Midpeninsula Regional
Open Space District

R-20-10
Meeting 20-02
January 22, 2020

AGENDA ITEM 4

AGENDA ITEM

Adopt an Addendum to the Mindego Hill Ranch Grazing Management Plan as an amendment to the Russian Ridge Use and Management Plan that adds the south pasture as part of the conservation grazing area on the property, and approve an Addendum to the Mitigated Negative Declaration for the Mindego Ranch Use and Management Plan

GENERAL MANAGER'S RECOMMENDATIONS

1. Adopt a Resolution approving an Addendum to the Mitigated Negative Declaration for the Russian Ridge Use and Management Plan, in accordance with the California Environmental Quality Act, to add the south pasture as part of the conservation grazing area on the property.

2. Approve Addendum #1 to the Mindego Hill Ranch Grazing Plan to guide management in the south pasture expansion area.

3. Amend the Russian Ridge Use and Management Plan for the south pasture expansion to reflect the approval of Addendum #1 to the Mindego Hill Ranch Grazing Plan.

SUMMARY

Supporting the District's Coastside mission to protect and restore the natural environment and encourage viable agricultural use of land resources, the General Manager recommends adoption of Addendum #1 to the Mindego Hill Ranch (Mindego) Grazing Management Plan (Grazing Plan) (Attachment 1) and a corresponding amendment to the Russian Ridge Use and Management Plan (U&M Plan) to expand conservation grazing within Russian Ridge Open Space Preserve (Russian Ridge). The addendum identifies existing resources and current uses in the proposed south pasture expansion area, and provides recommendations for future improvements, management, and monitoring. The recommendations include: installation of additional water infrastructure, improvements to fencing, vegetation management, and monitoring of resource management activities. Midpeninsula Regional Open Space District (District) staff and the current conservation grazing tenant have been working with the Natural Resources Conservation Service (NRCS) to secure cost-sharing support for the anticipated improvements. Implementation of the recommended infrastructure improvements is estimated to cost $119,341, of which approximately $85,000 is projected to be the District's share with the remainder funded by the NRCS. Work on the improvements is anticipated to begin in July 2020. The District's share would be requested as part of the annual Budget and Action Plan process for FY 2020-21. District costs for infrastructure improvements are eligible for Measure AA reimbursement.

BACKGROUND

In the late 1990s, coastal residents expressed their support for extending the District's boundaries to include the San Mateo County Coast, where development was beginning to threaten the area's rural character. When the District's boundaries expanded in 2004, a commitment was made to the Coastside community to preserve agricultural land and rural character, and encourage viable agricultural use of the land as part the District's unique mission in the San Mateo Coastside Protection Area:

To acquire and preserve in perpetuity open space land and agricultural land of regional significance, protect and restore the natural environment, preserve rural character, encourage viable agricultural use of land resources, and provide opportunities for ecologically sensitive public enjoyment and education.

To date, the District has protected more than 11,000 acres of natural open space and agricultural land on the San Mateo County Coast, including more than 40 percent of San Mateo County's ranchlands. The District has invested more than $16 million in environmental restoration and ecologically-sensitive public recreation in these preserved coastal properties.

Coastal grasslands are one of the most biodiverse and threatened ecosystems in North America, and in many cases depend on regular disturbances like grazing or fire to prevent encroachment by introduced species, shrubs, and forest. These disturbances were historically provided by wildlife herds and Native American burning practices.

Conservation grazing is distinguished from basic livestock production in that the core focus of using livestock to pursue conservation goals, such as native species habitat enhancement. The grazing plan sets the management parameters to meet those goals (such as stocking rates, class of livestock, seasonality, and duration of grazing activity). The District uses conservation grazing as a critical tool for managing approximately 8,000 acres of coastal grasslands for ecological health, biodiversity and wildland fire safety. The District's Conservation Grazing Program is a mutually beneficial partnership with small-scale local ranchers on the San Mateo County Coast to accomplish multiple goals aligned with the District's mission.

Mindego Hill Ranch is in the Coastside Protection Area, and the rangeland expansion area, while outside the boundary, supports the viability of conservation grazing and is critical for grassland management, fuel reduction, and habitat enhancement.

DISCUSSION

The District has used conservation grazing as a management tool to protect sensitive species habitat and reduce fuel loads at Mindego within Russian Ridge since 2015 (R-15-114). This management is consistent with the Russian Ridge U&M Plan for the Mindego Ranch area adopted by the Board of Directors (Board) in 2014 (R-14-21). Conservation grazing also helps fulfill the District's commitments to the US Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) to protect and enhance sensitive species habitat. Mindego Ranch supports one of only six populations of endangered San Francisco garter snake (SFGS) as well as a population of their preferred prey species, California red-legged frog (CRLF). Expansion of the conservation grazing area supports the management and recovery of

this population of SFGS and is consistent with the recovery plan for this species. Additionally, expansion of the conservation grazing area also supports the District's commitment to the San Mateo County Coast community to protect and restore the natural environment and encourage viable agricultural use of land resources. Grazing practices at Mindego Hill are guided by the Mindego Grazing Plan (Attachment 6). When the District commenced conservation grazing of the original 1,047-acre property, staff identified an additional 125 acres to the southeast as a future priority for expanding conservation grazing in the preserve to protect and enhance sensitive species habitat and reduce fuel loads.

The NRCS is a federal agency under the US Department of Agriculture that provides farmers and ranchers with financial and technical assistance to encourage conservation practices as part of day-to-day agricultural activities. The NRCS manages the following natural resources conservation programs that assist agricultural producers with reducing soil erosion, enhancing water supplies, improving water quality, increasing wildlife habitat, and reducing damage caused by floods and other natural disasters:

- *Agricultural Management Assistance* - Construct or improve water management or irrigation structures.
- *Conservation Stewardship Program* - Improve resource conditions, such as soil quality, water quality, water quantity, air quality, habitat quality, and energy.
- *Environmental Quality Incentives Program (EQUIP)* - Implement conservation practices, or activities, such as conservation planning, that address natural resource concerns on agricultural lands.

The District's tenant at Mindego Ranch has worked with the local NRCS Conservationist to identify infrastructure improvements (consistent with the addendum) that qualify for funding assistance through these programs, reducing District costs in implementing the infrastructure to support the proposed pasture expansion.

The proposed 125-acre south pasture expansion area within Russian Ridge is situated adjacent to and south of the Mindego Hill Trail, and east of Mindego Hill (Attachment 2). The proposed pasture expansion site is bordered by Russian Ridge on the north, east and west, and by private property to the south. Access to the site is via an all-weather gravel road off Alpine Road that runs east to west for approximately 0.5 miles.

The proposed pasture expansion area is south sloping, comprised primarily of annual grasslands with scattered dense stands of coyote brush and some oak trees. The pasture drains into a small tributary that flows into Alpine Creek, within the San Gregorio Creek Watershed. Livestock access to the stream channels would be restricted by natural buffers (steep terrain and dense vegetation) as well as partial wildlife-friendly fencing, as needed. This portion of Alpine Creek drains into Mindego Creek, downstream from the Cuesta La Honda Guild's point of diversion for their water supply.

District staff have begun efforts to manage priority invasive species at this site under the Integrated Pest Management (IPM) Program. Similar nearby sites (e.g. Mindego Hill) have shown positive impacts in vegetative diversity, increased native grasses and wildflowers, and reduction of invasive vegetation from IPM practices that include the use of conservation grazing as a grassland management tool. Additionally, reducing fine fuels in this area through active grazing would decrease the risk of wildland fires.

Amendment to the Russian Ridge Use and Management Plan
The attached Mindego Grazing Plan addendum is an amendment to the Russian Ridge U&M Plan and provides a framework to guide ongoing resource management work based on the specific conditions and resources within the proposed pasture expansion area. With an emphasis on protecting both the unique biological resources and agricultural heritage of the site, the addendum aligns with the District's coastside mission and Conservation Grazing Management Policy. To maximize the ecological benefits of conservation grazing in the expansion area, the addendum recommends infrastructure improvements, resource management projects, stocking rates, and a monitoring protocol for expanding the effectiveness of the conservation grazing program on the property and its beneficial effects on grassland habitats. The components of the Mindego Grazing Plan addendum, which are an addition to the existing U&M Plan, are discussed in more detail below.

Proposed Infrastructure Improvements
The addendum recommends several infrastructure improvements to optimize effective use of conservation grazing as a rangeland management tool. The use of grazing animals requires fencing and water sources for controlling the distribution of livestock to manage and protect the natural resources. Refer to Attachment 3, Mindego Hill Proposed Grazing Infrastructure Map, for detailed locations of the proposed improvements, which include the following:

- *Fencing:* Approximately 5,000 linear feet of new fencing is proposed along the eastern and southern pasture boundary. Fencing would be installed parallel to the Mindego Hill Trail to the east and along the border of the former Silva Property to the south. The fence would be wildlife friendly, per District standards. Short sections of fence may be required along the western boundary of the pasture to reinforce the natural barrier of dense vegetation and steep terrain, which will act to contain livestock. Fencing for this project is estimated to cost approximately $60,000 and is not eligible for NRCS cost sharing.

- *Water:* The availability of clean and reliable water is essential to the function of the conservation grazing program. Having well distributed water sources helps disperse the influence of livestock on the landscape and reduce impacts on natural waterways. No natural water sources are present within the pasture expansion area to support grazing livestock. However, a clean and reliable water source has been developed on Mindego that uses a natural spring with a solar powered pump to supply water to a storage tank and water troughs in pastures adjacent to the proposed expansion area (R-14-021). This existing water system can be modified to supply water to the expansion area.

  Staff recommends installation of three new wildlife-friendly concrete water troughs to supply water to livestock and promote livestock distribution. Two of the new troughs would be located within the pasture at sites that are minimally visible from the Mindego Hill Trail to reduce aesthetic impacts. Staff would install the third trough in the holding field/corral area above the pasture. A new 5,000-gallon low-profile tank (partially buried in the ground) would be installed in the corral area to supply the water troughs in the pasture expansion area. Installation of approximately 5,000 feet of pipe would be required to supply water to the new troughs and tank. The total cost of these water improvements is anticipated to be approximately $59,500. The water improvements would be eligible for approximately $34,500 in NRCS cost sharing funds through the EQUIP program. The District would reimburse the tenant the remaining $25,000 to complete this work.

Estimated Carrying Capacity
Proposed carrying capacity estimates for the south pasture expansion area would be referenced as a starting point and be adjusted upward or downward as necessary throughout the grazing season based on numerous factors, including rainfall and forage. Carrying capacity estimates for the site include:

- Favorable Production Year
  175.6 AUMs = Approximately 15 cows year-round or 30 cows for 6 months
- Average Production Year
  145.2 AUMs = Approximately 12 cows year-round or 24 cows for 6 months
- Unfavorable Production Year
  111.6 AUMs = Approximately 9 cows year-round or 18 cows for 6 months

Monitoring
The monitoring plan for the grazed rangeland pastures on the Mindego portion of Russian Ridge is designed to ensure that the specific rangeland uses are compliant with the Mindego Grazing Plan and land stewardship goals and objectives. The addendum recommends using the protocols identified and used for the Mindego Grazing Plan to monitor the pasture expansion area. In addition, six new photo point locations have been strategically selected to monitor overall rangeland health, grazing infrastructure, and invasive vegetation.

Farm Bureau
Staff reviewed the addendum with the executive committee of the Farm Bureau on September 25, 2019. The committee members were generally supportive of the addendum and recommended the addition of farm labor housing (e.g. trailer) to provide day-to-day monitoring of the site. However, the tenant has not requested and does not require workforce housing to manage the property. Consequently, farm labor housing is not included in the addendum.

FISCAL IMPACT

The addendum specifies several recommended infrastructure improvements related to fencing and water infrastructure. Implementation of these improvements is estimated to cost approximately $119,500 and would take place in Fiscal Year 2020-21. The NRCS has estimated that the tenant would likely be eligible for approximately $34,500 in cost-share payments for implementing the qualifying recommended infrastructure improvements. The District would reimburse the tenant for remaining costs (approximately $85,000). Work is anticipated to begin in July 2020. If approved, sufficient funds for the improvements will be requested as part of the annual Budget and Action Plan process.

