

Denniston and San Vicente creeks have documented historic runs of southern steelhead, and possibly Coho salmon, although the populations seem to be extant. It is probable that Martini and Montara creeks also once supported small populations of steelhead. All of the creeks have had blockages to fish entry established by newer highway culverts, but with replacement of these obstacles, Rancho Corral de Tierra presents a rare opportunity to re-establish extant salmonid populations to watersheds that have retained the migration and spawning characteristics necessary for these fish.

A number of rare and endangered animals make their homes on or in the immediate vicinity of Rancho Corral de Tierra:

California black rail – *Laterallus jamaicensis coturniculus* - in marshy areas near the mouths of creeks.

California red-legged frog – *Rana aurora draytonii* - confirmed sightings on the Ocean View Farms and South Cowell Torello parcels along all four creeks.

Dusky-footed wood rat – *Neotoma fuscipes annectens* - found in riparian areas where it builds a large nest of twigs and debris. Sighted in McNee Ranch State Park, expected to be found along any of the stream corridors on the property.



San Bruno elfin butterfly – *Incisalia mossii bayensis* - documented on the Montara Mountain parcel and surrounding areas.

San Francisco garter snake – *Thamnophis sirtalis tetrataenia* - documented on the North & South Cowell Torello parcels along Denniston and San Vicente creeks.

Southern steelhead – *Onchynchus mykiss irideus* - records of historic populations in Denniston and San Vicente creeks.

◆ SPECIAL STATUS ANIMALS



Mission blue butterfly – *Icaricia icariodes missionensis* -sighted in the SF Watershed property near the Montara Mountain and North Cowell Torello parcels.

Peregrine falcon – *Falco peregrinus anatum* -Established pairs at Devil's Slide to the north and in the SF Watershed to the east; have been observed hunting over the property.

Saltmarsh common yellow-throat – *Geothlypis trichas sinuosa* - nesting pairs have been documented in Princeton marsh, and foraging on the property along the streams and drainage areas.



II. Biological Description of Rancho Corral de Tierra

It would take years to fully compile a complete description of a property of this diversity and size, but this report presents a starting point by utilizing existing resources, experience, and familiarity with the landscape to establish a base of knowledge and direction for further research. Its importance cannot over-emphasized – Rancho Corral de Tierra in particular, and Montara Mountain in general, present a protected island of coastal biological diversity from which we will have much to learn.

This report will not have the resources to delve into the many complexities of the natural webs of life found here, but will lay the groundwork for an understanding of what is here, why it is important, and that, hopefully, can help us determine what needs to be done next.

METHODOLOGY

The time constraints of this project and size of the property prohibited a comprehensive field research and survey of the biological resources. But the continuing interest in this and adjacent properties, both for conservation and development purposes, has generated extensive literature on historical and current conditions that can be used as a reliable base of reference and an indication of areas for further study. A complete list of the references used in this report may be found in **Appendix A**.

Reports and map data were collected from the California Department of Transportation (CALTRANS), the County of San Mateo (SMCo), California State Parks, United State Geological Survey (USGS), conservation organizations, development proposals, and individuals. Databases from California Department of Fish & Game (**RAREFIND II**) and **CalFlora** were utilized to locate recorded occurrences and establish levels of verification. This compiled data was entered into a database structure along with a general listing of flora & fauna for the area. The full data base, along with this document and other supporting field documentation, will be available on CD-ROM.

Maps were assembled based on the USGS Montara Mountain Quadrangle topographic map, and boundaries for the subject property and adjoining areas were based on data from the SMCo Assessor's Office, POST, and other map sources. Boundaries and location entries were referenced to existing mapping work by POST for compatibility. Aerial photographs supplied by POST and obtained from USGS were corrected and aligned with the topographic maps and boundary delineations. Latitude/Longitude coordinates and elevations were derived from the TOPO! Computer program, qualified to the base maps and verified by field GPS readings. Species locations, geologic data, plant communities, watershed boundaries, etc., were arranged as a series of overlays to the base maps to construct the maps used in this report and to generate specific area and subject maps for field work.

The compilation of historic records and existing documented conditions were used to generate the overview report that comprises the first part of this document. This was delivered to POST on May 9, 2001. New data and verifications that have been developed with the production of this second section has been incorporated into a revision of the first part of the document where necessary.

Targeted areas for field survey and verification were determined by analysis of the maps, aerial photos, and existing documentation. These fell into 5 categories: ridgelines, water courses, granite rock outcrops and special focus areas.

Ridgelines:

The major ridgelines that transverse the property present a wide range of plant associations, from Maritime Chaparral, Coastal Scrub, to Coastal Prairie, contained numerous sites of historic occurrence of special status species, and presented good observation lines for other sections of the property. Ridgelines were traveled by vehicle where possible, or by foot where necessary. The ridges surveyed were:

- Martini creek ridge – the main ridge between the north and south forks of Martini creek
- Montara creek ridge – the main ridge that forms the north boundary of the Montara creek watershed and separates it from the Martini creek watershed and the two smaller drainages to the north. Sometimes referred to locally as the “Water Tank Ridge” because of the large water storage tank on the lower part of the ridge.
- San Vicente creek ridge – the main ridge that forms the northern boundary of the San Vicente creek watershed, separating it from the Montara and Sunshine Valley creek drainages to the north.
- North Denniston ridge – the main ridge that separate the Denniston and San Vicente creek watersheds.
- East Denniston ridge – the east-west tending ridge to the south of Denniston creek.

Water Courses:

Rancho Corral de Tierra contains most of or significant parts of four main watersheds, as well as a number of smaller creeks, drainages and wetlands. Creek valleys were surveyed to determine general condition, ground check vegetative cover, and verify reported special status species occurrences. The four surveyed were Martini, Montara, San Vicente and Denniston creeks. Aside from the parts of the creeks that are on the property, a general assessment of upstream and downstream conditions was included. Details of the specific watersheds and drainages of the property can be found in the **Watershed Delineations & Resources** section of this document

Granitic Rock Outcrops:

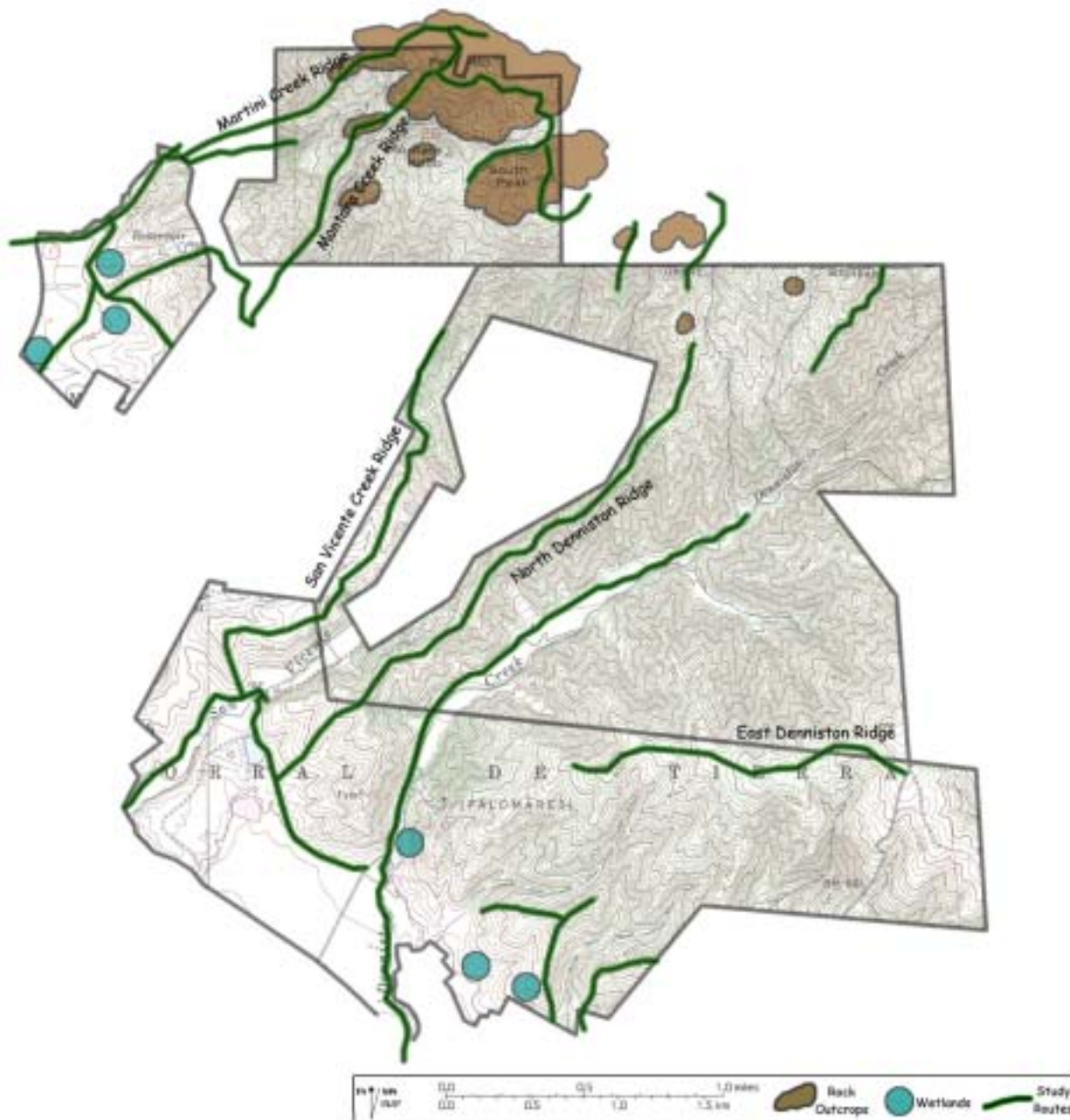
These areas were targeted for survey because of the number of reported occurrences of special status species and because the soils and conditions of these areas often create the opportunity for unique habitats and plant communities to develop. Rock outcrop areas were identified in the area of South Peak, Peak Mountain, Montara Knob, and along the Martini creek, Montara creek, and North Denniston Ridges.

Special Focus Areas:

In addition to the larger categories above, a number of special focus areas were identified. Many of the remaining native grassland areas on the property, the transitional areas from grassland to scrub, and

areas that are recovering from earlier agricultural or grazing operations often present unique conditions for certain plant communities and special status species. A number of wetland areas exist on the property, as well as areas that are within the immediate vicinity of existing development. Areas to study were identified in the foothill areas of the Ocean View and Cowell Torello South Parcels, along San Vicente creek, and around the existing reservoirs.

The following map delineates the areas of field study:



UNIQUE BIOLOGICAL COMMUNITIES

The environment of Rancho Corral de Tierra and Montara Mountain has protected unique coastal communities of plants and animals that have developed in a natural balance not found anywhere else on the central California coast. These would be considered special if only for their relatively undisturbed condition, but beyond that, individual species, associations and habitats have developed that are unique to this area.

UNDISTURBED HABITATS

Part of the value of an undisturbed habitat is in its natural diversity and flexibility to adapt to a wide range of cyclic conditions over years, decades, even centuries. A healthy and undisturbed biology maintains a genetic diversity of individuals that can guarantee its survival at the extremes of its natural ranges, and adapt to climatic changes that happen over time. A number of specific & unique communities and associations are found on the subject property – again, time and resources prevented a full inventory and ranking of the individual species in each of the communities.

Grasslands and Prairies

The lower elevations of Rancho Corral de Tierra that have not been cleared for agriculture are coastal grassland associations, with prairie communities found on the exposed ridges of the foothills. These communities have a substantial herbaceous population, including several Special Status Species such as San Francisco wallflower (*Erysimum franciscanum*), coast rockcress (*Arabis blepharophylla*), and the rare & endangered Hickman's cinquefoil (*Potentilla hickmanii*). These grasslands are found in the lower foothill areas of the Ocean View Farms parcel and both north and south Cowell Torello parcels.

Grasslands and prairies are home to numerous small burrowing mammals and reptiles, such as pocket gophers and fence lizards. The low vegetation provides migratory and feeding areas to

birds, frogs and snakes, grazing for deer and hunting for larger predators. Lupines, potentilla, irises, lilies and other largely annual herbaceous plant populations support an extensive insect population on its leaves, seeds, and nectars, which in turn attracts birds and reptiles.



Coastal Scrub Associations

The Coastal Scrub community on Montara Mountain is one of the largest and most complex on the central California coast and the predominate vegetative cover on the mountain. These communities



are usually dominated by coyote brush (*Baccharis pilularis*) and California sagebrush (*Artemisia californica*) with significant components of wild lilac (*Ceanothus thrysiflorus*), coffeeberry (*Rhamnus californica*), poison oak (*Toxicodendron diversilobum*), and yellow bush lupine (*Lupinus arboreus*). Two unique groupings (the deciduous California

hazelnut/cream bush association and the California wax myrtle/coyote brush/coffeeberry association) are known on the Mountain and further stands of these particular communities are expected to be found on the Montara Mountain and North Cowell Torello parcels.

The Coastal Scrub association on East Denniston ridge is particularly interesting – at the higher elevations, the scrub develops into a very tall (2 – 4 meters) multi-storied community with coyote bush, coffee berry, and poison oak as the dominate species, interspersed with significant stands of twinberry (*Lonicera involucrate* var. *ledebourii*), wild lilac, and red elderberry (*Sambucus racemosa*), as well as seemingly-out-of-place patches of creek dogwood (*Cornus sericea*) and thimbleberry (*Rubus parviflorus*) that would indicate the presence of a high water table.

Maritime Chaparral

At the higher elevations, the eroding hillsides and coastal scrub give way to rockier ground and the hardier evergreen chaparral. One unique maritime chaparral community of Montara Mountain is centered around the endemic Montara manzanita (*Artostaphylos montaraensis*), associated with brittle-leaf manzanita (*A. tomentosa* ssp. *crustacea*), golden chinquapin (*Chrysophylla chrysolepis*) and California huckleberry (*Vaccinium ovatum*). This community is found on the Montara Mountain parcel and is likely to be found on the North Cowell Torello parcel.

Another unique variation is found in the immediate area around Peak Mountain – here the chaparral dominate is coast silk-tassel (*Garrya elliptica*), with associations of huckleberry, coffeeberry, wild lilac and golden chinquapin.



Artostaphylos montaraensis

Montara manzanita in the maritime chaparral community of the Montara Mountain parcel.

The chaparral is often broken up by areas of **rocky outcrops**. The exposed granitic material and thin soils of these areas can not support the heavy plants of the chaparral, and so are populated by grasses, herbaceous annuals and succulents. Here, the combination of broadleaf stonecrop (*Sedum spathulifolium*), varied-color lupine (*Lupinus variicolor*) and other nectar plants such as coast rockcress (*Arabis blepharophylla*) and San Francisco wallflower (*Erysimum franciscanum*) combine to create the larval and adult habitats for the endangered San Bruno elfin Butterfly.



Riparian Corridors

The creeks, streams and springs of Rancho Corral de Tierra feature a dense and varied riparian habitat, with arroyo willow (*Salix lasiolepis*), Sitka willow (*Salix sitchensis*), red elderberry (*Sambucus racemosa*), twinberry (*Lonicera involucrata*), giant horsetail (*Equisetum arvense*), lady fern (*Athyrium filix-femina*), creek dogwood (*Cornus sericea*) and thimbleberry (*Rubus parviflorus*). The steep drop from the headwaters, narrow valleys and relatively short valley floor stretches before entering the coastal terraces has adapted this community to heavily favor the willow and dogwood thickets, without the larger alders and evergreen trees usually found in longer creek runs. This is typically termed “Riparian Scrub”, which transitions into a more classically defined coastal scrub community as distance from the creek influence increases.

SPECIAL STATUS SPECIES

Key to abbreviations and status rankings

California Native Plant Society (CNPS) Lists

- 1A = Plants Presumed Extinct in California
- 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere
- 2 = Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
- 3 = Plants About Which We Need More Information – A Review List
- 4 = Plants of Limited Distribution – A Watch List

State-Listed Plants

- CE = State-listed, endangered
- CT = State-listed, threatened
- CR = State-listed, rare
- CEQA = CEQA consideration is mandatory Lists 1 & 2
- CEQA? It is recommended that evaluation for CEQA consideration Lists 3 & 4

State-Listed Animals

- SE = State-listed, endangered
- ST = State-listed, threatened
- SCE = State candidate (endangered)
- SCT = State candidate (threatened)

Federally-Listed Plants

- FE = Federally-listed, endangered
- FT = Federally-listed, threatened
- PE = Federally-proposed, endangered
- PT = Federally-proposed, threatened
- C1 = Enough data are on file to support federal listing
- C2 = Threat and/or distribution data are insufficient to support federal listing
- C2* = Threat and/or distribution data are insufficient to support federal listing, but the plant is presumed extinct
- C3a = Extinct
- C3c = Too widespread and/or not threatened

Federally-Listed Animals

- FE = Federally-listed, endangered
- FT = Federally-listed, threatened
- FPE = Federally proposed (endangered)
- FPT = Federally proposed (threatened)
- FPD = Federally proposed (delisting)

PLANTS

***Arabis blepharophylla* - coast rockcress (red dot) - ●**

Status: CNPS: 4, State/Federal: /C3c

Habitat: Rocky outcrops, steep banks in coastal scrub and prairie. Found in areas of thin soils and low competition from other vegetation.



3 Occurrences: (#'s 1-3) 1 confirmed, 2 historic and not verified at this time.

- (1) Confirmed, off-property, on San Pedro Mountain, adjacent to northern boundary of McNee Ranch State Park.
Source: Corelli, Kozak, Vasey.
- (2) Historic, not confirmed, South Peak Area, Montara Mountain parcel.
Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983
- (3) Historic, not confirmed, South Peak Area, SF Watershed property adjacent to eastern boundary of Montara Mountain parcel.
Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983

Notes: South Peak area explored on May 11, 2001 by Kozak and again on May 17, 2001 by Corelli and Kozak. Appropriate rocky areas on subject property and adjacent SF Watershed property were covered in rough 20' transects. No specimens were found, but almost all of the common associates were observed. Although the bloom period for the plant was probably over at this time, the distinctive basal rosette and stem with seed pods would have been found. We still believe that these areas have high potential for populations of this species.

***Artostaphylos montaraensis* - Montara manzanita (green dot) - ●**

Status: CNPS: 1B, State/Federal: /C2

Habitat: Slopes and ridges in maritime chaparral and coastal scrub on decomposed granitic soil.



9 Occurrences: (#'s 4-12) 9 from RAREFIND II and cross referenced by CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983 and subsequent Devil's Slide Environmental Reports.

- (4-9) Confirmed, off-property, on the north facing slopes of Montara Mountain in either McNee Ranch State Park or San Pedro County Park, but all with 1 mile of subject property boundaries.
- (10,11) Confirmed, off-property on SF Watershed Property but immediately adjacent to western boundaries of Montara Mountain and North Cowell Torello parcels
- (12) Confirmed, approx 1.1 miles east of North Cowell Torello parcel in SF Watershed.

Notes: Montara manzanita favors north facing slopes in the maritime chaparral. Most of the slopes on the subject property face west or south, with the exception of the slopes along the south fork of Martini creek and at the eastern section of the North Cowell Torello parcel. These areas were not immediately accessible in this survey, but examination from nearby ridges and of aerial photographs shows high potential for this plant's occurrence. Current studies of special species plants being done in the SF Watershed property by Toni Corelli have documented Montara manzanita immediately adjacent to the North Cowell Torello parcel. These data were not available at the time of this writing but will be included in any supplements to this report.

***Cirsium andrewsii* – Franciscan thistle (blue dot) - ●**

Status: CNPS: 4, State/Federal: CEQA?

Habitat: On coastal bluffs, prairie, ravines, scrub and seeps. Sometimes ultramafic.

1 Occurrence: (# 13) Source: Mike Vasey, 2000.

- (13) Confirmed, off-property, on the south side of Green Valley in McNee Ranch State Park, approximately .85 miles north of Ocean View Farms parcel.

Notes: The discovery of this plant to the north of the subject property is a recent occurrence – appropriate habitat for the species exists on all four parcels of the subject property.

***Erysimum franciscanum* - Franciscan wallflower (yellow dot) - ●**

Status: CNPS: 4, State/Federal: /C2

Habitat: Ultramafic out-crops and granitic cliffs in grassland and coastal dunes and scrub.



5 Occurrences: (#'s 14-18) All confirmed.

- (14) Confirmed, off-property, on the western ridges of the San Pedro Headlands property north of Devil's Slide, approx. 1.9 miles north of Ocean View Farms parcel. Sources: Kozak, Vasey.
- (15) Confirmed, off-property, on CALTRANS right-of-way along east side of Highway 1 north of Green Valley, approx. 1.1 miles north of Ocean View Farms parcel. Sources: Corelli, Kozak.
- (16) Confirmed, off-property, along San Pedro Mountain ridge north of green Valley, approx. 1.5 miles north of Ocean View Farms parcel. Sources: Corelli, Kozak.
- (17) Confirmed, off-property, along San Pedro Mountain Road in McNee Ranch State Park, approx. 0.4 miles north-northwest of Montara Mountain parcel. Sources: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project, September 1983 and subsequent Devil's Slide Environmental Reports, Corelli, Kozak, Vasey.

- (18) Confirmed, at eastern edge of Montara Mountain parcel, between North Peak and South Peak. Sources: Corelli, Kozak.

Notes: Franciscan wallflower favors open areas and steep hillsides or cliffs with a direct marine influence. Current studies of special species plants being done in the SF Watershed property by Toni Corelli have documented Franciscan wallflower immediately adjacent to the North Cowell Torello parcel. The discovery of occurrence #18 and the documentation of these populations in the watershed would indicate the general area around the peaks and the upper Denniston watershed would support an extensive population.

***Grindelia hirsutula maritima* - San Francisco gumplant: (white dot) - ○**

Status: CNPS: 1B, State/Federal: /C2

Habitat: Sandy or ultramafic slopes on coastal bluffs, coastal scrub and grassland.