Infrastructure improvements are Measure AA eligible. The following table outlines the Measure AA Portfolio #09 Russian Ridge: Public Recreation, Grazing, and Wildlife Protection Projects budget, costs-to-date, and the approximate fiscal impact.

MAA09 Russian Ridge: Public Recreation, Grazing, and Wildlife Protection Projects Portfolio Allocation:	**$5,560,000**
Life-to-Date Spent (as of 12/12/2019):	($374,166)
Encumbrances:	($365,248)
Approximate District cost of recommended improvements:	($85,000)
Portfolio Balance Remaining (Proposed):	**$4,735,586**

BOARD COMMITTEE REVIEW

On October 22, 2019, the Planning and Natural Resources Committee reviewed the proposed addendum to the Mindego Grazing Plan and associated amendment to the U&M Plan and recommended approval to the full Board.

PUBLIC NOTICE

Public notice was provided as required by the Brown Act. Public Notice was sent to the interested parties lists for coastal land purchases, grazing, Russian Ridge Open Space Preserve and Mindego area of Russian Ridge Open Space Preserve and posted on the District's webpage.

CEQA COMPLIANCE

The Project was evaluated in a Mitigated Negative Declaration and Initial Study (IS/MND), adopted by the Board on January 22, 2014 (R-14-21), available at: **https://www.openspace.org/sites/default/files/2013.11.25.MindegoRanchISMND.pdf**.

An Addendum to the IS/MND (Attachment 4) was prepared to evaluate the potential impacts of range expansion. Pursuant to section 15164 of the CEQA Guidelines, the differences between the approved Project described in the 2014 IS/MND and the modification of the Project as currently proposed and described in the Addendum are minor, and the Addendum provides sufficient environmental documentation of the changes to the Project. The Addendum finds that these minor additions to the Project do not alter any of the conclusions of the 2014 IS/MND. No significant environmental effects or a substantial increase in the severity of previously identified significant effects would result. The resolution to adopt the addendum to the IS/MND is included here as Attachment 5.

NEXT STEPS

If the Board approves the General Manager's recommendations, staff will file a Notice of Determination with the San Mateo County Clerk. Staff will work with the conservation grazing tenant and local NRCS office to secure supporting funds and implement the recommended infrastructure improvements and conservation grazing management.

Attachments

1. Addendum #1 to Mindego Hill Ranch Grazing Management Plan
2. Mindego Ranch, Proposed South Pasture Expansion Map
3. Proposed Improvements to Infrastructure Map

4. Addendum to the Mitigated Negative Declaration for the Russian Ridge Use and Management Plan
5. Resolution Adopting the Addendum to the IS/MND
6. Mindego Hill Ranch Grazing Management Plan

Responsible Department Head:
Kirk Lenington, Natural Resource Department

Prepared by:
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Graphics prepared by:
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ADDENDUM No. 1:

Mindego Hill Ranch Grazing Management Plan

March 2019

PREPARED FOR:

Midpeninsula Regional Open Space District
Attn: Lewis Reed, Rangeland Ecologist
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ORIGINAL PLAN PREPARED BY:
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May 2008

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CONTENTS

I. OVERVIEW & PURPOSE

This document serves as an addendum to the original Mindego Hill Grazing Management Plan, prepared in May 2008 by SAGE Associates, for the 1,047 acre Mindego Hill Ranch (Mindego Hill). This addendum is prepared by Koopmann Rangeland Consulting at the request of Coty Sifuentes-Winter, Senior Resource Management Specialist for the Midpeninsula Regional Open Space District (District). Mindego Hill was acquired by the District in 2008.

Mindego Hill was historically grazed by the former owners, the True Family. Upon acquisition of Mindego Hill, the District installed a variety of grazing infrastructure improvements including fencing, gates, corral, and an extensive livestock water system prior to entering into a long-term grazing lease in 2015. Cattle grazing on Mindego Hill is carefully managed to reduce wildfire fuel loads, conserve and enhance habitat for special status wildlife species, and foster the rich agricultural heritage in San Mateo County. Mindego Hill is bordered on two sides by the Russian Ridge Open Space Preserve, also owned and managed by the District. A grassland portion of Russian Ridge, adjacent to Mindego Hill, is identified by Natural Resources Department (NRD) staff as a site that may benefit ecologically from the introduction of livestock grazing while reducing wildfire fuel loads adjacent to a highly used access road/trail. The site includes approximately 125 grazeable acres described in subsequent sections of this document.

This addendum serves to add the 125 acre Russian Ridge site as a pasture expansion to the original Mindego Hill Ranch Grazing Management Plan prepared in 2008 by SAGE Associates. Rangeland management and grazing prescriptions, management strategies, and best management practices (BMPs) recommended in the Sage RMP should also be applied to the pasture expansion area. This addendum recommends additional management prescriptions specific to the pasture expansion area to meet the District's objectives for the site.

II. PROPERTY BACKGROUND & DESCRIPTION

LOCATION:

Russian Ridge Open Space Preserve (Russian Ridge) is located in rural San Mateo County, bordered by Skyline Boulevard on the east and Alpine Road to the south (Figure-1). The 125± acre site within Russian Ridge is situated adjacent to and west of the Mindego Hill Trail south of the Mindego Hill property (Figure-2). The pasture expansion site is bordered by Mindego Hill to the north, Russian Ridge to the south and east, and by private property to the west. Access to the site is via an all-weather gravel road that runs south to north for approximately 0.5 miles, originating on the north side of Alpine Road.

SITE DESCRIPTION:

The proposed pasture encompasses approximately 125± grazeable acres of the Russian Ridge Open Space Preserve located on the west-southwest side of the Mindego Hill Trail (former True Driveway). The pasture area is west sloping, comprised primarily of annual grasslands with dense stands of coyote brush and some oak trees around the bottom of the pasture. The entire pasture drains into a small tributary to Alpine Creek, part of the San Gregorio Creek Watershed. Cattle will not have access to the stream channel and a natural vegetative buffer of at least 375 feet exists between the grazed pasture and Alpine Creek. Livestock access to the stream channels will be controlled by natural buffers (steep terrain and dense vegetation) as well as partial fencing as needed. This portion of Alpine Creek drains into Mindego Creek with the confluence of the two streams located downstream from the Cuesta La Honda Guild point of diversion (POD).

Annual grasslands comprise the majority of the pasture area, dominated by non-native grasses and low growing forbs that are palatable, desirable forage for livestock. Some ridgetop grassland areas of the proposed pasture have been impacted by coyote brush encroachment. Well-established coyote brush and hardwood forest dominate many of the steeper drainages. Large infestations of invasive vegetation are well established in the area and include yellow starthistle, milk thistle, bull thistle, and poison hemlock, most of which can be controlled or reduced through livestock grazing. Similar sites nearby have shown a positive impact from livestock grazing in terms of vegetative diversity, increased native grasses and wildflowers, and reduction of invasive vegetation. Additionally, reducing fine fuels in this area will minimize the risk of catastrophic wildfire, which poses a risk to nearby residences.

HISTORIC & CURRENT LAND USE:

The site was historically grazed by cattle but has not been grazed for several decades, beginning when the District took ownership of the property in 1978. For the past several decades, the site has been a part of the Russian Ridge, used for low impact public recreation. The site, while included in Russian Ridge, received little recreational use due its remote location, steep terrain, and difficult access.

Recent construction and opening of the Mindego Hill Trail has increased traffic and public use in the area, but access is restricted to the trail/access road on the ridge top. Currently, the site remains relatively undisturbed with the exception of biological monitoring, coyote brush removal efforts, implementation on invasive species treatment, and the livestock corral located adjacent to the Mindego Hill Trail/driveway, which serves the current grazing operation on the Mindego Hill property.

III. CULTURAL AND ECOLOGICAL RESOURCES

ECOLOGICAL RESOURCES & SPECIAL STATUS SPECIES:

A biological assessment of the Mindego Hill pasture expansion area was conducted by the District's Natural Resource Department staff in 2017. The pasture expansion area boasted a diverse vegetative composition with a variety of grasses and forbs observed. Large stands of invasive thistle, coyote brush, and dense layers of thatch were noted throughout much of the site, which may have impaired the growth of additional species and/or may have limited observations by staff. No special status vegetative species were observed during the assessment.

San Francisco garter snake (SFGS), California red-legged frogs (CRLF), and Western pond turtles (WPT) have been documented on the adjacent Mindego Hill property. A reported observation of a San Francisco garter snake was documented in the pasture expansion area in 2009 [1] along the Mindego Hill Trail. The potential for CRLF and WPT to exist in the pasture expansion area is rare due to the absence of aquatic features other than a few seasonal drainages and seeps. The pasture expansion area is considered potential upland habitat for SFGS that are known to occupy Mindego Lake and Upper Springs approximately 0.25 miles to the north [1]. Other species of interest that have been documented in the pasture expansion area include mountain lions, bobcats, and American badgers. Feral pigs have been observed on the site and often cause ecological impacts to water sources and desirable vegetation by rooting up the soil.

CULTURAL RESOURCES:

The Muwekma Ohlone Tribe of the San Francisco Bay Area historically occupied the region, including the Russian Ridge area in San Mateo County. Native Americans are thought to have used the area for gathering seeds and may have burned some of the grasslands to encourage a bountiful crop in the following years [2]. Remnant artifacts from the Muwekma Ohlone Tribe can be found throughout the region including decorative shells, milling slabs, hand stones, awls, mortars, and pestles. No cultural resources were identified within the pasture expansion area during a biological and cultural resource assessment conducted by District staff in 2017. Sensitive cultural resources are known to occur at sites near the pasture expansion area, so there is a potential for inadvertent discovery of cultural resources on site.

VEGETATIVE COMPOSITION:

A combination of annual grassland and coastal scrub habitat covers approximately 70-75 percent of the pasture expansion area, comprised of a diverse vegetation composition, ranging from 100 percent annual grassland to areas heavily influenced by coyote brush. The vast majority of the grassland forage species are introduced non-native palatable grasses and low forbs that are desirable for livestock grazing. Dense woody vegetation including oaks, bay laurels, redwoods, and coyote brush dominate the steep drainages and act as a natural barrier to livestock along the

steep western edge of the site. Non-native invasive vegetation is found throughout the pasture expansion area. Yellow starthistle is found throughout the site with many localized dense stands. Italian thistle, milk thistle, and bull thistle were also identified. Coyote brush encroachment has drastically impacted grasslands throughout the pasture expansion area. Purple starthistle and wooly distaff thistle are found on the adjacent Mindego Hill pastures but were not observed in the pasture expansion area, except for a few purple starthistle plants on the Mindego Hill Trail/driveway [3].

IV. GRAZING MANAGEMENT PERSCIPTIONS & RECOMMENDATIONS

The proposed pasture expansion area within Russian Ridge is primarily annual grasslands. The reintroduction of cattle grazing to the site has the potential to enhance wildlife habitat, reduce non-native invasive plant species, promote increased plant species diversity, and reduce wildfire fuel loads. The following grazing management prescriptions are recommended to achieve the District's management objectives for the site.

ESTIMATED CARRYING CAPACITY**:**

Stocking rates should be adjusted downward or upward annually depending on precipitation (distribution and quantity) and annual forage production. Standing forage will determine pasture rotation, at the livestock operator's discretion, provided they remain within the prescribed forage standards. At no time should there be significant areas of bare soil void of vegetation cover present in the grazed pastures. A minimum of two to three inches of forage should be left as ground cover during both the growing season and dry summer and fall months. Proposed carrying capacity estimates for the Pasture Expansion Area should be referenced as a starting point and be adjusted upward or downward as necessary throughout the grazing season. Carrying capacity estimates for the site include:

- Favorable Production Year:
  175.6 AUMs = Approximately 15 cows year-round or 30 cows for 6 months.
- Average Production Year:
  145.2 AUMs = Approximately 12 cows year-round or 24 cows for 6 months.
- Unfavorable Production Year:
  111.6 AUMs = Approximately 9 cows year-round or 18 cows for 6 months.

SEASON OF USE**:**

A light to moderate year-round grazing regime is best suited for the site, which will be incorporated into the current 2-pasture grazing rotation in place on Mindego Hill. The result will be a 3-pasture grazing rotation with the addition of the Pasture Expansion Area which will allow greater flexibility in managing livestock grazing to achieve multiple objectives including fire fuel load reduction, wildlife habitat enhancement, promoting native grasses and forbs, and control of invasive vegetation.