2 Occurrences: (#'s 19-20) Non-confirmed.

- (19) Non-confirmed, off-property, on ocean bluffs near Highway 1, approx. 0.4 miles north of Ocean View Farms parcel. Source: RAREFIND II.
- (20) Non-confirmed, off-property, on ocean bluffs near outfall of Montara creek near Highway 1, approx. 0.65 miles south-southwest of Ocean View Farms parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983 and subsequent Devil's Slide Environmental Reports.

Notes: Field surveys to the two locations specified failed to positively identify any plants, but at the time of the field work (mid-May) the SF Gumplant is just starting to bud, and identification can be difficult. The population of the Montara creek location has been thought to be extant. Several specimens were located that might be the subject species, or may be a more common species such as *G. hirsutula* var. *hirsutula* (Hairy gumplant) or *G. stricta* (Pacific Coast gumplant). An unidentified *Grindelia* sp. have also been reported near the wetland and grassland areas at the southwest corner of the Ocean View Farms parcel (ref. SMCo Planning application # PLN2000-00645 for Montara Sanitary District sewer line replacement along Kanoff Ave.) Subsequent observations would verify identities, and would be included in any supplements to this report. Both the Ocean View Farms and South Cowell Torello parcels contain suitable habitat for this species.

***Linanthus croceus* (red triangle) - ▲**

Status: CNPS: 1B, State/Federal: CE(?)/FE(?)

Habitat: Coastal bluff, prairie and grasslands.

1 Occurrence; (# 21)

- (21) Confirmed, off-property, on ocean bluff in Moss Beach, approx. 1 miles south of Ocean View Farms parcel. Sources: Corelli, Kozak, Vasey.

Notes: *Linanthus croceus* was thought to be extinct for almost 80 years – this small population was recently discovered. Compatible habitat for this species exists on the Ocean View Farms and the South Cowell Torello parcels. Exact status of application for Federal and State listing unknown as of this writing.

***Lupinus eximius* – (green triangle) - ▲
Montara Mountain blue bush lupine/San Mateo bush lupine:**

Status: CNPS: 3, State/Federal: /C2

Habitat: Coastal bluffs, coastal scrub and grassland, open areas and disturbed areas above (generally) 600 ft. elevation.



11 Occurrences: (#'s 22-32) The occurrence of *L. eximius* is too numerous to list the individual plants, so we have delineated the main populations on or in the immediate vicinity of the subject parcel. In general, *L. eximius* is found in open areas above the 600 ft. elevation, and only on Montara Mountain. Like its relative *L. arboreus* (Yellow bush lupine), it is an effective colonizer of disturbed areas and so is found mostly along roads & trails, in disturbed fields, or in natural open areas. It is seldom found in the midst of the thick coastal scrub or chaparral. This limits its distribution to areas where trails and open areas exist.

In all, we delineated approximately 626 acres of habitat where it can be expected to find *L. eximius*. The area for the SF Watershed property listed here is only that within the immediate vicinity of the property – substantial populations likely exist in other locations. The same is true for San Pedro Valley County Park. Approximately 299 acres of this habitat were within the boundaries of the subject property. Other populations would be expected to be found in the northeast part of the North Cowell Torello parcel, at the top of the Denniston creek watershed. Population densities varied considerably, from only one or two plants per acre to areas of hundreds of plants where it is one of the dominant species.

- (22) San Pedro Mountain population: Confirmed, approximately 49 acres mainly on the west facing slope above Highway 1, approximately 1.4 miles north of the Ocean View Farms parcel. Source: Corelli, Kozak, Vasey.
- (23) McNeer Ranch State Park population: Confirmed, approximately 88 acres in the corridor that follows San Pedro mountain Road and the Peak Access Road, approximately 0.3 miles north of the Montara Mountain parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983 and subsequent Devil's Slide Environmental Reports, Corelli, Kozak, Vasey.
- (24) San Pedro Valley County Park population: Confirmed, approximately 24 acres that follows the Montara Mountain trail to where it joins the Peak Access Road. Other populations exist in the eastern sections of the park that are not included here. Approximately 0.6 miles north of the Montara Mountain parcel. Source: San Mateo County Department of Parks & Recreation, Corelli, Kozak, Vasey.

- (25) Montara Mountain population: Confirmed, approximately 50 acres in the west facing valley that lies between the four peaks of the mountain, mostly on the Montara Mountain parcel. Source: Corelli, Kozak.
- (26) Martini creek ridge population: Confirmed, approximately 39 acres that follow the ridgeline down from the peaks to the 600 ft. elevation level. On the Montara Mountain parcel. Source: Kozak.
- (27) Montara ridge population: Confirmed, approximately 33.5 acres that follow the ridgeline down to the 600 ft. elevation level. *L. eximius/arboreus* intermediate specimens noted at lower range. On the Montara Mountain parcel. Source: Kozak.
- (28) SF Watershed population: Confirmed, approximately 128 acres in the immediate vicinity of the subject property, mostly along the main fire road and associated side roads. Adjacent to the eastern boundaries of the Montara Mountain and North Cowell Torello parcels. Other populations exist in the eastern and northern sections of the property that are not included here. Source: Corelli, Kozak.
- (29) San Vicente ridge population: Non-confirmed. Site indicated by records has been badly damaged by off-road-vehicle use. No specimens of species located. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983
- (30) San Vicente creek population: Non-confirmed, off-property within "Parcel X". Access to property was not possible during this study. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983
- (31) North Denniston ridge population: Confirmed, approximately 41 acres that follow the ridgeline down from the peaks to the 600 ft. elevation level. On the North Cowell Torello parcel. Source: Kozak.
- (32) East Denniston ridge population: Confirmed, approximately 173 acres extending from the 600 ft. elevation at the north end of the ridge to the property boundary at the south, and extending eastward along the to access roads back down to the 600 ft. elevation levels. *L. eximius/arboreus* intermediate specimens noted at lower range at the southwest end of range. On the South Cowell Torello parcel. Source: Kozak.

Notes: The line between populations of *L. eximius* and *L. arboreus* is often very distinct, with very little overlap, and in the cases surveyed, always around the 600 ft. elevation line. Research into these two species has yet to determine why they are so separated, when they seem to be so closely related. *L. eximius* is a much earlier bloomer (usually February – May), and there may be a difference in the seasonal timing of their associated pollinators that is altitude-related. There may be an environmental adaptation involved – it was noted during studies done for the Devil's Slide Bypass that the median fog level in the area is at about 600 feet. Or it may be that what we are seeing, as Toni Corelli has suggested, are two populations growing toward each other: *L. eximius* from the higher elevations where it had evolved, and *L. arboreus* from the lower elevations where it is most common.

Of further interest with this species, on both the Montara and East Denniston ridges, intermediary or transitional individuals with mixed blue and yellow coloration were noted that seemed to possess mixed characteristics of the two species.

***Lupinus latifolius* var. *dudleyi* - Dudley's lupine: (blue triangle) - ▲**

Status: Not rated

Habitat: Open areas on coastal bluffs, coastal scrub and grassland.

1 Occurrence: (# 33) Historic.

- (33) Non-confirmed, on San Vicente creek ridge. Site indicated by records has been badly damaged by off-road-vehicle use. No specimens of species located. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983

Notes: Although this species is not listed as one of concern, it is included here for compatibility and as cross-reference with the CALTRANS reports.

***Potentilla hickmanii* - Hickman's cinquefoil: (yellow triangle) - ▲**

Status: CNPS: 1B, State/Federal: CE/C1

Habitat: Open pine forests in marshy areas, coastal bluff, prairie and grassy meadows (vernally mesic.)

6 Occurrences: (#'s 34-39).

- (34) Confirmed; on hillside above corrals at Ocean View Farms. Site visit indicates population of several hundred plants within approximate 0.5 acre area. Source: CALTRANS, Corelli, Kozak. Vasey.
- (35, 36) Confirmed; on hillside above Daffodil drainage valley on Ocean View Farms parcel. Site visit confirms population of several hundred plants over about a 1 acre area. Source: RAREFIND II.
- (37) Confirmed; newly documented population; beneath and around a Monterey pine on ridge above Daffodil drainage valley on Ocean View Farms parcel. Approximately 40 – 50 plants. Source: Corelli, Kozak.
- (38) Confirmed; recently documented small population along footpath east of San Pedro Mountain road on Ocean View Farms Parcel. Approximately 20 – 30 plants. Source: RAREFIND II, Vasey.
- (39) Non-confirmed; historic record of 2 sites near ocean bluff in Moss Beach, approximately 1.6 miles south of Ocean View Farms parcel. Site visit did not find any specimens. Population believed to be extant from development and erosion. Source: RAREFIND II, CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983

Notes: Site surveys indicated known existing populations are in good shape, in part because they are protected from any heavy foot or vehicle traffic. Occurrence #38 is of concern as it straddles a footpath that is regularly used by Montara residents walking through the property. The discovery of #37 is

encouraging for finding more populations. Both the Ocean View Farms and South Cowell Torello parcels contain suitable habitat for this species.

***Silene verecunda* ssp. *verecunda* - San Francisco champion:** (white triangle) 

Status: CNPS: 1B, State/Federal: /C2

Habitat: Sand hills and rocky soils in coastal strand, prairie and scrub.

2 Occurrences: (#'s 40-41).

- (40) Non-confirmed; off-property in area east of South Peak adjacent to Montara Mountain parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983.
- (41) Non-confirmed, on San Vicente creek ridge. Site indicated by records has been badly damaged by off-road-vehicle use. No specimens of species located. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983

Notes: South Peak area explored on May 11, 2001 by Kozak and again on May 17, 2001 by Corelli and Kozak. Appropriate rocky areas on subject property and adjacent SF Watershed property were covered in rough 20' transects. No specimens were found, but almost all of the common associates were observed, as well as many specimens of other *Silene* sp. We still believe that these areas have high potential for populations of this species.

REPTILES

***Thamnophis sirtalis tetrataenia* - San Francisco garter snake: (red square) - ■**

Status: State/Federal: SE/FE

Habitat: Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County – prefers dense cover & water depths of at least one foot. Upland areas near water are also very important for wintering and reproduction.

9 Occurrences: (#'s 42-50).

- (42) Non-confirmed; off-property in Pacifica, Laguna Salada at Sharp Park Golf Course. Source: RAREFIND II.
- (43) Non-confirmed, off-property in Pacifica, adjacent to Mori Point at south end of Sharp Park Golf Course. Source: RAREFIND II.
- (44) Non-confirmed; upper Denniston creek beyond the upper agricultural fields. Along creek and first three tributaries. North Cowell Torello parcel. Source: San Mateo County LCP Sensitive Habitat Map update program.
- (45) Non-confirmed; Denniston creek at CCWD reservoir, North Cowell Torello parcel. Source: RAREFIND II.
- (46) Non-confirmed; Denniston creek at north end of Princeton-by-the-Sea subdivision. South Cowell Torello parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983.
- (47) Non-confirmed; Denniston tributary just north of Princeton-by-the-Sea subdivision. South Cowell Torello parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983.
- (48) Non-confirmed; off-property, west of Half Moon Bay Airport at Agricultural reservoir, south of Moss Beach. Approximately 0.35 miles southwest of South Cowell Torello parcel.. Site visit reveals that reservoir has been abandoned, and habitat for support of species is minimal. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983.
- (49) Non-confirmed; off-property, east side of Pillar Point marsh. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983.
- (50) Non-confirmed; in the vicinity of North Peak adjacent top Montara Mountain parcel. Site visit reveals absolutely no habitat to support this species, and we assume this was mapped in error. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project. September 1983.

Notes: Although no actual sightings of the San Francisco Garter Snake were obtained during this study, examination of all the documented sites revealed an abundance of appropriate habitat (with the

exception of #50, which is obviously an error) and evidence of California red-legged frogs (see below), an essential food source for the snake. The evidence and record would support the assumption of a reasonable population in the Denniston creek watershed.

BIRDS

Falco peregrinus anatum - Peregrine falcon: (green square) ■

Status: State/Federal: SE/Delisted

Habitat: Nesting in rocky promontory areas, nearby expansive open areas with extensive bird populations for prey. Primarily on immediate coastal, but moves to inland marshes and cliffs in winter.

Notes: Established nesting pairs at Devil's Slide promontory (approximately 2 miles north of Ocean View Farms parcel) and in the SF Watershed to the east have been observed hunting over the range of property.

Geothlypis trichas sinuosa - Saltmarsh common yellow-throat: (blue square) - ■

Status: State/Federal: /FSC

Habitat: SF Bay region resident, in fresh and saltwater marshes with thick, continuous cover down to water surface for foraging; tall grasses, tule patches and willows for nesting.

2 Occurrences: (#'s 51-52).

- (51) Non-confirmed; off-property in Pacifica: Nesting pair at Sharp Park Canyon east of Highway 1. Source: RAREFIND II.
- (52) Nonconfirmed; off-property in Pillar Point Marsh – various number of nesting pairs observed; habitat threatened by proposed development. Source: RAREFIND II.

Notes: History of returning population for nesting in general area – ideal supporting habitats on property along Martini, San Vicente, and Denniston creeks.

***Laterallus jamaicensis coturniculusi* - California black rail: (yellow square) - □**

Status: State/Federal: ST/FSC

Habitat: Marshy areas near the mouths of creeks or in moist marshy vegetation in or near freshwater.

1 Occurrence: (#'s 53).

- (53) Non-confirmed; off-property in Pillar Point Marsh – various number of nesting pairs observed; habitat threatened by proposed development.. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil's Slide Bypass Project, September 1983.

Notes: History of returning population in area – ideal supporting habitats on property along Martini, San Vicente, and Denniston creeks.

AMPHIBIANS

***Rana aurora draytonii* - California red-legged frog: (white square) - □**

Status: State/Federal: /FT

Habitat: Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.

4 Occurrences: (#'s 54-57).

- (54) Confirmed; off-property in Green Valley creek, east side of Highway 1 in McNee Ranch State Park. Source: RAREFIND II.
- (55) Non-confirmed; on north side of San Vicente creek on South Cowell Torello parcel, approx. 0.25 mi from Highway 1. Source: Brady LSA, Moss Beach Highlands Final Environmental Impact Report. - January 2000.
- (56) Confirmed; upper Denniston creek beyond the upper agricultural fields. Along creek and first three tributaries. North Cowell Torello parcel. Source: San Mateo County LCP Sensitive Habitat Map update program.
- (57) Non-confirmed; in pond alongside Denniston creek approx. 300m upstream from Bridgeport Drive on South Cowell Torello parcel. Source: RAREFIND II.

Notes: There are ideal supporting habitats for the Red-legged frog on property along Martini, San Vicente, and Denniston creeks. Confirmed report at upper Denniston creek – numerous individuals could be heard calling in pond in at mid-morning. In addition, there are unsubstantiated reports of sightings along lower San Vicente creek, at Montara creek below the flower farms near Montara, and at the wetland area on the southwest corner of the Ocean View Farms parcel. The evidence and record would support the assumption of a reasonable population in the watersheds throughout the property.

INVERTEBRATES

Danaus plexippus – Monarch butterfly (red star) - ★

Status: State/Federal: none - sensitive

Habitat: Winter roosts extending along coast from Mendocino to Baja California. Roosts in wind-protected tree groves (Eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.

3 Occurrences: (#'s 58-60).

- (58) Non-confirmed; some winter clustering observed in eucalyptus groves along Martini creek, east side of Highway 1 on Ocean View Farms parcel and in McNee Ranch State Park. Source: RAREFIND II.
- (59) Non-confirmed; in the eucalyptus grove past the end of Avenue Granada, on the South Cowell Torello parcel. Site may be extant from removal of trees. Source: RAREFIND II.
- (60) Non-confirmed; at the intersection of Columbus St. and Avenue Portola in El Granada, adjacent to the South Cowell Torello parcel. Source: RAREFIND II.

Notes: The time of this report (May) was the wrong time of year to check for Monarch roosting, but Chuck Kozak reports watching flocks moving through trees along Martini creek and observing the “patrolling” behavior common to roosting sites. Flocks of migrating Monarch butterflies are a common sight in the winter around the subject parcel. Groves of eucalyptus, pine and cypress on the property, along with early winter flowering plants and regular sources of water make this an ideal winter roost area.

Icaricia icariodes missionensis - Mission blue butterfly:

Status: State/Federal: /FE

Habitat: Grasslands of the San Francisco Peninsula.

1 Occurrence: (# 61).

- (61) Non-confirmed; at San Andreas Dam in the Sf Watershed, 2 mi. NW of Hillsborough. Source: RAREFIND II.

Notes: The Mission Blue Butterfly has used *Lupinus variicolor* (Varicolored lupine), which is common on Montara Mountain, as a larval host plant. Referenced sighting is at southern end of known range; approx. 2.9 miles east-northeast of North Cowell Torello parcel.

***Incisalia mossii bayensis* - San Bruno elfin butterfly: (green star) - ★**

Status: State/Federal: /FE

Habitat: Coastal mountainous areas with grassy ground cover, mostly in the vicinity of San Bruno Mountain in San Mateo County. Colonies locate on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.

6 Occurrences: (#'s 62-67).

- (62) Non-confirmed; off-property on rocky outcrop area above “saddle” ridge area between Montara and San Pedro mountains in McNee Ranch State Park, approx. 0.65 miles north of Montara Mountain parcel. Source: RAREFIND II.
- (63) Non-confirmed; off-property on Whiting Ridge Road 1 mile east of North Peak in the SF Watershed property, Source: RAREFIND II.
- (64) Non-confirmed; on Montara Mountain parcel, between North and South Peaks in rocky outcrop area. Sources: RAREFIND II, CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil’s Slide Bypass Project. September 1983.
- (65) Non-confirmed; off-property, immediately north of Peak Mountain adjacent to Montara Mountain parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil’s Slide Bypass Project. September 1983.
- (66) Non-confirmed; off-property, immediately above headwaters for Martini creek, in McNee Ranch State Park, approx 0.2 miles north of Montara Mountain parcel. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil’s Slide Bypass Project. September 1983.
- (67) Non-confirmed; on western boundary of Montara Mountain parcel on Martini creek ridge. Source: CALTRANS District 4 Office of Environmental Analysis: Biological Assessment of Endangered Species, Devil’s Slide Bypass Project. September 1983.

Notes: The rocky out-crops near the peaks of Montara Mountain host populations of *Sedum spathulifolium* and *Lupinus variicolor* (Varicolored lupine), which are the preferred larval host and adult food plant of the San Bruno elfin butterfly. Time of survey (May, 2001) is shortly into the emergent season of the mature butterfly. Sedum populations examined showed evidence of larval feeding, although other insects feed on the plant as well. Time constraints prevented a methodic search for this species, but continuing sightings each year of larvae and butterflies in the area of the mountain peaks would indicate a healthy local population. Eastern portions of the North Cowell Torello parcel may also feature appropriate habitats for this species.

***Lichanthe ursine* – Bumblebee scarab beetle:**

Status: State/Federal: /FSC

Habitat: Coastal sand dunes from Sonoma to San Mateo Counties.

1 Occurrence: (# 68).

- (68) Non-confirmed; off-property along beach dunes at Laguna Salada in Pacifica. Source: RAREFIND II.

Notes: This entry is included as a coastal species of concern, even though there are no compatible habitats on the property for this species; the beaches immediately to the west of the Ocean View Farms parcel could possibly host the beetle.

MAMMALS

***Neotoma fuscipes annectens* - Dusky-footed wood rat:**

Status: State/Federal: /FSC

Habitat: Found in riparian areas where it builds a large nest of twigs and debris.

0 Occurrences:

Notes: This entry is included as a coastal species of concern, even though there are no confirmed sightings on record ; unconfirmed sightings have been reported along the creeks on the subject property and in McNee Ranch State Park; the animal could be expected to be found along any of the stream corridors on the property. Further study is needed to determine if these sightings are of the subject species or of a more common species of wood rat.

FISH

***Onchynchus mykiss irideus* - Southern steelhead: (blue star) -★**

Status: State/Federal: /FE

Habitat: Spawning in cool, clear, well oxygenated streams. Higher elevation headwaters are primary spawning and rearing areas.

2 Occurrences: (#'s 69 – 70)

- (69) Non-confirmed, San Vicente creek, on South Cowell Torello parcel; historic record of steelhead population. Source: San Mateo County Department of Environmental Management Local Coastal Plan Sensitive Habitats Background Report. January 1979
- (70) Non-confirmed, Denniston creek, on South Cowell Torello parcel; historic record of steelhead population. Source: San Mateo County Department of Environmental Management Local Coastal Plan Sensitive Habitats Background Report. January 1979

Notes: The determination of when any local populations of Southern steelhead may have been shut out from their spawning grounds is difficult to determine. Steelhead, unlike other salmon species, can make multiple trips upstream to spawn, sometimes with years in the interim. A disruption in the entry to a stream may take a number of years to completely block out returning fish.

Both creeks have major blockages to incoming fish migrations: in Denniston creek, fish face a six foot jump to reach a bridge culvert in Princeton. On San Vicente creek, the recent collapse of the foot bridge and associated culvert near the ocean outfall at the Fitzgerald Marine Reserve have effectively blocked any possibility of upstream migration for the time being.

WATERSHED DELINEATIONS & RESOURCES

A watershed, for the purposes of this report, is defined by the topography that directs all water falling on or originating within its boundaries to a specific entry point to the ocean. Watershed delineation is a useful tool when analyzing larger tracts of coastal property – water is a prime factor in the development of biological communities, and the amount and distribution of water can vary considerably between watersheds from micro-climates, groundwater resources, topography, scale, orientation, etc. Watersheds are defining units of the environment; hence the phrase “a watershed event” as a defining moment in history.



View from Peak Mountain across
the
San Vicente watershed toward

Many of the historic land grants and properties were based on watershed boundaries, if for no other reason than to clarify who owned the water resources. Some of the borders of Rancho Corral de Tierra correspond roughly to these natural boundaries - the north boundary of the Ocean View Farms parcel is defined by Martini creek; the western edge of the North Cowell Torello parcel follows the line of the ridge that separates the San Vicente creek and Montara creek watersheds.

Modern property boundaries often ignore watershed definitions in favor of straighter lines that more easily define a numeric value of acreage. For this reason, delineation of watersheds is important to define the extent of an ecological unit that may extend beyond the borders of a property, and to better understand how the property relates to these larger units.