The Pasture Expansion Area would benefit from winter and early spring grazing which will reduce non-native annuals allowing native forbs and wildflowers to bloom. In addition, winter and early spring grazing will reduce cattle impacts to recreational trails on Mindego Hill during winter months as cattle are confined to the new expansion pasture. A second grazing rotation, during the early summer, will reduce remaining fine fuels for fire protection and assist in control of some invasive thistles, which typically bolt and flower later than the annual grasses and wildflowers.

PRESCRIBED FORAGE STANDARD**:**

Leaving prescribed levels of residual dry matter (RDM) on the ground surface will provide a grassland seed crop for the following season, minimize the risk for soil erosion and sedimentation, protect water quality and reduce the presence of invasive vegetation. To protect soil stability, minimize the risk of sedimentation into local streams, and the spread of invasive vegetation, the grazed site should not exceed the following RDM performance standards per average slope at the conclusion of the grazing season:

- 0-30% Slopes – An average minimum of two to three inches of forage – approximately an average of 800-1,000 pounds per acre per Natural Resource Conservation Service (NRCS) and University of California Cooperative Extension (UCCE) definition [4].
- Greater than 30% Slopes – An average minimum of three to four inches of RDM – approximately an average of 1,000-1,200 pounds per acre per NRCS and UCCE definition [4].

At no time should there be significant areas of bare soil void of vegetation cover in any of the grazed pastures, particularly on steep upland slopes or areas adjacent to riparian corridors. A minimum of two to three inches of forage should be left as ground cover during both the growing season and dry summer and fall months.

Grazing to reduce vegetative biomass plays an important role in reducing wildfire fuel loads and promoting ecological benefit on coastal rangelands. While it is ideal to graze pastures to at or near prescribed RDM levels, it may be difficult to obtain these results annually based on natural climatic factors. Grazing operators should manage grazing livestock to remove, at a minimum, forty percent of the annual forage produced. For example, if annual forage production in a pasture is 5,000 pounds per acre, the grazing operator should manage livestock to reduce, at a

minimum, 2,000 pounds of forage per acre resulting in Fall RDM measurements around 3,000 pounds per acre.

While a forty percent reduction in forage is not ideal, it will provide some benefit in terms of fine fuels reduction and ecological benefit. If pastures or areas within pastures continually fail to meet the prescribed RDM standard, consider options to achieve RDM objectives such as; increased stocking rate, adjusting season of use/timing, adding a water source in the area, and/or placing cattle supplement in the area as an attractant.

V. GRAZING INFRASTRUCTURE RECOMMENDATIONS

FENCING:

Containment of grazing livestock to designated pastures plays an important role in the success of grazing to achieve resource management objectives, protect water quality, and provide a safe, user friendly recreational experience. New fence will be required along the eastern and southern borders of the pasture expansion area. An existing fence between the pasture expansion area and Mindego Hill property is in place along the northern boundary. Natural barriers (dense vegetation and steep terrain) will act as a livestock barrier along the western border of the pasture expansion area. Grazing tenant should monitor the efficacy of the natural barrier and install additional fencing as needed to ensure livestock remain in the pasture area. The District can require installation of additional fencing, as needed, to ensure cattle remain within the designated pasture area.

Approximately 5,000 linear feet of new fencing will be required along the eastern and southern pasture boundary. Fencing will be installed parallel to the Mindego Hill Trail to the east and along the border of the Silva Property to the south. The fence should consist of five (5) wires, four (4) strands of barbed wire on top with a smooth bottom wire approximately 16" above the ground. Fence braces should consist of welded oilfield pipe with heavy duty 1.33 PPF t-posts installed on ten (10) or twelve (12) foot centers. This style of fence is a wildlife friendly design that has been used extensively on the Mindego Hill property as well as other District preserves. The fence line parallel to the Mindego Hill Trail should be installed 10-12 feet below the trail to allow maintenance staff to mow and perform road maintenance as necessary without compromising the fence. Additionally, the fence will be installed below the road to reduce aesthetic impacts to Preserve visitors. Short sections of fence may be required along the western boundary of the pasture to reinforce the natural barrier (dense vegetation and steep terrain) that will act to contain livestock. Reference Figure-3, Mindego Hill Proposed Grazing Infrastructure Map, for detailed location of proposed fencing.

STOCK WATER:

Developed stock water is an essential component to a well managed livestock grazing program. Water sources can be used as an attractant to encourage cattle to graze desired areas within a pasture and enhance livestock distribution to better utilize available forage and graze grasslands more evenly. No natural water sources are present within the pasture expansion area to support grazing livestock.

A reliable water source is developed on the Mindego Hill property, a natural spring with a solar powered pump, which supplies water to a storage tank and water troughs in pastures adjacent to the pasture expansion area. This existing water system can be modified to supply a reliable, quality water source to the pasture expansion area.

Installation of three (3) new wildlife friendly concrete water troughs is recommended to supply water to livestock and promote livestock grazing distribution. Two of the new troughs will be located within the pasture at sites that are minimally visible from the Mindego Hill Trail to reduce aesthetic impacts. The third trough will be installed in the holding field/corral area above the pasture. A new 5,000-gallon water storage tank will be installed in the corral area to supply the water troughs in the pasture expansion area. A low-profile tank partially buried in the ground is recommended to minimize aesthetic impacts in the Preserve. Installation of approximately 5,000 feet of pipe is will be required to supply water to new troughs and tank. Pipe should be trenched or plowed into the ground at a depth of 18 to 24 inches. Reference Figure-3, Mindego Hill Proposed Grazing Infrastructure Map, for detailed location of proposed troughs, tank, and pipeline. All water troughs should be equipped with a wildlife escape ramp.

CORRAL:

The livestock corral that serves the Mindego Hill property is currently located within the pasture expansion area on the east side of the Mindego Hill Trail. The existing corral will adequately serve grazing operations in the pasture expansion area.

VI. BEST MANAGEMENT PRACTICES

WATER QUALITY PROTECTION:

Runoff from the pasture expansion area drains entirely into a small tributary to Alpine Creek, part of the San Gregorio Creek Watershed. This portion of Alpine Creek drains into Mindego Creek with the confluence of the two streams located downstream from the Cuesta La Honda Guild point of diversion (POD). Protecting water quality in the watershed is of high importance to the District to ensure the safety of downstream water users and protect aquatic habitat for wildlife.

The following BMPs should be implemented to help reduce the risk of animal waste contaminating water sources within and downstream of the pasture expansion area:

- Maintain a natural vegetative buffer of no less than thirty (30) feet from the top of the bank of perennial tributaries to Alpine Creek. The vegetative buffer will act as a natural filter to trap potential pathogens before they reach the water body. There is currently a 375 foot vegetative buffer planned between the grazed pasture area and tributary drainage.
- Control runoff and leaching from stockpiled manure, confined livestock, and corral facilities. Maintain a 100 foot vegetative buffer between corrals/confined livestock pens and perennial streams. The corral is situated on a ridgetop nearly a half-mile from the tributary drainage to Alpine Creek.
- Fly and vector control in livestock facilities may also reduce the spread and subsequent infection of other animals with pathogenic bacteria.
- Provide off-stream livestock water sources such as water troughs to reduce the use of streams by cattle and other livestock for water.
- Leave prescribed levels of residual dry matter (RDM) on the ground surface to minimize the risk for soil erosion and sedimentation to protect water quality. Ensure that grassland vegetation remains at levels equal to or greater than minimum prescribed RDM standards.
- Implement a comprehensive livestock husbandry program, including appropriate and timely inoculations and de-worming to minimize the risk of contracting or spreading disease to other livestock, humans, and wildlife. The Mindego Hill pasture expansion area presents an extremely low risk of impacts to water quality. No restrictions on season of use are recommended.
- Trap and remove feral pigs when feasible. Rooting from feral pigs disturbs soil which can lead to erosion and sedimentation of downstream waterways. Additionally, feral pigs can carry disease and pathogens such as cryptosporidium which may contaminate water sources.

SPECIAL STATUS SPECIES**:**

SFGS have been documented within the pasture expansion area, which provides potential upland habitat for snakes occupying the Upper Springs and Mindego Lake sites on the Mindego Hill property. The dense thatch accumulation in the pasture expansion area provides poor habitat for SFGS who prefer a mosaic of grassland vegetation of varying height.

Utilize grazing livestock to manage surrounding upland habitats for a mosaic of microhabitats (some open grassland, some brush, some downed woody debris areas, etc.) in the pasture expansion area. Creating a mosaic of microhabitats and breaking up the dense layer of thatch in the grasslands can be beneficial for successful management of SFGS habitat [5].

All proposed activities must adhere to applicable permit conditions for avoidance and minimization of impacts to SFGS. A preconstruction training, biological pre-surveys and/or the presence of a biological monitor may be required during construction and maintenance of grazing infrastructure as well as mechanical vegetation management efforts (e.g. mowing or weed whipping) to avoid impacts to SFGS

CULTURAL RESOURCES**:**

While cultural resources were not observed in the pasture expansion area, cultural resources are known from nearby areas. Given sensitivity, continue to monitor the pasture expansion area for the presence of cultural artifacts, particularly during construction of grazing infrastructure. If inadvertent cultural resources are detected, report to District staff and avoid future work in and around the area of the cultural resources until the site is inspected by a Senior Resource Management Specialist or a professional archaeologist.

INVASIVE VEGETATION MANAGEMENT:

Available forage production has been impacted by non-palatable invasive plant species resulting in reduced germination of desirable forage. Invasive plants decrease forage productivity, impact livestock health, impact wildlife habitat value, and create significant fiscal impacts to the landowner/lessee. Implementing an integrated approach to controlling pest plants is critical to the success of improving forage production and quality in grazed pastures. Manage the site with the minimum goal of containing the weed infestation to its current extent and preventing the introduction of new invasive species. Invasive plant control methods must be consistent with the District's Integrated Pest Management Program (IPMP) and all invasive species treatment must adhere to the District's BMPs and mitigation measures as prescribed in the IPMP.

The following recommended practices are designed to reduce the presence of invasive vegetation, protect soil and water quality, and promote beneficial forage production.

- Adjust the stocking rate in order to maintain a minimum of two-three inches of beneficial, vegetated ground cover at all times.
- Application of a selective broadleaf herbicide in the spring can be an effective strategy for the control of purple starthistle, yellow starthistle, and wooly distaff thistle, particularly when treating large infestations that are not easily controlled through manual methods. Follow-up inspection and manual removal during the summer can help control late germinating plants following initial herbicide treatment. A pest control recommendation must be issued from a Pest Control Advisor for any herbicide application on the property.

- Manually remove wooly distaff and purple starthistle by digging or cutting out the plant at least five inches below the soil surface before they begin to flower. After flowering, the plants should be bagged and removed from site, as seeds will continue to mature and ripen after the plant has been cut.
- Mowing can be used to manage invasive thistles, provided it is well timed and used on plants with a high branching pattern. Mowing at early growth stages results in increased light penetration and rapid regrowth of the weed. If plants branch from near the base, regrowth will occur from recovering branches. Repeated mowing of plants too early in their life cycles (rosette or bolting stages) or when branches are below the mowing height will not prevent seed production, as flowers will develop below the mower cutting height. Plants with a high branching pattern are easier to control, as recovery will be greatly reduced. Even plants with this growth pattern must be mowed in the late spiny or early flowering stage to be successful. An additional mowing may be necessary in some cases. Be sure to mow well before thistles are in flower to prevent seed spread.
- Prioritize thistle removal where the likelihood of seed spread is high such as road sides, cattle trails and loafing areas.
- Carefully monitor areas where outside feed is brought in for new invasive species and remove new weeds before they become established. If feasible, feed Certified Weed Free Hay or locally sourced hay to minimize the risk of introducing new invasive plant species.
- Do not import outside soil or fill material. Soil can be contaminated with invasive species and pathogens such as phytophthora. Soil importation is not consistent with District policy.
- Be aware of seed transport on ranch equipment and clean vehicles/equipment as needed. All personnel working in infested areas shall take appropriate precautions to not carry or spread weed seed or plant and soil diseases outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles prior to entering or leaving the site.

Implement an integrated approach described above to identifying and treating invasive plants within the pasture expansion area that are impacting forage production and grassland health including but not limited to coyote brush, yellow starthistle, wooly distaff thistle, Italian thistle, bull thistle and purple starthistle. Work with the District, UCCE and/or local NRCS or RCD to determine best options and timing for specific treatments.