Rancho Corral de Tierra encompasses significant parts of four major coastal watersheds that drain the west faces of Montara Mountain: Martini creek, Montara creek, San Vicente creek and Denniston creek. These have their sources at the peak ridges of the mountain and extend west to the Pacific Ocean. To the east of the mountain ridge, water drains to Pilarcitos creek. Water on the north side of the mountain flows to San Pedro creek in Paciica, and to the south of the property is the Frenchmans creek watershed.

The property also includes portions of a number of smaller creek drainages. These and the major watersheds, arranged north to south according to their outfalls at the ocean, are individually detailed in the following pages. The accompanying Watershed Delineations map illustrates the physical boundaries of the watersheds and drainages. These boundaries were derived from analysis of the topographic information of the United States Geological Survey Montara Mountain Quadrangle, 7.5-Minute Series (Topographic) map. Some variation may exist at the lower elevations due to road grading, berm construction, redirection of drainage by urban development, etc. Boundaries are expected to be accurate to at least 99% of volume and acreage. Exact delineation of the boundaries would require an amount of field survey work that was beyond the scope of this report.

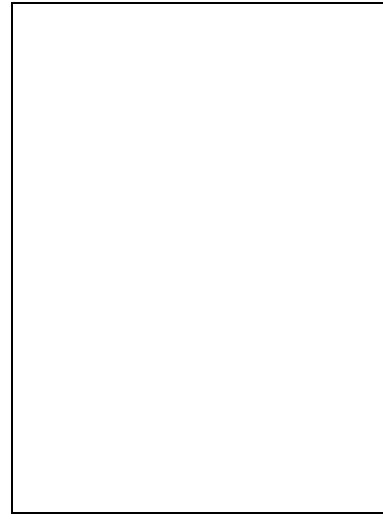
MARTINI CREEK WATERSHED

Size:

649.7 acres total; 50.5 acres on the Ocean View Farms parcel, and 113.1 acres on the Montara Mountain Parcel. The remainder is mostly within McNee Ranch State Park, with small portions on the CALTRANS bypass right-of-way and private property.

Watercourse:

2.85 miles total, with 1.28 miles on or bordering the property on the Ocean View Farms and Montara Mountain parcels. The creek sources from two perennial (year-round) forks. The north fork is entirely within McNee Ranch State Park, and the south fork originates on Montara Mountain parcel before flowing through a portion of the State Park and the CALTRANS right-of-way. The drainage areas of the two forks form steep ravines until they reach approximately the 400 foot elevation, at which time they begin to spread out into wider valleys. Observations on the size of the valleys of the two forks and levels of flows would indicate that the south fork carries a larger percentage (estimated 60 – 65%) of the water in the system. From the point of confluence of the two forks and continuing west to Highway 1, the creek forms the northern boundary of the Ocean View Farms parcel, and exits to the ocean at Montara State Beach west of the highway. Two identifiable seep drainages contribute to the creek along this section. The first is from the south through the abandoned flower field immediately upstream from the pedestrian bridge at the stable, and the second from the north from within the State Park just downstream of the bridge.



Headwaters of the south
fork of Martini creek

Habitats:

The two forks begin at the lower limits of the Maritime Chaparral zone at approximately the 1600 foot elevation. The south fork source springs are located adjacent to the previously-discussed unique chaparral variation at Peak Mountain – dominated of coast silk-tassel (*Garrya elliptica*), with associations of huckleberry, coffeeberry, wild lilac and golden chinquapin. From here, the two forks run through primarily undisturbed native habitat of Riparian Scrub, a dense, medium height vegetation dominated by arroyo willow (*Salix lasiolepis*), creek dogwood (*Cornus sericea*), and California blackberry (*Rubus ursinus*), with associations of Sitka willow (*Salix sitchensis*), twinberry (*Lonicera involucrata*), osoberry (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), wood mint (*Stachys bullata*), western sword fern (*Polystichum munitum*) and thimbleberry (*Rubus parviflorus*). The riparian area through these sections extends anywhere from 20 to 50 feet either side of the center of the creek channel, and transitions to coastal scrub communities on the slopes above.

This type of riparian vegetation provides shelter, food and nesting areas for a wide range of birds and mammals. The large sheltered areas beneath the willows provide sleeping and calving areas for the black-tailed deer. The thickets of willow and berry are nesting areas for a wide-variety of birds that also feed on the fruit and berry production of the plants and on the insect population that inhabits the creek zone. The heavy leaf and branch debris give the wood-rats and other small animals nest building materials.

As the creek valleys widen out at around the 400 foot elevation, both forks maintain their riparian cover relatively undisturbed. The upper valley of the south fork, which is somewhat wider than the north fork's, had been partially cleared at one time for private recreational use. This area is recovering to a coastal scrub community, but has a heavy infestation of Cape ivy (*Senecio mikanioides*) and poison hemlock (*Conium maculatum*) that has intruded into the riparian cover in places.

Below the confluence of the forks, the creek retains its heavy riparian cover, and is bordered on the south by an abandoned flower field on the subject parcel. The north side, in the State Park, rises up slopes of coastal scrub interspaced with plantings and naturalized colonies of Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressa macrocarpa*). The flower field, although no longer in production, as been regularly disked every few years to clear the vegetation. The result of this disking, along with the rich soil and protected location of this field, has been the production of an unnaturally thick colony of yellow bush lupine (*Lupinus arboreus*), a natural colonizer of disturbed areas, combined with a heavy infestation of poison hemlock. The lupine colony is reaching full maturity this year, with the average plant height at well over 5 – 6 feet tall.



Martini creek at the
San Pedro Mtn. Rd
bridge

As the creek approaches the more heavily utilized areas near the San Pedro Mountain Road pedestrian bridge, the riparian cover is exceedingly invaded by eucalyptus trees (*Eucalyptus globules*), pampas grass (*Cortaderia jubata*), cape ivy and French broom (*Genista monspessulana*). Below the bridge, these invasive species are joined by the Monterey cypress and Monterey pine plantings from older ranching operations until the native cover is almost completely replaced by these larger, dominating trees.

Continuing towards Highway 1, the tree plantings diminish and the low riparian scrub of arroyo willow and California blackberry briefly returns, although the heavy influx of cape ivy continues.

Further Notes:

An agricultural water impoundment structure exists along the creek just above the Highway culvert, but the density of the vegetation and the complexity of the drainage channels made direct examination impossible at this time.

In the early 1980's, the original culvert for Martini creek beneath Highway 1 washed out in heavy rains, and was replaced by the current structure. This newer culvert has a fall of over 6 feet from its exit to the beach below, eliminating any possibility of entrance to the creek by fish coming from the ocean. Reports from long-time residents of Montara indicate that at one time the creek did support a population of some fish species, although there is no record we could find for this report as to what type and of what quantity. Observations of the creek over the past years has yielded no known sightings of fish, but the heavy and impenetrable riparian cover on the upper parts of the creek could possibly still shelter a native population of freshwater species.

DAFFODIL VALLEY DRAINAGE

Size:

136.1 acres total; 60.7 acres on the Ocean View Farms parcel, and 42.4 acres on the Montara Mountain Parcel. The remainder is within the CALTRANS bypass right-of-way property.

Watercourse:

1.21 miles total, with 0.74 miles on the Ocean View Farms and Montara Mountain parcels. The drainage sources from perennial (year-round) springs that are found at about the 600 – 700 foot elevations. The drainage area extends up to about the 1100 foot elevation at the point where the main ridge that separates the Martini creek and Montara creek watersheds splits. An agricultural pond at the 250 foot elevation on the Ocean View Farms parcel collects the output of the springs, and releases it along the established watercourse to the small culvert bridge under San Pedro Mountain Road, and then down between the agricultural fields to a culvert under Highway 1 and to its outfall at Montara State Beach.

Habitats:

The upper part of the drainage, above the agricultural pond, is a thin line of riparian scrub (as described above in the description of the Martini creek watershed) flanked by coastal scrub community on the surrounding slopes.

Below the pond, the valley widens and was the site of a former flower field. Vegetation in this area would be classified as “disturbed abandoned agriculture”, consisting mostly of remnant flower crop and invasive species such as Cape ivy (*Senecio mikanioides*), poison hemlock (*Conium maculatum*), sweet fennel (*Foeniculum vulgare*), French broom (*Genista monspessulana*) and pampas grass (*Cortaderia jubata*). Some recovery of native vegetation is occurring, in a manner to suggest that the valley would be a natural riparian and wetlands area in its natural state. The area supports a robust population of small rodents, coast garter snakes, tree frogs, and ground-nesting birds.

After the drainage exits the valley, there is a small area of riparian cover that extends to the San Pedro Mountain Road culvert and beyond to the eastern edge of the current agricultural field. At this point, the water enters a constructed drainage swale that runs between active farm fields to a culvert under Highway 1 and its outfall at Montara State Beach.

Further Notes:

The name “Daffodil Valley Drainage” is taken from the abandoned flower operation below the pond, which still sprouts abundant daffodils every year, and is a popular place for Montara residents to collect flowers in the early spring.

FARALLONE DRAINAGE

Size:

375.5 acres total; 127.5 acres on the Ocean View Farms parcel, and 26.5 acres on the Montara Mountain Parcel. The remainder is within the CALTRANS bypass right-of-way and private property.

Watercourse:

1.64 miles total, with 0.9 miles on the Ocean View Farms and Montara Mountain parcels. The drainage sources from perennial (year-round) springs found on the north flank of Montara creek ridge at about the 600 – 700 foot elevations. The drainage area extends up to about the 900 foot elevation at the southwest corner of the Montara Mountain parcel. An identifiable creek channel forms just south of the boundary of the Montara Mountain parcel at about the 500 foot elevation, running down through a lightly populated area at the north end of Montara and then turning west onto the Ocean View Farms parcel just north of the Farallone View School.

At the southwest corner of the parcel it is joined by a small tributary that runs along Kanoff street in Montara, as well as the termination of a large section of the Montara urban area stormwater culvert system, and collects in a wetland area on the east side of Highway 1. The wetland is also fed by smaller seep drainages to the immediate north, and is drained through a culvert under the highway and on to its outfall at Montara State Beach.

Habitats:

The upper part of the drainage on the Montara Mountain parcel has a transitional riparian scrub (as described above in the description of the Martini creek watershed) flanked by coastal scrub community on the surrounding slopes.

Immediately below the parcel, in the CALTRANS right-of way, the watercourse enters a dense stand of eucalyptus and Monterey pine and an area that is extremely degraded and eroded by un-maintained roads and recreational vehicle use. Beyond this it continues through a lightly developed area that is primarily eucalyptus, Monterey pine and Monterey cypress forest. No riparian cover of any significance develops until the creek enters the Ocean View Farms parcel, where a corridor of arroyo willow develops as the creek flows west along the southern edge of the property. The surrounding areas consist of recovering farmland populated with a mix of native and non-native grasses, coyote bush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*) and pampas grass (*Cortaderia jubata*), with associations of Douglas iris (*Iris douglasiana*), sticky monkey flower (*Mimulus aurantiacus*), California beeplant (*Schrophularia californica*), Pacific gumplant (*Grindelia stricta*), common yarrow (*Achillea millefolium*) and varicolored lupine (*Lupinus variicolor*).