VII. MONITORING

The monitoring program for the grazed rangeland pastures on the Mindego Hill portion of Russian Ridge is designed to ensure that the specific rangeland uses are in compliance with the Mindego Hill Rangeland Management Plan and the land stewardship goals and objectives. Utilize the monitoring protocols recommended in the Mindego Hill Grazing Management Plan (Sage, 2008) to monitor the pasture expansion area. Six (6) photo point locations within the pasture expansion area were strategically selected to capture overall rangeland health, grazing infrastructure, and invasive vegetation. These six photo points should be added to the annual Mindego Hill rangeland monitoring and data collection, including residual dry matter data. Figure-4 is a map showing photo point locations within the pasture expansion area and Exhibit-1 shows the stock photo for each of the six selected monitoring points.

Figure-1: Regional Location Map

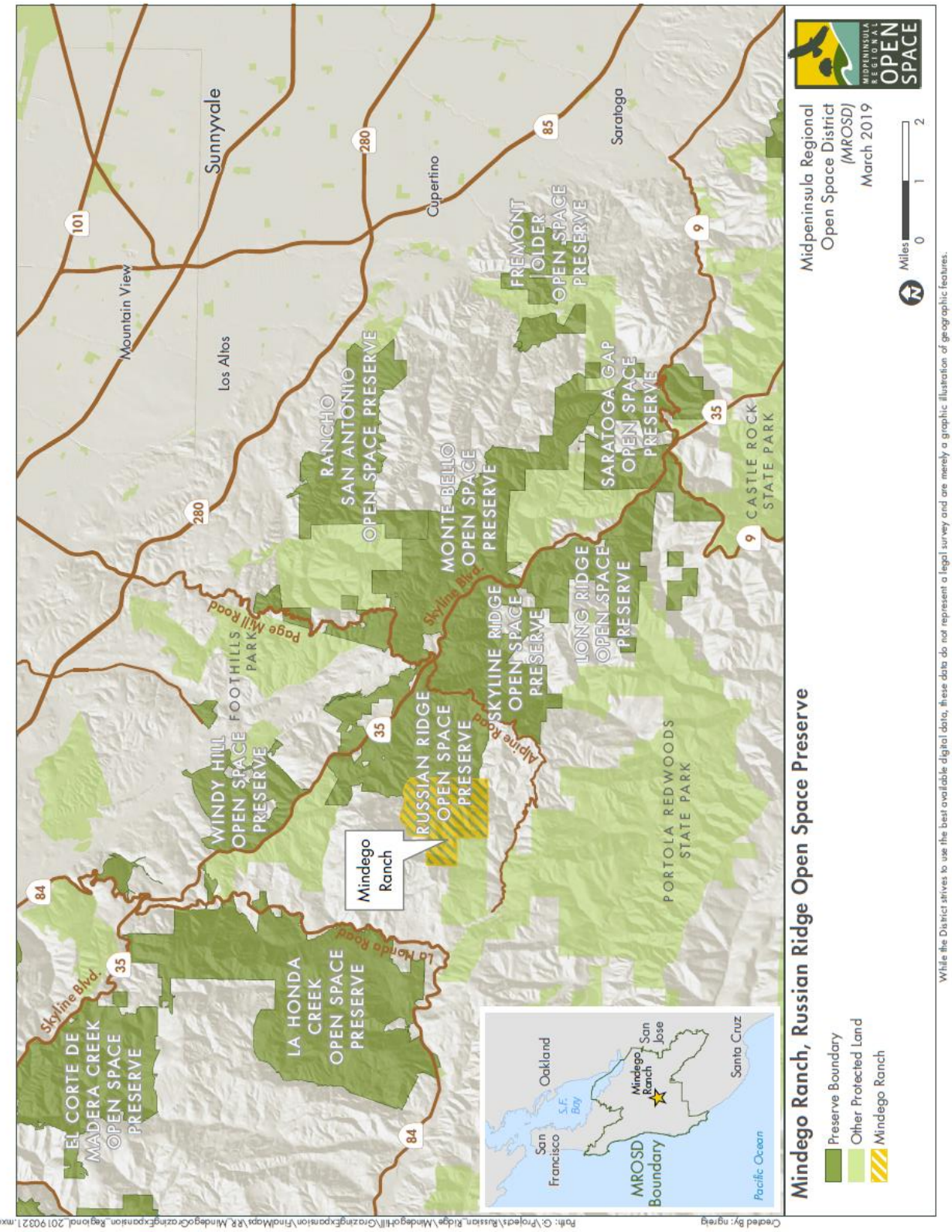


Figure-2: Mindego Hill Pasture Expansion Area

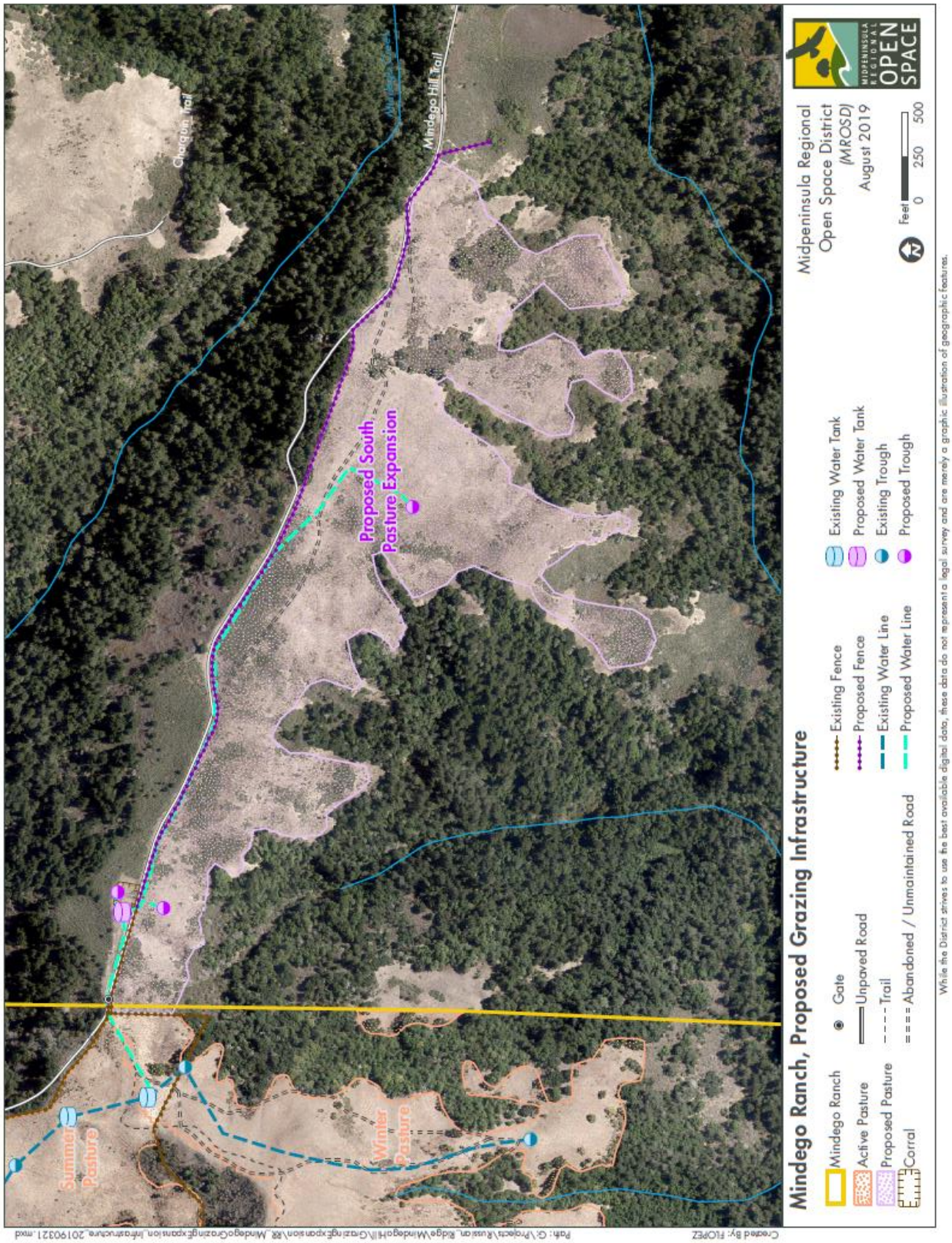


Figure-3: Proposed Grazing Infrastructure Improvements

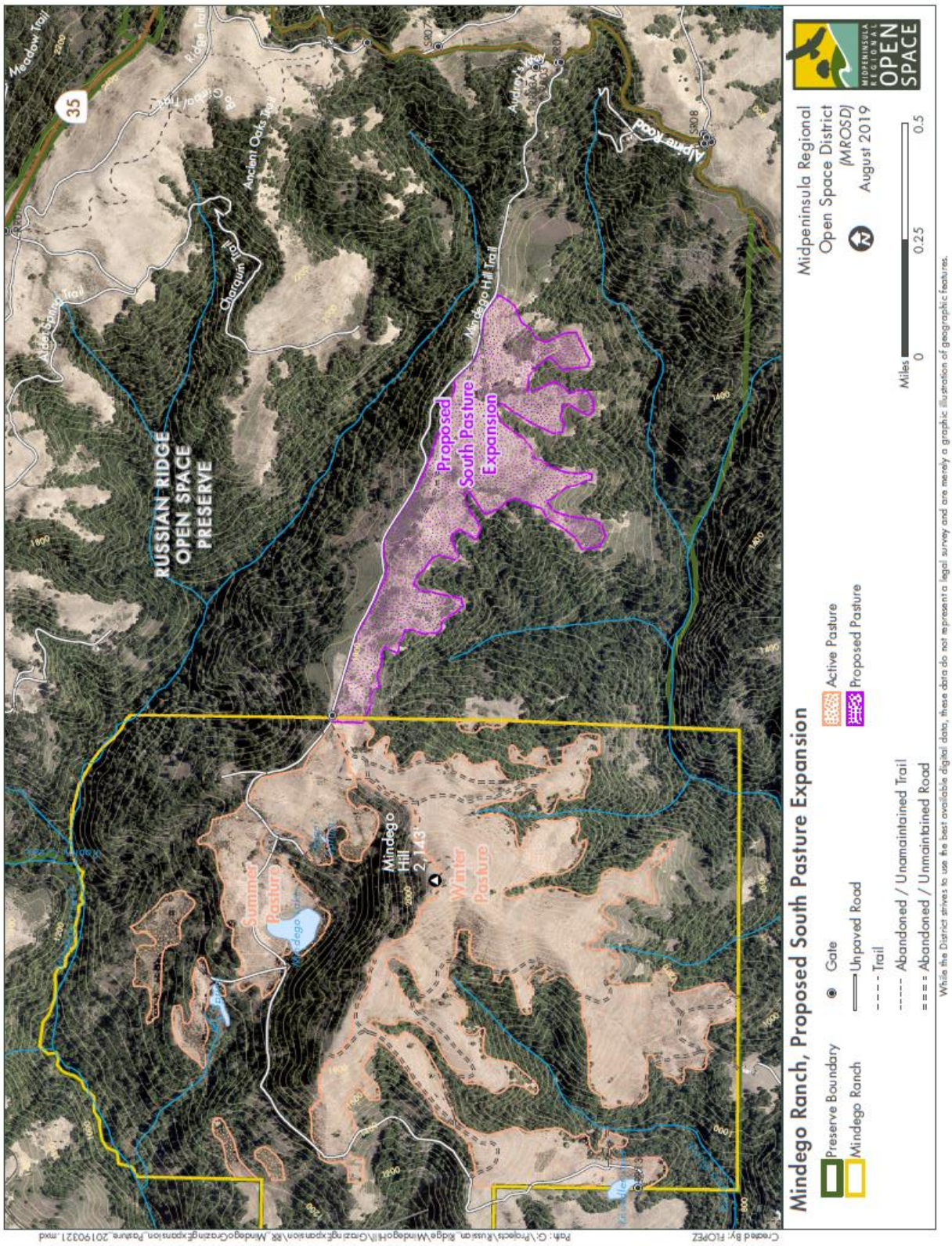


Figure-4: Rangeland Monitoring Photo Point Locations

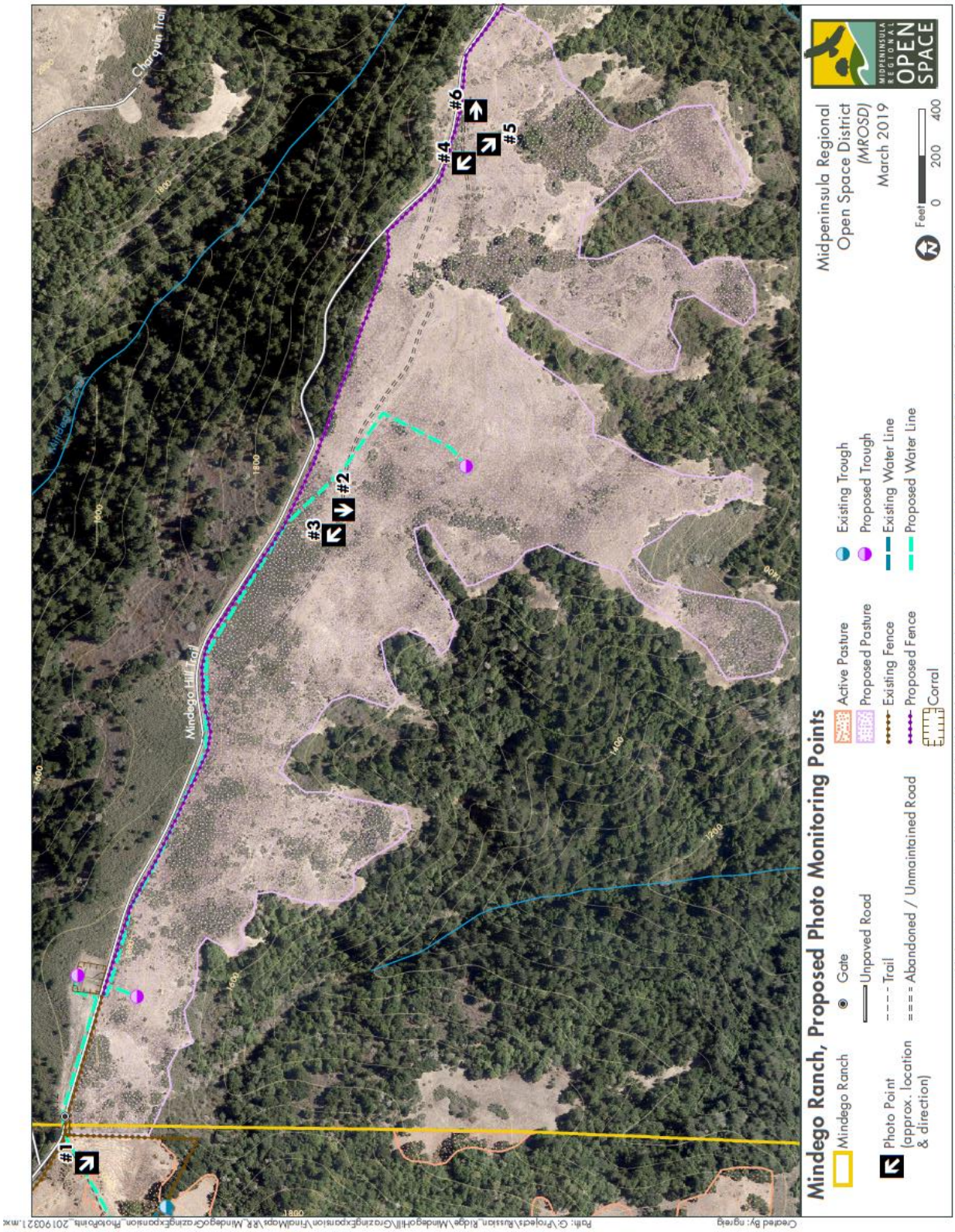


EXHIBIT-1

Rangeland Monitoring Stock Photos

Photo Point 1: Across the road from corral facing south. A landscape photo capturing vegetative composition including coyote brush encroachment.

Photo Point 2: Ridgetop near east central part of pasture expansion looking west toward Alpine Creek. Planned location for water trough, brush encroachment, and grasslands.

Photo Point 3: Ridgetop near east central part of pasture expansion looking north toward corrals and Mindego Hill. Ridgetop grasslands with Mindego Trail in background.

Photo Point 4: Ridgetop near western end of pasture expansion looking north toward Alpine Creek and Mindego Hill. Grassland habitat with coyote brush encroachment.

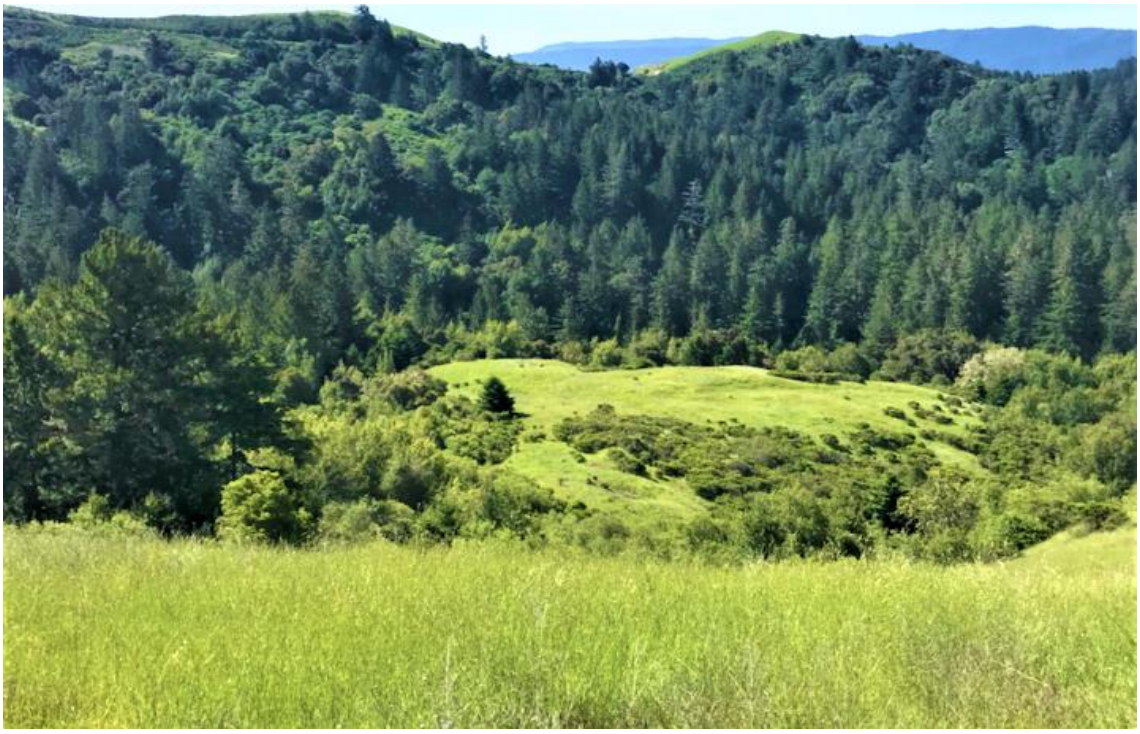


Photo Point 5: Ridgetop near western end of pasture expansion looking west toward Alpine Road. Grassland habitat with coyote brush encroachment and lower reaches of pasture.