At the convergence of the main stream and the Kanoff Street tributary, along the border of the Ocean View farms parcel and the undeveloped Kanoff Street right-of-way is a significant grove of arroyo willow (*Salix lasiolepis*) that is notable for the size and maturity of the trees that have developed in the shelter of a remnant berm from the Ocean Shore Railroad. It's estimated that they may date from the early 1910's.

The wetland formed by this drainage on the east side of Highway 1 is possibly a result of the highway, and the Ocean Shore Railroad berm before it, damming up the flow as the creek approached the ocean. This wetland covers approximately 8-9 acres, with American bulrush (*Scirpus americanus*), panicled bulrush (*Scirpus microcarpus*), Pacific bog rush (*Juncus effuses*), and broadleaf cattail (*Typha latifolia*) as predominate species, with associates of seep-spring monkey flower (*Mimulus guttatus*), Pacific cinquefoil (*Potentilla anserina*), Pacific oenathe (*Oenathe sarmentosa*), and arroyo willow.

A culvert under Highway 1 drains the wetland to its outfall at Montara State Beach.

Further Notes:

The name “Farallone Drainage” is given to this feature because of the proximity of Farallone View School, the drainage focus point at the north end of Farallone Street in Montara, and that this area drains a large portion of the Farallone City historic subdivision that is now part of Montara.

MONTARA CREEK WATERSHED

Size:

1087.5 acres total; 287 acres on the Montara Mountain Parcel. The remainder is on other private properties, with small portions on the CALTRANS bypass right-of-way and the SF Watershed land.

Watercourse:

3.5 miles total, with the first 1.19 miles on the Montara Mountain parcel. Because most of the lower watercourse is on private property, survey work was limited to the area on the subject property and various public access points along the lower sections.

The creek originates from one main perennial (year-round) fork near the South Peak area on Montara Mountain parcel before flowing through the CALTRANS right-of-way and private properties. Topography indicates an intermittent southern tributary on the flower farm property east of Montara. The drainage area of the main channel forms a steep ravine through the Montara Mountain parcel until it reaches approximately the 400 foot elevation at the head of the valley that comprises the flower farm fields south of the property.

The creek is channeled along one side of the flower fields until it reaches the edge of the urban area of Montara, where it regains its original meander. The creek is joined by several intermittent drainages through this area before continuing into a steep ravine down to Highway 1. The creek exits to the ocean just north of the Montara Light House and sets the northern most boundary of the Fitzgerald Marine Reserve.

Habitats:

The creek begins in the Chaparral zone at approximately the 1600 foot elevation, and runs down the steep ravines of the Montara Mountain parcel through primarily undisturbed native habitat of Riparian Scrub, a dense, medium height vegetation dominated by arroyo willow (*Salix lasiolepis*), creek dogwood (*Cornus sericea*), and California blackberry (*Rubus ursinus*), with associations of Sitka willow (*Salix sitchensis*), twinberry (*Lonicera involucrata*), osoberry (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), wood mint (*Stachys bullata*), western sword fern (*Polystichum munitum*) and thimbleberry (*Rubus parviflorus*). The riparian area through these sections extends anywhere from 20 to 50 feet on either side of the center of the creek channel, transitioning to coastal scrub communities on the slopes above.



Riparian area on Montara Creek

This type of riparian forest provides the many benefits described above in the Martini creek watershed, but vanishes rapidly once the creek exits the south end on the Montara Mountain

parcel. The creek maintains a minimal riparian area of mostly arroyo willow through the flower farm, briefly regaining a broad cover again as it passes through the CALTRANS right-of-way before entering the urbanized area of Montara with primarily eucalyptus, Monterey pine and Monterey cypress. The last mile through the ravine restores the natural riparian cover and the creek exits to the ocean surrounded by coastal bluff habitats with minimal development influence because of the Lighthouse.

Further Notes:

The portion of Montara creek on the property is essentially undisturbed habitat, and there are no diversions or impoundments until below the property. An agricultural water impoundment structure exists along the creek at the flower farm, and Citizens Utilities (the local water supplier for Montara & Moss Beach) has a surface flow impoundment in the same area. Because of these significant draws on the creek, the flow volume reduces drastically after it exits the property.

The existing culvert at Highway 1, constructed in the early 1970s, presents a significant barrier for any historical fish migration. Some long-time residents have reported historic fish populations, but observations of the creek over the past years have yielded no known sightings of fish, but like Martini creek, the heavy and impenetrable riparian cover on some parts of the creek could possibly still shelter a native population of freshwater species. The section through the flower farm and the east part of Montara does support a fairly healthy riparian community of birds, small mammals, amphibians and reptiles. California red-legged frogs have been reported in this area, and the spreading fields and seasonal wetlands through this area provide excellent habitat for the species, as well as for the San Francisco garter snake.

Montara creek remains unnamed on the USGS maps, even though it is the second largest watershed in the area. The name of Montara creek has gained acceptance in the past few years in reports and studies done in the area, and is now indicated as such on the San Mateo County maps.

SUNSHINE VALLEY DRAINAGE

Size:

301 acres total; 67 acres on the North and South Cowell Torello parcels. The remainder is within the CALTRANS bypass right-of-way and private property.

Watercourse:

1.9 miles total, with 0.69 miles on the above mentioned parcels. The drainage originates from intermittent springs on the southwest corner of the North Cowell Torello parcel at about the 500 foot elevation with the formation of an identifiable creek channel. Creek flow is very dependent on drainage and groundwater recharge from winter rains, although a small trickle can be found at the lower sections even in dry years.

The creek flows along the southern side of Sunshine Valley road through a mix of undeveloped areas, small homes, and horse stable operations. As it approaches the urban area of Moss Beach, the drainage is diverted into culverts and drainage ditches until it passes beneath Highway 1 at Virginia Ave. On the west side of the highway, the creek emerges into its natural coastal bluff ravine as it flows to the ocean north of the main entry area of the Fitzgerald Marine Reserve.

Habitats:

The upper part of the drainage along the north-western edges of the Cowell Torello parcels is a mix of open grasslands and recovering coastal scrub. Much of this area has significant disturbance, and in some stretches there is no vegetation along the creek channel. In the section below along Sunshine Valley Road, the creek retains a healthy riparian cover of arroyo and Sitka willows, but moves into a reforested area of eucalyptus and Monterey pine and cypress as it approaches Moss Beach.

On the west side of the highway, although the creek emerges from the highway culvert to its natural ravine, the surrounding banks are populated by eucalyptus, Monterey pine and cypress, and various urban garden plants such as nasturtium and ice plant.

Further Notes:

The name "Sunshine Valley Drainage" is given to this feature because of its origination in the valley of the same name and that its most visible section is along Sunshine Valley Road.

SAN VICENTE CREEK WATERSHED

Size:

1165 acres total; 550 acres on the Cowell Torello and Montara Mountain parcels. The remainder is on other private properties, with a small portion on the SF Watershed land.

Watercourse:



Headwaters of the north
fork of
San Vicente Creek

5.4 miles total, with .83 miles on various parcels of the subject property. The majority of the watercourse is on the privately-held in-holding parcel that was not included in this study. Survey work was limited to the areas on the subject property and various public access points along the lower sections.

The creek originates from two main perennial (year-round) forks south of the South Peak area on the San Francisco Watershed land and the Montara Mountain parcel at about the 1700 ft. elevation. The two forks run southward through the North Cowell Torello parcel to their convergence on the in-holding parcel at an elevation of 400 feet. The creek is joined by a third tributary shortly thereafter.

The drainage areas of the two forks form the typical steep ravines (as seen on Martini and Montara creeks) until they reach their convergence at the top of the valley of the agricultural fields of the in-holding property.

The creek re-enters the subject property near the south-west corner of the North Cowell Torello parcel, passing through the stable operations on the South Cowell Torello parcel, and is fed by numerous small side drainages before exiting the property at Etheldore Street in Moss Beach. The creek continues across a County-owned parcel, under Highway 1 and then through private property until it enters the Fitzgerald Marine Reserve near the main entrance at the foot of California Street.

Habitats:

The creek begins in the Chaparral zone at approximately the 1700 foot elevation in unique spring-meadows on the side of South peak, and runs down steep ravines through primarily undisturbed native habitat of Riparian Scrub, a dense, medium height vegetation described above in the sections on Martini and Montara creeks.

This type of riparian forest provides the many benefits described earlier and appears to maintain a healthy cover down to the tops of the valleys. Direct observation of the creek area through the in-holding parcel was not possible, but examination from neighboring ridges and analysis of aerial photographs indicate that the creek retains a fairly healthy riparian cover through the property with minimal disturbance from development and agricultural activities.



San Vicente Creek
riparian cover



Disturbed banks in Moss
Beach

Below the in-holding parcel, the riparian cover is sporadic, ranging from a spread of 50 feet on either side to non-existent. In places, the riparian vegetation is replaced by stands of eucalyptus and Monterey cypress, or subject to heavy infestations of Cape ivy (*Senecio mikanioides*). This sporadic coverage and non-native intrusion continues as the creek leaves the property at the Etheldore St. culvert in Moss Beach, and continues down to its ocean destination at the main entrance of the Fitzgerald Marine Reserve.

Further Notes:

The upper portions of San Vicente creek on the property and the San Francisco Watershed lands are essentially undisturbed habitat, and there are no diversions or impoundments until below the property. Information on any water impoundment on the in-holding parcel was not available at the time of this writing. Coastside County Water District (CCWD) maintains an off-creek diversion on the lower parts of the creek on the South Cowell Torello parcel.



Damaged outfall culvert

San Vicente creek has a documented historic steelhead population that is currently believed to be extant. The existing culvert at the Fitzgerald Marine Reserve was severely damaged by winter storms several years ago, presently an insurmountable barrier to any fish migration into the creek from the ocean. Repair to this section, with attention in the design to facilitate the return/re-establishment of the native steelhead population, is planned for 2002.

Much of the creek does support a fairly healthy riparian community of birds, small mammals, amphibians and reptiles. California red-legged frogs have been documented in this area near the Etheldore St. culvert, and the spreading fields and seasonal wetlands through this area provide excellent habitat for the species, as well as for the San Francisco garter snake.

DENNISTON CREEK WATERSHED

Size:

3230 acres total; 2420 acres on the North and South Cowell Torello parcels. The remainder is on other private properties, and the SF Watershed land.

Watercourse:

9.1 miles total, with 7.8 miles on the subject property. The majority of the watercourse is on the subject property, and is the one of the most significant topographical and biological features of the property.

The creek originates from four main perennial (year-round) forks that begin near the northeast corner of the North Cowell Torello parcel. Starting below the ridge that sets the boundary of the San Francisco Watershed land at about the 1700 - 1800 ft. elevation, the forks run south-westward through the North Cowell Torello parcel to their eventual convergence at an elevations of 400 to 250 feet.

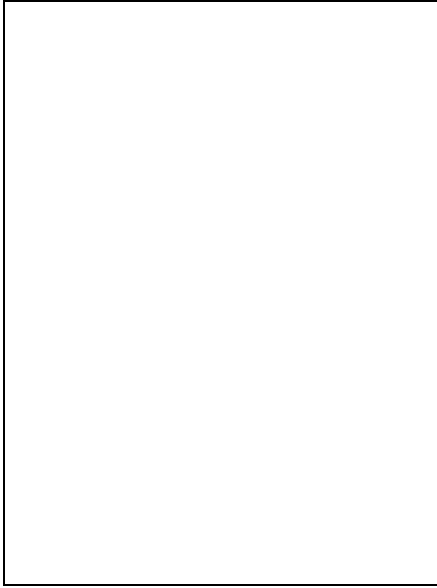
The drainage areas of the forks form the typical steep ravines (as seen on Martini, Montara and San Vicente creeks) until they reach their convergences at the top of the relatively narrow valleys that open later to the agricultural fields of property.



Outfall of Denniston
creek at Princeton
harbor

The creek flows through the valley and the upper agricultural fields and into Denniston reservoir, a .25 mile long facility maintained by the Coastside County Water District. Below the small dam that forms the reservoir, the creek exits the foothills and enters into the broad coastal terrace area where the main farming operation is located. As it crosses the agricultural fields, the creek turns southward and joins the property boundary with the Princeton-by-the-Sea subdivision at the northern end of the town of El Granada. Here it is joined by an intermittent tributary that drains the other side of East Denniston ridge. The creek continues along this boundary until it exits the property at Highway 1. The drainage area for the creek is quite wide at this point, extending 1.25 miles to the north to within a few hundred yards of San Vicente creek, 0.5 miles south for most of the Princeton-by-the-Sea subdivision and encompassing all of the Half Moon Bay Airport property on the west side of the highway.

Below Highway 1, the creek continues through private property into the harbor town of Princeton to its outfall north of the harbor in Half Moon Bay.

Habitats:

The creek begins in the Chaparral zone at approximately the 1700 - 1800 foot elevations along the ridge that extends from South Peak to Scarper Peak. Like the other creeks on the property, it runs down steep ravines through primarily undisturbed native habitat of Riparian Scrub, a dense, medium height vegetation described above in the previous sections.

This type of riparian forest provides the many benefits described in above sections, and maintains a healthy cover down to the tops of the valleys. Riparian corridor width averages from 20 to 150 feet from center of the stream channels.

When the creek tributaries reach the tops of the valleys, there are segments of full riparian forest, similar to the previously described riparian scrub but with the significant addition of populations of the full sized trees red alder (*Alnus rubra*), California buckeye (*Aesculus californica*) and boxelder (*Acer negundo* var. *californica*). These valleys appear to be the northern-most extent of these species' contiguous range on the San Mateo County coast, although the red alder and boxelder do re-appear in the San Pedro creek watershed on the north side of Montara Mountain. The hillsides surrounding these areas contain a mix of coastal scrub communities inter-spread with patches of native grasslands and rocky outcrops. As the four main forks converge, there are extended areas of marshland and side drainage wetlands. Access to this area is limited; the existing roads do not extend back to these valleys, no roads come down the ridges from the upper boundaries, and any entry would need to be by foot along established animal trails.

The existence of the riparian forest, with its higher and stouter trees, would indicate an area of historic raptor and owl populations long preceding those that have become established in the planted groves of eucalyptus, pine and cypress found elsewhere in the area. The surrounding marshes and grasslands provide ample habitats for smaller mammals and hunting areas for the raptors and larger carnivores. The area has extensive evidence of a healthy amphibian and reptile population. The isolation and inaccessibility of this area indicates it to be a prime focus of future study into the natural state of coastal riparian habitats.

As the creek continues toward the upper agricultural fields, the cover returns to riparian and coastal scrub communities, and passes through several planted stands of eucalyptus and Monterey cypress. Invasive plant species, such as pampas grass (*Cortaderia jubata*), French broom (*Genista monspessulana*), sweet fennel (*Foeniculum vulgare*) and poison hemlock (*Conium maculatum*) begin to appear along the established roads and fields and cape ivy (*Senecio mikanioides*) is found throughout the riparian cover.

As the creek approaches the upper end of the reservoir, it starts to spread out to form a freshwater marsh that is populated with cattails (*Typha* sp.), tule reed (*Scirpus acutus*), California bulrush (*Scirpus californica*), seep-spring monkeyflower (*Mimulus guttatus*), arroyo willow,

American dogwood, Hooker's evening primrose (*Oenothera elata*), and giant horsetail (*Equisetum telmateia*). As it widens to the reservoir, the channel deepens significantly and the edges are dominated by cat tail and tule reed. Dredging from the reservoir have been used to create a berm between the reservoir and the road. The lower end of the reservoir is heavily infested with non-native watercress (*Rorippa nasturtium-aquaticum*).

Below the reservoir dam, the creek passes through a mix of riparian scrub and planted groves of eucalyptus and Monterey cypress along the agricultural buildings and the lower fields. Where it joins the boundary with Princeton-by-the-Sea, a riparian cover is re-established of primarily arroyo and Sitka willows, with associations of creek dogwood, wood mint, and California blackberry. This mix continues until the creek reaches the developed area of Princeton, where it is replaced with a mix of invasives of cape ivy, Monterey cypress, and various garden escapees.

A well-established wetland area of approximately 3 acres exists along the property's boundary with the Princeton-by-the-Sea subdivision where the southern intermittent tributary of the creek meets the main channel. This area is characterized by American bulrush (*Scirpus americanus*), panicled bulrush (*Scirpus microcarpus*), Pacific bog rush (*Juncus effuses*), and broadleaf cattail (*Typha latifolia*) as dominate species, with associates of seep-spring monkey flower (*Mimulus guttatus*), Pacific Cinquefoil (*Potentilla anserina*) and arroyo willow.

The damming action of the highway, in an area where surface water once flowed across open bluffs, has produced a significant wetland corridor along the east side of the highway from the Denniston creek bridge southward.

Further Notes:

The upper portions of Denniston creek that are on the property and the San Francisco Watershed lands are essentially undisturbed habitat, and there are no diversions or impoundments until creek reaches the valleys below 400 feet in elevation. As mentioned above, Coastside County Water District (CCWD) maintains an impoundment reservoir on the lower part of the creek on the South Cowell Torello parcel. There are two smaller holding reservoirs just above the main one that are used seasonally to hold extra runoff.

Denniston creek has a documented historic steelhead population that is currently believed to be extant. The existing culvert at Broadway in Princeton, constructed in the 1970s, may prevent any incoming migration of fish

Much of the creek supports a fairly healthy riparian community of birds, small mammals, amphibians and reptiles. California red-legged frogs and San Francisco garter snakes have been documented along the creek from Highway 1 up along the corridor. Denniston provides excellent habitat for these species all along its watercourse.

OTHER WATERSHEDS AND DRAINAGES

DEER CREEK:

Deer creek and its intermittent western tributary originate in the eastern half of the South Cowell Torello parcel. The tributary contributes to a recovering wetland area of approximately 2 acres where it enters the Princeton-by-the-Sea subdivision, as evidenced by developing communities of brown bog rush, cat tail and panicled bulrush.

ARROYO de en MEDIO:

This intermittent creek originates in the far eastern leg of the South Cowell Torello parcel.

FRENCHMAN'S CREEK:

A significant and large (~4000 acres) watershed to the south of the property with an established steelhead population and an important agricultural and residential water source, noted here because one of the forks of Locks creek, its main tributary, originates on the eastern edge of the South Cowell Torello parcel.

ALIEN AND INVASIVE SPECIES

The great range and diversity of the natural habitats of Rancho Corral de Tierra are usually sufficiently established to resist introductions of non-native plant species. But in all areas where there has been disturbance of the ground or intrusion by humans, the potential for invasion by opportunistic non-native species is presented.

As expected, the higher levels of infestation of these species is found in those areas most accessible and nearest to human activity and residential development. The more remote areas, like the steep slopes near the mountain peaks and the back canyons of Denniston valley, exhibit the least. The following is a basic listing and analysis of problem invasive plant species found on the property.

TREES

With the exception of the riparian forest in the back of Denniston creek valleys, forest areas on the property consist almost entirely of groves originating from plantings of three tree species:

- **Blue gum eucalyptus (*Eucalyptus globulus*)**
- **Monterey cypress (*Cupressa macrocarpa*)**
- **Monterey pine (*Pinus radiata*)**

These trees were originally introduced in the 1800's as wind-breaks and timber sources for the developing agricultural operations, and later planted as shade and street trees throughout the urban area of the MidCoast. All three have spread throughout the area, with the eucalyptus being the most aggressive.



The trees are mostly grouped around historic or current agricultural operations and home sites, and significant groves can be found along all of the creek watercourses and along some of the ridgelines in the foothills.

The trees have created a dense, shaded canopy and acidic soils that few of the native plant species survive very well in, and contribute to artificial micro-climates that disrupt the natural distribution of native species through the area. On the other hand, the tall trees have become primary nesting and roost habitat for raptors, owls, and a number of other bird species, as well as sheltering areas for other wildlife. The eucalyptus groves have developed into winter roosts for migrating Monarch butterflies.



Future management plans for the property may need to consider methods to control any further spread of the trees, and any removal of existing groves may need to take into account the protection of existing raptor habitat and careful re-vegetation schedules to gradually restore the natural distribution of native species. A large percentage of the Monterey pines in the area have contracted a pine-pitch canker that has proven fatal to the trees, and consideration may need to be given to the removal of infected trees as part of any future management plans.

OTHER SIGNIFICANT INVASIVE SPECIES

Cape ivy (*Senecio mikanioides*): Also known as German ivy, this African import is a particular problem in riparian and wetland areas, where it can cover and choke off acres of native vegetation. Eradication is difficult as the plant reseeds in the late winter when protective native leaf cover is at a minimum, and it very easily roots from the smallest piece of stem. Cape ivy infestations of some level or another are found on all riparian and wetland areas of the property, with Martini creek and San Vicente creek being areas of special concern.

French broom (*Genista monspessulana*): This member of the Legume Family (Fabaceae) is a direct competitor to the native yellow bush lupine. Like the lupine, it is an aggressive colonizer of disturbed soil, but its lack of natural controls allows it to often dominate cleared areas before the lupines can establish, and unlike the lupine, does not die back after a few years to allow more diverse species to become established. The seeds can have a dormant life of up to ten years, so eradication of an established stand takes continuous removal and monitoring for a number of years. The plant commonly infests cleared areas and along roads and paths throughout the property.

Pampas grass (*Cortaderia jubata*): Originally brought to the San Mateo County coast in the 1960's during highway construction as a slope stabilizer, pampas grass has since spread hundreds of miles to the north and south along the coast. The large feathery flower heads produce tens-of-thousands of wind-born seeds. Pampas grass moves in quickly to disturbed areas, and can be found in old farm fields and along roads and paths throughout the property. Large stands of the plants crowd out native vegetation, and the razor-sharp leaf blades can cut into deer-hide, seriously disrupting wildlife movements through an area.



The seeds have a minimal dormant life, so eradication can usually be accomplished by manual removal of the plants and then a minimal maintenance program of removing new seedlings as they appear. The prevalence of the plant throughout the area necessitates a thorough re-establishment of native groundcover to prevent re-infestation.

Periwinkle (*Vinca major*): An escapee from local gardens, this plant favors the shaded understory in riparian and forested areas, where it can spread aggressively, taking over the native underbrush and moving into the creek channels itself. Like Cape ivy, it can regenerate easily from broken stems, making removal difficult. Significant infestations of periwinkle can be found in all the riparian corridors of the property, and is particularly well-established in San Vicente creek.