Photo Point 6: Ridgetop near western end of pasture expansion looking South toward Alpine Road and former Silva Property. Grassland habitat with coyote brush encroachment.

REFEERENCES

1. PERSONAL COMMUNICATION: Andersen, Julie. Senior Resource Management Specialist, Midpeninsula Regional Open Space District.
2. Russian Ridge Open Space Preserve History. OpenSpace.org/preserves/Russian-Ridge. Accessed March 2019.
3. PERSONAL OBSERVATION: Koopmann, Clayton. April 2017 site visit.
4. Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California. University of California Cooperative Extensions (UCCE). Publication 8092. 2002.
5. Managing Rangelands to Benefit California Red-Legged Frogs and California Tiger Salamanders. *Lawrence D. Ford, Pete A. Van Hoorn, Devii R. Rao, Norman J. Scott, Peter C. Trenham, and James W. Bartolome*. Chapters 4, 5, and 8. September 2013.
6. US Fish and Wildlife Service (USFWS). 2004. Endangered and threatened wildlife and plants: Determination of threatened status for the California red-legged frog. *Federal Register* 61(101):25813-25833.
7. Mindego Hill Rangeland Management Plan. *Sage and Associates*. 2008.
8. California Natural Diversity database last accessed online March 2019.

PLAN PREPARED BY:

Having prepared this Rangeland Management Plan (RMP) addendum, I certify that it is consistent with the purpose and requirements, as set forth in the relevant RMP Provisions. As with any plan, this RMP should be viewed as a living document, subject to periodic update and review as needed to reflect changing on-farm conditions over time. The RMP, including addenda, should be updated at least every ten years, or in the event of significant changes in the use, management, or ownership of the Property.

Clayton W. Koopmann

Clayton W. Koopmann

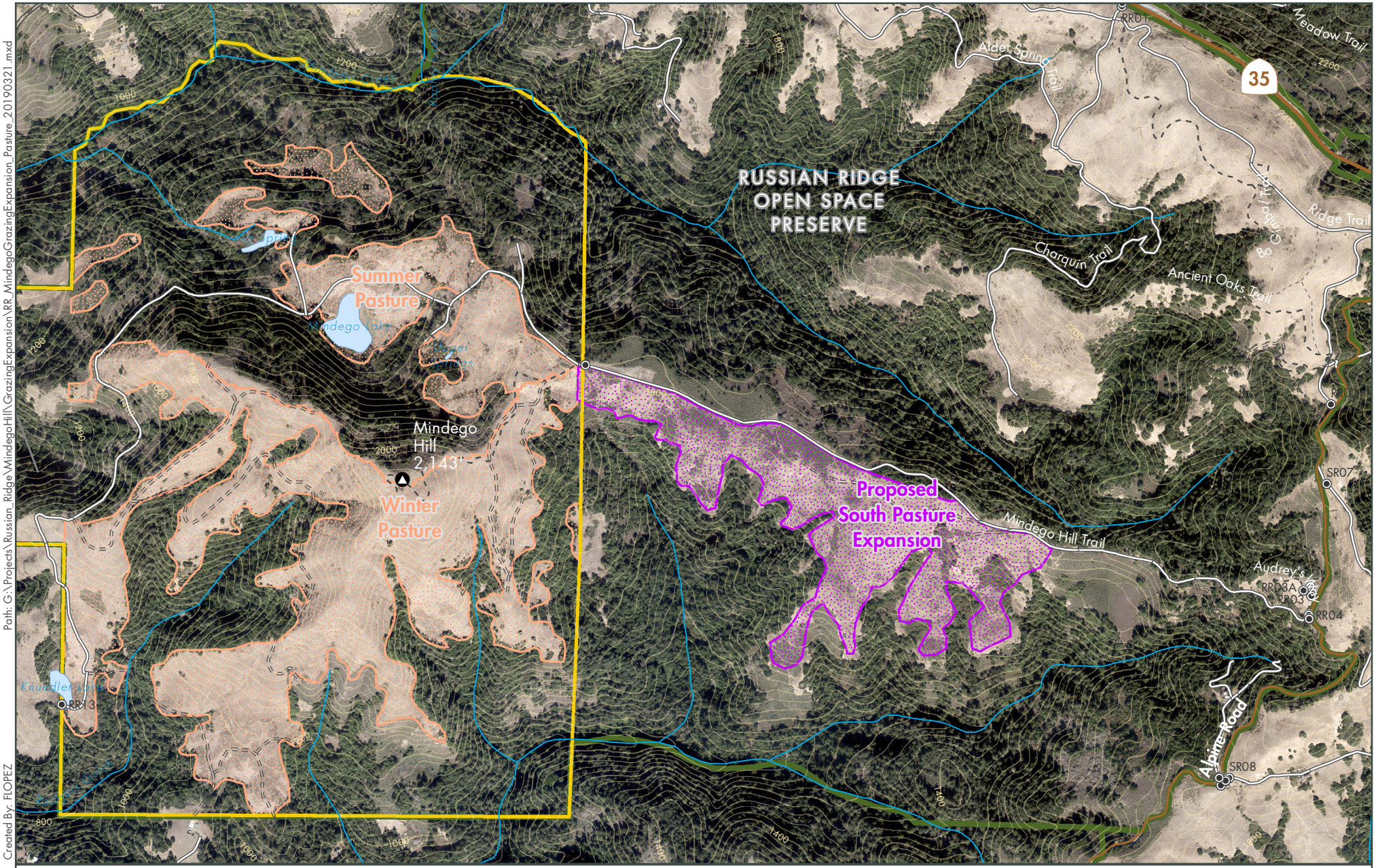
April 2, 2019

Date

Clayton W. Koopmann, B.S., Agricultural Management & Rangeland Resources; Owner Koopmann Rangeland Consulting; California Board of Forestry Registered Certified Rangeland Manager #M-100

Koopmann Rangeland Consulting

Rangeland Resource Management Services



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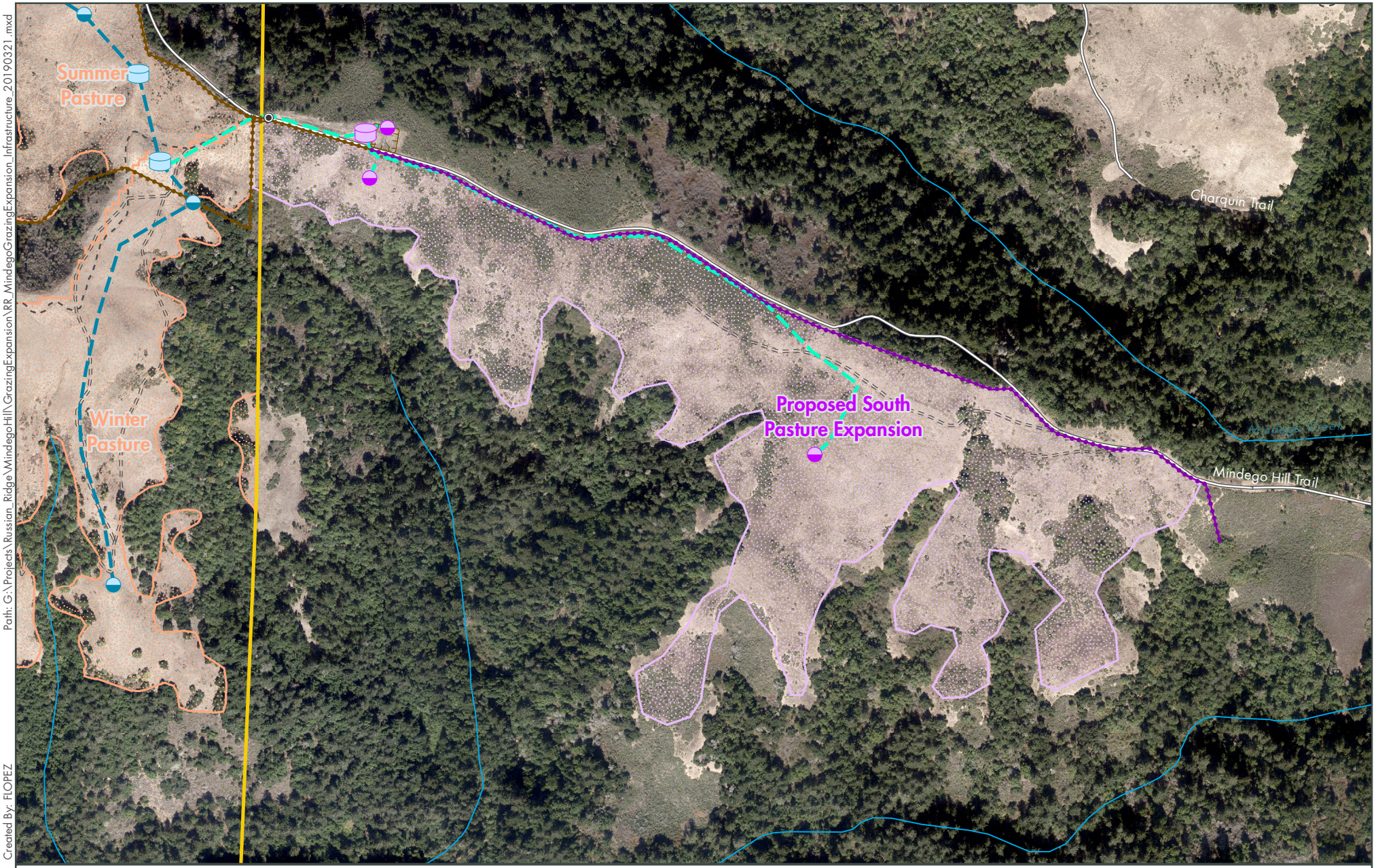
Mindego Ranch, Proposed South Pasture Expansion

- Preserve Boundary
- Mindego Ranch
- Gate
- Unpaved Road
- Trail
- Abandoned / Unamaintained Trail
- Abandoned / Unmaintained Road
- Active Pasture
- Proposed Pasture

Midpeninsula Regional Open Space District *(MROSD)*
August 2019

Miles
0 0.25 0.5

While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.



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Created By: FLOPEZ

Mindego Ranch, Proposed Grazing Infrastructure

- Mindego Ranch
- Active Pasture
- Proposed Pasture
- Corral
- Gate
- Unpaved Road
- Trail
- Abandoned / Unmaintained Road
- Existing Fence
- Proposed Fence
- Existing Water Line
- Proposed Water Line
- Existing Water Tank
- Proposed Water Tank
- Existing Trough
- Proposed Trough

Midpeninsula Regional Open Space District *(MROSD)*
August 2019

Feet
0 250 500

While the District strives to use the best available digital data, these data do not represent a legal survey and are merely a graphic illustration of geographic features.

Addendum to the Initial Study / Mitigated Negative Declaration

Mindego Ranch Use and Management Plan

SCH# 2013112067

Addendum to the Initial Study / Mitigated Negative Declaration

Mindego Ranch Use and Management Plan

SCH# 2013112067

LEAD AGENCY:

Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022

Contact: Gretchen Laustsen, Planner III
Phone: 650.691.1200
Fax: 650.691.0485

January 22, 2020

TABLE OF CONTENTS

Exhibits

ACRONYMS AND ABBREVIATIONS

BAAQMD	Bay Area Air Quality Management District
CalEEMod	California Emissions Estimator Model, Version 2001.1.1
CEQA	California Environmental Quality Act
CDFW	California Fish and Wildlife
CRLF	California Red-Legged Frog
District	Midpeninsula Regional Open Space District
IS/MND	Initial Study / Mitigated Negative Declaration
GHG	Greenhouse Gas
MROSD	Midpeninsula Regional Open Space District
Russian Ridge or RROSP	Russian Ridge Open Space Preserve
SFGS	San Francisco Garter Snake
U&M Plan	Use and Management Plan
USFWS	United State Fish and Wildlife Service

1 MINDEGO RANCH USE AND MANAGEMENT PLAN OVERVIEW

1.1 PURPOSE OF THIS DOCUMENT

In January 2014, the Midpeninsula Regional Open Space District (District, MROSD) Board of Directors adopted the Initial Study and Mitigated Negative Declaration (IS/MND) (State Clearinghouse No. 2013112067) for the MINDEGO RANCH USE AND MANAGEMENT PLAN (herein referred to as the 2014 IS/MND). The 2014 IS/MND analyzed a proposed project that included the adoption of a Use and Management Plan (U&M Plan) for the 1,047-acre Mindego Ranch Property within the District's Russian Ridge Open Space Preserve (RROSP or Russian Ridge). The proposed U&M Plan focuses on habitat restoration projects to benefit resident populations of California red-legged frog (CRLF) and San Francisco garter snake (SFGS). Other planned actions include re-introduction of cattle grazing to the property and associated infrastructure improvements, road and trail maintenance to reduce erosion, and routine patrol activities. The U & M Plan also includes minimal public access to the property, namely opening access to an existing donor recognition site to hikers and equestrians.

The following documents were incorporated into the U &M Plan and guide implementation for several components, including habitat restoration, grazing management, and roadway improvements:

- San Francisco Garter Snake Habitat Management Plan. This habitat management plan was prepared specifically for the proposed project by Biosearch in September 2012. The management plan provides a United States Fish and Wildlife Service (USFWS) compliant strategy to encourage the recovery of SFGS by improving habitat conditions for SFGS and CRLF, a primary food source for SFGS. Habitat management actions include temporarily draining Mindego Lake to eradicate non-native species, and removing sediment and vegetation from other ponds on the property to improve breeding habitat for CRLF. The habitat enhancement actions were designed to benefit the SFGS and would be implemented under an endangered species recovery or enhancement permit issued by the USFWS.

- Road and Trail Erosion Inventory: Mindego Ranch Area. This report, prepared by Timothy C. Best, CEG, in November 2012, inventories the condition and erosion potential along existing roads and trails into and within Mindego Ranch, focusing on potential risk for future sediment delivery to streams, and locations where road or trail upgrades are needed. The report identifies feasible repairs to minimize erosion and repair damaged roads. The report also includes an assessment of long-term maintenance requirements.

- Mindego Hill Ranch Grazing Management Plan (Mindego Grazing Plan). This grazing plan was prepared specifically for the proposed project by Sage Associates in October 2012. The grazing plan provides appropriate management practices for a conservation grazing program, including soil and water conservation, erosion control, pest management, nutrient management, water quality, and habitat protection associated with the onsite grasslands that are proposed for grazing.

The District proposes modifications to the previously approved project through the approval of an addendum to the Mindego Grazing Plan that includes expansion of the conservation grazing area, installing additional grazing infrastructure improvements, and monitoring recommendations. The project purpose identified in Section 1.0, page 2, of the 2014 IS/MND remain unchanged.

The purpose of this proposed Addendum is to consider whether these modifications to the project would result in the need for additional analysis under CEQA (Public Resources Code, section 21166; CEQA Guidelines, sections 15162, 15164). As demonstrated in Section 4 below, the project modifications do not meet any of the criteria listed in section 15162 of the CEQA Guidelines (as described in Section 2 below).

This means the modifications would not (1) result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects due to substantial changes to the project; (2) result in significant environmental effects or a substantial increase in the severity of previously identified significant effects due to substantial changes with respect to the circumstances under which the project is undertaken; or (3): affect approved mitigation measures, requiring new mitigation measures or alter their feasibility or implementation.

Therefore, pursuant to section 15164 of the CEQA Guidelines, the differences between the approved project described in the 2014 IS/MND and the project modifications as currently proposed are considered minor technical changes and additions. For these reasons, an addendum to the 2014 IS/MND is the appropriate mechanism to address modifications to the project.

This document concludes that the proposed approval of the addendum to the Mindego Grazing Plan would not alter any of the conclusions of the 2014 IS/MND. As mentioned above, none of the conditions listed in section 15162 of the CEQA Guidelines exist for the project modification described herein. Therefore, pursuant to section 15164 of the CEQA Guidelines, the differences between the approved project described in the 2014 IS/MND and the modification of the project as currently proposed and described in this addendum are minor and this addendum provides sufficient environmental documentation.

1.2 PROJECT HISTORY

The project area, a 1,047-acre former cattle ranch, was added to the District's RROSP in 2008. A Preliminary Use and Management Plan, which maintained status quo management on the Mindego Ranch property, was approved as part of the purchase (MROSD 2008). Subsequently, the District conducted biological surveys on the property, which documented the existence of a population of SFGS, a federally listed endangered species. Because of the biological sensitivity of this species, which includes federal regulation of activities within its habitat, the District has engaged in long-term planning to ensure that future District public access and land management objectives are fully consistent with the requirements of the Endangered Species Act.

District staff worked closely with resource specialists to develop land management recommendations for Mindego Ranch, including pond restoration, re-introduction of cattle grazing, and road and trail improvements to reduce erosion and facilitate adequate maintenance and patrol of the property. These recommendations were consolidated into the U&M Plan for Mindego Ranch. The U&M Plan was developed to guide stewardship of the property for the next twenty to thirty years. In January 2014, the MROSD Board of Directors adopted the Project's Initial Study / Mitigated Negative Declaration (R-14-03).