Poison hemlock (*Conium maculatum*): This annual plant from Europe, a member of the Carrot Family (Apiaceae), competes directly with the native Cow Parsnip (*Heracleum lanatum*) and Henderson's Angelica (*Angelica hendersonii*), both annual herbaceous members of the coastal scrub community. Favoring wetter areas, poison hemlock is found in seep drainages and along creek channels throughout the property. It can form dense monoculture stands of many acres, particularly in abandoned farm fields and grazing areas where a native cover has not re-established. A particularly large population is located on the abandoned flower fields near the convergence of the two forks of Martini creek on the Ocean View Farms parcel.

As its name indicates, the plant is poisonous – it is the hemlock that Socrates used to commit suicide. It is not related to the hemlock tree. Eradication can usually be accomplished by mowing the plant down before the flower heads can set seed, and continuing this practice for one or two growing seasons, as the seeds are only viable for one season.

Wild fennel (*Foeniculum vulgare*): Another European member of Apiaceae, this plant is closely related to the domesticated plant that produces the fennel bulbs found in markets. Our population may well be related to vegetable garden plants brought by the Spanish missionaries. Unlike poison hemlock, it favors drier areas and is a perennial with a life-span of up to ten years.

Fennel colonizes disturbed areas in coastal scrub habitat, often establishing large monocultures in old fields, landslide areas, or abandoned cleared areas. Colonies of fennel can be found in the foothill and field areas throughout the property. Eradication requires digging the plants out, as they will re-sprout from root remnants if left to remain.

The indigenous swallow-tailed butterflies (*Papilio* sp.) have adapted to fennel as a major food source, and some debate has arisen in the native plant field about the effects that removal of the plant may have on the butterfly population.

Other invasive plants with significant populations on the Rancho Corral de Tierra property include:

- Bindweed (*Convolvulus arvensis*)
- Bird's foot lotus (*Lotus corniculatus*)
- Bull thistle (*Cirsium vulgare*)
- Cotoneaster (*Cotonester* sp.)
- Field mustard (*Brassica campestris*)
- Flax (*Linum perenne*)
- Fuller's teasel (*Dipsacus fullonum*)
- Harding grass (*Phalaris aquatica*)
- Ox tongue (*Picris echioides*)
- Queen Anne's Lace (*Daucus carota*)
- Rattlesnake grass, little quaking grass (*Briza maxima*, *B. minor*)
- Scarlet pimpernel (*Anagallis arvensis*)
- Sweet Alyssum (*Lobularia maritima*)
- Water cress (*Rorippa nasturtium-aquaticum*):
- Wild oat grass (*Avena fatua*)
- Wild radish (*Raphanus sativus*)

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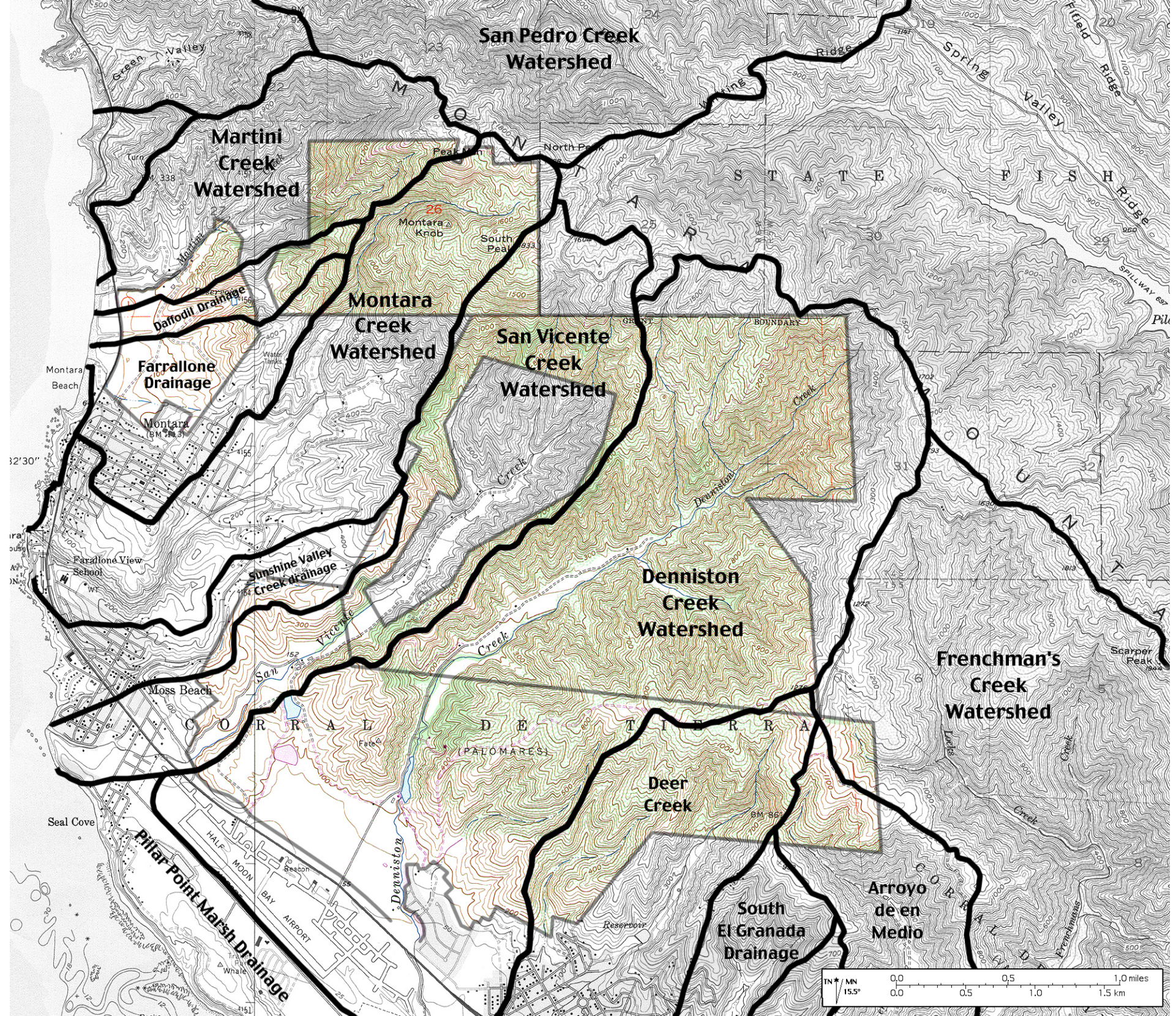
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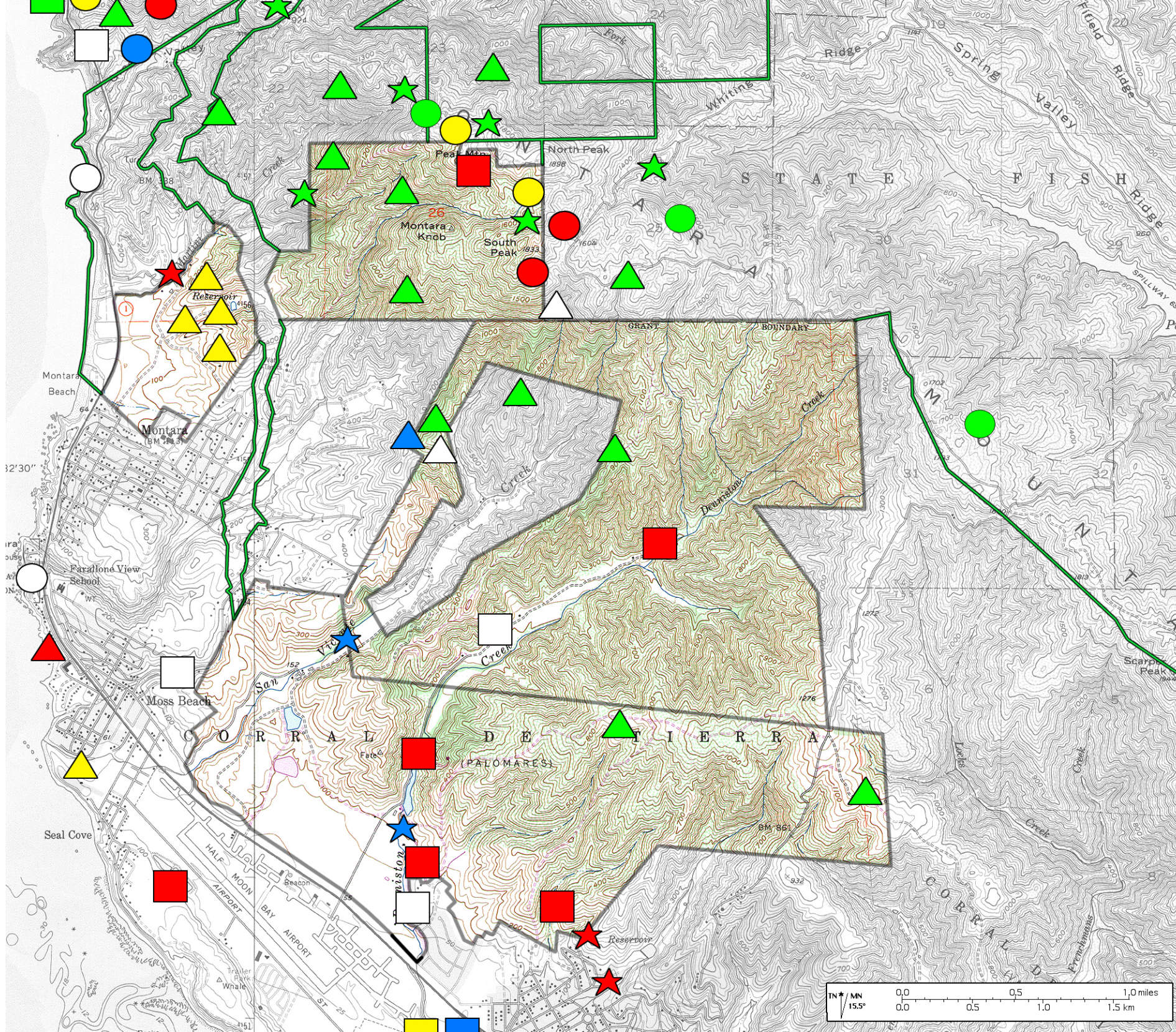
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Compiled & Edited by Chuck Kozak
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Rancho Corral de Tierra (Palomares)
Watershed Delineations



Rancho Corral de Tierra Special Status Species



- = coast rockcress
- = Montara manzanita
- = Franciscan thistle
- = Franciscan wallflower
- = San Francisco gumplant
- = San Francisco garter snake
- = Peregrine falcon
- = Saltmarsh common yellow-throat
- = California black rail
- = California red-legged frog
- ▲ = Linanthus croceus
- ▲ = Montara Mountain blue bush lupine
- ▲ = Dudley's lupine
- ▲ = Hickman's cinquefoil
- △ = San Francisco campion
- ★ = Monarch butterfly
- ★ = San Bruno elfin butterfly
- ★ = Southern steelhead