The District has used conservation grazing as a management tool to protect sensitive species habitat and reduce fuel loads at Mindego within Russian Ridge since 2015. Conservation grazing also helps fulfill the District's commitments to the USFWS, California Department of Fish and Wildlife (CDFW), and the San Mateo County Farm Bureau (Farm Bureau) - to protect and enhance sensitive species habitat and to protect the local agricultural heritage respectively. Specific grazing practices within areas currently grazed at Mindego Hill are guided by the U&M Plan, which includes the Mindego Grazing Plan. When the District commenced grazing of the original 1,047-acre property, staff identified an additional 125 acres to the southeast as a future priority for expanding conservation grazing on the property.

The proposed grazing plan addendum provides a framework to guide ongoing resource management work based on the specific conditions and resources within the proposed pasture expansion area. With an emphasis on protecting both the unique biological resources and agricultural heritage of the site, the grazing plan addendum aligns with the District's coastside mission and Grazing Management Policy. To manage the effects of grazing in the expansion area, the addendum recommends infrastructure improvements, resource management projects, stocking rates, and a monitoring protocol for expanding the effectiveness of the conservation grazing program on the property and its beneficial effects on grassland habitats. The components of the addendum are discussed in more detail in Section 3.

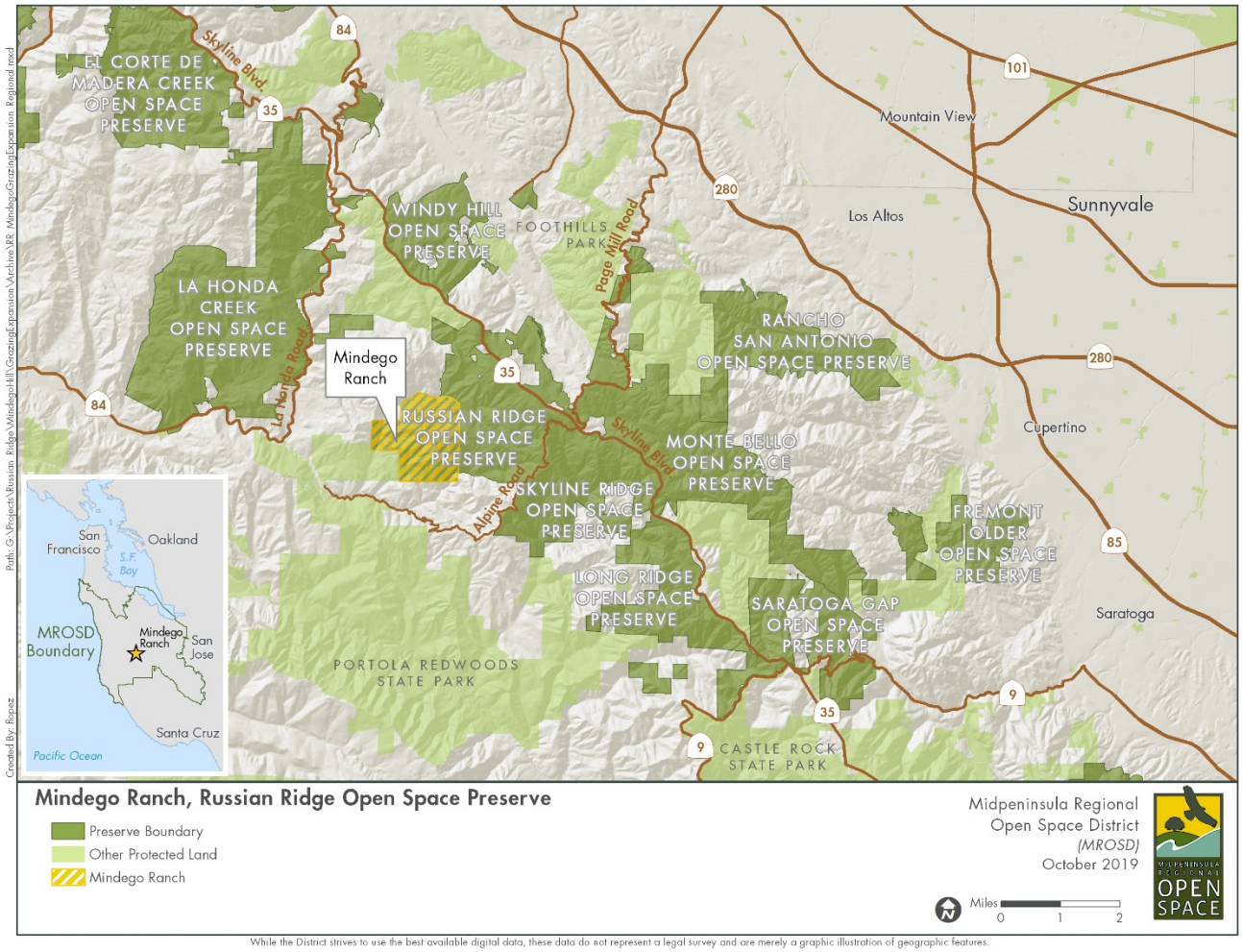

Exhibit 1 **Regional Map**

2 CEQA GUIDANCE REGARDING PREPARATION OF AN ADDENDUM TO THE IS/MND

Section 15162 (a) of the CEQA Guidelines provides that when a negative declaration has been adopted for a project, no subsequent negative declaration shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, that one or more of the following conditions is met:

(1) substantial changes are proposed in the project which will require major revisions of the previous negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous negative declaration was adopted, shows any of the following:

   (A) the project will have one or more significant effects not discussed in the previous negative declaration;

   (B) significant effects previously examined will be substantially more severe than shown in the previous negative declaration;

   (C) mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measures or alternatives; or

   (D) mitigation measures or alternatives which are considerably different from those analyzed in the previous negative declaration would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measures or alternatives.

Section 15164 of the CEQA Guidelines states that a lead agency or a responsible agency shall prepare an addendum to a previously adopted IS/MND if some changes or additions are necessary, but none of the conditions described above in section 15162(a), calling for preparation of a subsequent negative declaration, have occurred.

CEQA allows lead and subsequent responsible agencies issuing additional discretionary approvals for a project to restrict their review of modifications to a previously approved project to the incremental effects associated with the proposed modifications, compared against the anticipated effects of the previously approved project at build-out. In other words, if the project under review constitutes a modification of a previously approved project which was subject to prior final environmental review, the "baseline" for purposes of CEQA is adjusted such that the originally approved project is assumed to exist.

The District is proposing only minor modifications to the approved project; these changes are described in Section 3 of this addendum. As demonstrated in detail below, the project modifications do not meet any of the criteria listed in section 15162 that would require a subsequent IS/MND. First, the modifications would not result in any new significant environmental effects or a substantial increase in severity of previously evaluated significant effects that result from either a substantial change to the project or changes to the project circumstances. Second, there is no new information of substantial importance since certification of

the 2014 IS/MND that shows the modifications will have new significant effects or more severe previously evaluated effects. Finally, no mitigation measures in the 2014 IS/MND will be altered, and no new mitigation measures will be required. Therefore, pursuant to section 15164 of the CEQA Guidelines, the differences between the approved project described in the 2014 IS/MND and the refined elements of the project, as they are currently proposed, are minor technical changes. Furthermore, the 2014 IS/MND and associated mitigation monitoring and reporting program remain valid for mitigating the identified potentially significant impacts that would result from implementation of the project, including the proposed modifications. For these reasons, an addendum to the 2014 IS/MND is the appropriate mechanism to address modifications to the project.

3 DESCRIPTION OF PROPOSED PROJECT MODIFICATIONS

The District's proposed modifications to the previously approved project include an addendum to the Mindego Ranch Grazing Management Plan.

The purpose of this proposed Addendum is to consider whether these modifications to the project would result in the need for additional analysis under CEQA (Public Resources Code, section 21166; CEQA Guidelines, sections 15162, 15164). The following provides a description of each proposed modification to the previously approved project.

3.1 ADDENDUM TO THE MINDEGO RANCH GRAZING MANAGEMENT PLAN

The proposed addendum to the Mindego Ranch Grazing Plan identifies existing resources and current uses in the proposed south pasture expansion area, and provides recommendations for future improvements, management, and monitoring. Recommendations include an expansion of pasture area, corresponding stocking rates for the expanded pasture, infrastructure improvements, resource management projects, and a monitoring protocol to measure the effectiveness of the conservation grazing program on the property and its beneficial effects on grassland habitats. The components of the addendum are discussed in more detail below.

a) **Pasture Expansion:** Expansion of conservation grazing within the RROSP to an additional 125 acres in the south pasture. Under the existing grazing plan, there are 330 acres grazed on Mindego Ranch. The expansion would bring the total acreage to 455 acres.

   The pasture expansion area within Russian Ridge is situated adjacent to and south of the Mindego Hill Trail, and east of Mindego Hill (Attachment 2). The proposed pasture expansion site is bordered by Russian Ridge on the north, east and west, and by the former Silva Property, now District property, to the south. Access to the site is via an all-weather gravel road off Alpine Road that runs east to west for approximately 0.5 miles.

   The proposed pasture expansion area is south sloping, comprised primarily of annual grasslands with scattered dense stands of coyote brush and some oak trees. The pasture drains into a small tributary that flows into Alpine Creek, within the San Gregorio Creek Watershed. Livestock access to the stream channels would be controlled by natural buffers (steep terrain and dense vegetation) as well as partial wildlife-friendly fencing, as needed. This portion of Alpine Creek drains into Mindego Creek, downstream from the Cuesta La Honda Guild's point of diversion.

   Estimated Carrying Capacity: Proposed carrying capacity estimates for the south pasture expansion area would be referenced as a starting point and be adjusted upward or downward as necessary throughout the grazing season based on multiple factors including annual rainfall and available forage. Carrying capacity estimates for the site include:

Favorable Production Year
175.6 AUMs = Approximately 15 cows year-round or 30 cows for 6 months
Average Production Year
145.2 AUMs = Approximately 12 cows year-round or 24 cows for 6 months
Unfavorable Production Year
111.6 AUMs = Approximately 9 cows year-round or 18 cows for 6 months

b) **Grazing Infrastructure:** The addendum recommends several infrastructure improvements to optimize effective use of conservation grazing as a rangeland management tool. The use of grazing animals requires fencing and water sources for controlling the distribution of livestock to manage and protect the natural resources.

Water infrastructure – The availability of clean and reliable water is essential to the function of the conservation grazing program. Having well distributed water sources helps disperse the influence of livestock on the landscape and reduce impacts on natural waterways. No natural water sources are present within the pasture expansion area to support grazing livestock. However, a clean and reliable water source has been developed on Mindego Ranch that uses a natural spring with a solar powered pump to supply water to a storage tank and water troughs in pastures adjacent to the proposed expansion area (R-14-021). This existing water system can be modified to supply water to the expansion area.

The project includes installation of three new wildlife-friendly concrete water troughs to supply water to livestock and promote livestock distribution. Two of the new troughs would be located within the pasture expansion area at sites that are minimally visible from the Mindego Hill Trail to reduce aesthetic impacts. A third trough would be installed in the holding field/corral area above the pasture. A new 5,000-gallon low-profile tank (partially buried in the ground) would be installed in the corral area to supply the water troughs in the pasture expansion area. Installation of approximately 5,000 feet of pipe would be required to supply water to the new troughs and tank.

Pasture infrastructure – Approximately 5,000 linear feet of new fencing is proposed along the eastern and southern pasture boundary. Fencing would be installed parallel to the Mindego Hill Trail to the east and along the border of the former Silva Property, now District property, to the south. The fence would be wildlife-friendly, per District standards. While 5-strand barbed wire fence is more effective, a wildlife friendly fence using 4-strand barbed wire with a smooth bottom wire is also effective, though the smooth bottom wire is susceptible to damage and may require frequent repairs. Either style fence can be made wildlife friendly if the bottom wire is situated an average of 16”-18” above the ground allowing wildlife to cross underneath while functioning to contain livestock. Short sections of fence may be required along the western boundary of the pasture to reinforce the natural barrier of dense vegetation and steep terrain, which will contain livestock.

c) **Monitoring Protocols:** The monitoring plan for the grazed pastures on the Mindego Ranch portion of Russian Ridge is designed to ensure that the specific rangeland uses are compliant with the Mindego Grazing Plan, and land stewardship goals and objectives. The addendum recommends using the protocols identified and used for the Mindego Grazing Plan to monitor the pasture expansion area. In addition, six new photo point locations have been strategically selected to monitor overall rangeland health, grazing infrastructure, and invasive vegetation.

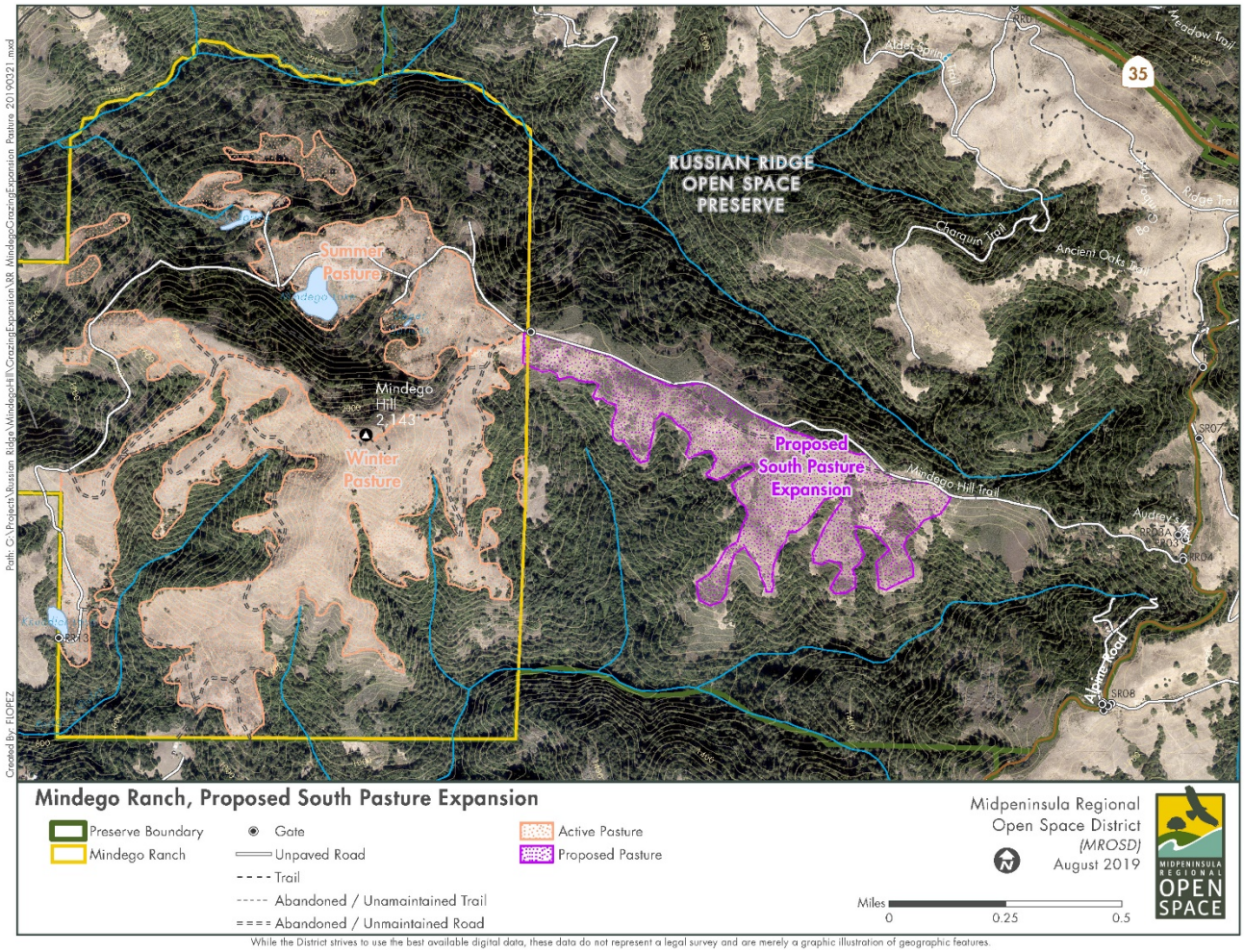

Exhibit 2 **Proposed Minor Project Modification Area Map**

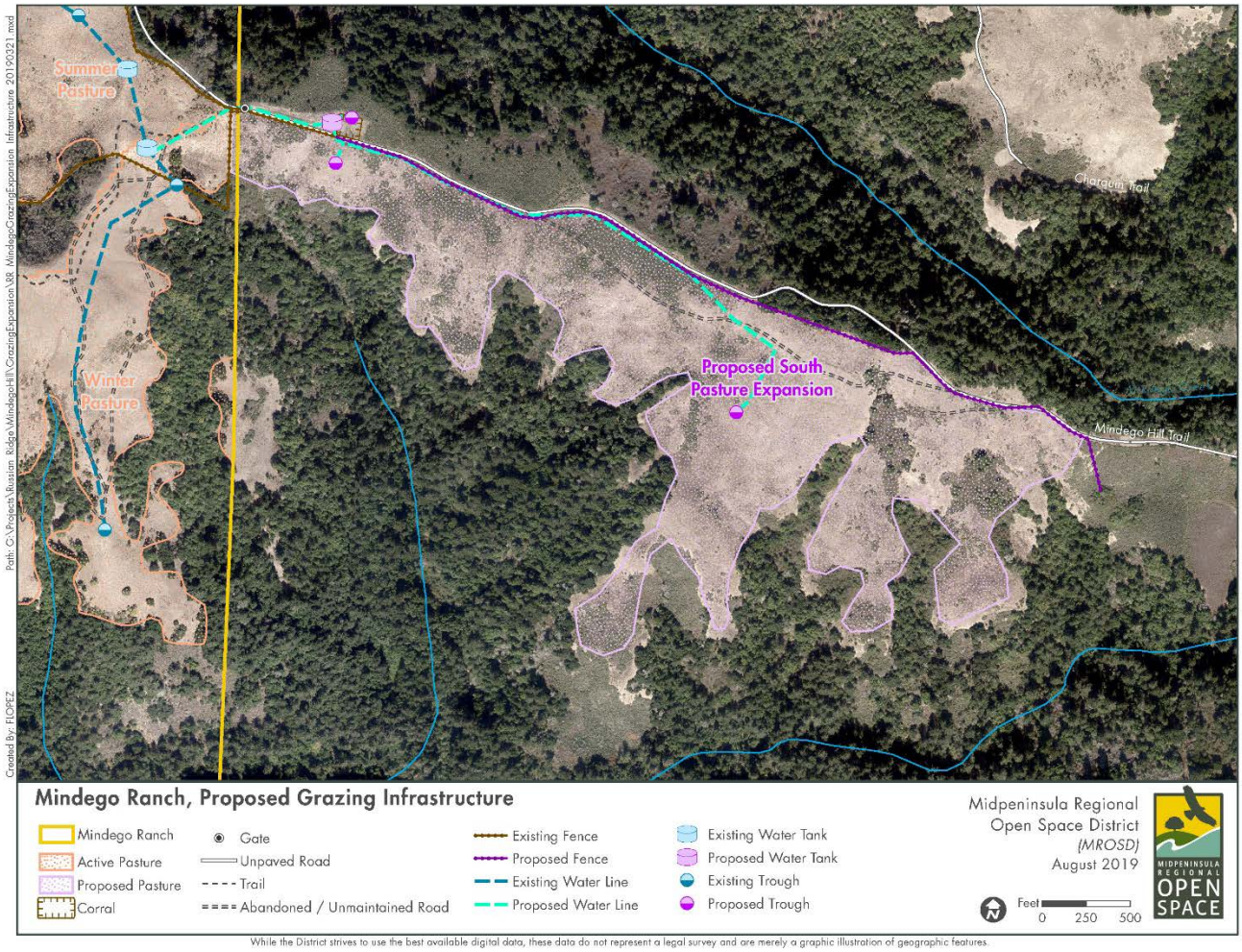

Exhibit 3 **Proposed Grazing Infrastructure Map**

4 ENVIRONMENTAL CONSEQUENCES OF PROPOSED PROJECT MODIFICATIONS

The purpose of this discussion below is to evaluate the environmental issue areas in terms of any "changed condition" (i.e., changed circumstances, project changes, or new information of substantial importance) resulting from the proposed project modifications that may result in a different environmental impact significance conclusion from the adopted 2014 IS/MND. Each resource issue area is addressed below.

4.1 AESTHETICS

The 2014 IS/MND identified less-than-significant and no impact/impacts associated with impacts on scenic vistas, damage to scenic resources within a scenic highway corridor, changes in visual character, and impacts from nighttime lighting.

The proposed grazing pasture expansion, grazing infrastructure and monitoring would occur within the same general project area and have a similar appearance to the existing condition. Thus, the proposed minor project additions would not substantially damage any scenic resources or substantially degrade the existing visual character or quality of the site or its surroundings. The proposed project additions include no new lighting and would not create a new source of light or glare that would adversely affect day or nighttime views in the area.

Based on the above discussion, there are no new significant effects or substantial changes to the environmental evaluation of aesthetic resources provided in the approved 2014 IS/MND that would occur with the implementation of the proposed project additions. The proposed grazing expansion evaluated in this addendum is visually consistent with the original project proposed in the 2014 IS/MND and would not generate any new significant impacts related to aesthetics.

4.2 AGRICULTURE AND FORESTRY RESOURCES

The 2014 IS/MND identified less-than-significant and no impact/impacts associated with impacts on farmlands, agricultural use, forest land or timberland. The local General Plans and Zoning Districts designate the project area for open space and recreation. The existing public access along an existing trail adjacent to the proposed project area facilitate open space and low intensity recreation, both of which are compatible with the proposed cattle grazing, will remain. The proposed project parcels are not under a Williamson Act contract. The proposed project area does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, is not zoned for forest land or timberland, and would therefore have no impact on these resources and would result in no change to the 2014 IS/MND conclusion.

4.3 AIR QUALITY

The 2014 IS/MND identified less-than-significant impacts with mitigation related to minor construction activities (including road improvements) resulting in emission of fugitive dust (i.e., PM10 and PM2.5). As indicated in the 2014 IS/MND, these impacts would be reduced to a less-than-significant impact with implementation of Mitigation Measures 3.31 (Basic Construction Mitigation Measures) and would not conflict with any air quality plans.

The 2014 IS/MND identified no impact or less-than-significant impacts associated with conflicts with applicable air quality plans, a net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, the exposure of sensitive receptors to substantial pollutant concentrations, objectionable odors affecting a substantial number of people.

The proposed minor expansion would not result in new or more severe impacts because the proposed land uses are consistent with the 2014 IS/MND, and the proposed construction activities are minor, temporary, and a small subset of the construction activities considered in the 2014 IS/MND. However, like the original approved project, with the implementation of Mitigation Measure 3.3-1 where applicable (2014 IS/MND), construction-related emissions of fugitive dust that could result in exposure of sensitive receptors to fugitive dust emissions impacts would be reduced to a less-than-significant level.

For the reasons described above, no new significant effects or substantial changes to the environmental evaluation of air quality impacts provided in the 2014 IS/MND would occur with implementation of the proposed new project modifications.

4.4 BIOLOGICAL RESOURCES

The 2014 IS/MND identified potentially significant impacts as a result of the original project on special status species wildlife and plants, sensitive natural communities and wetlands. These impacts were identified to be reduced to a less-than-significant impact with implementation of Mitigation Measures 3.4-1 through 3.4-4. The 2014 IS/MND identified a less-than-significant impact associated with the original project on native species and interference with wildlife movement or conflicts with local policies or ordinances protecting biological resources. There is no impact related to conflict with adopted or approved habitat conservation plans or natural community conservation plans.

The proposed new minor project modifications are consistent with the U&M Plan and would not increase the potential for impacts to biological resources. The project would now add a minor expansion of select actions whose impacts were fully evaluated in the 2014 IS/MND. In addition, the expansion area is outside of the site's sensitive natural communities and riparian and wetland areas. With implementation of all appropriate mitigation measures, no new impacts to biological resources would result from implementation of the proposed project new modifications evaluated in this addendum.

4.5 CULTURAL RESOURCES

The 2014 IS/MND identified less-than-significant impacts associated with impacts to historical resources. The 2014 IS/MND identified potentially significant impacts to archaeological resources, paleontological resources, geological features and human remains. These impacts would be reduced to a less-than-significant impact with implementation of Mitigation Measures 3.5-1 and 3.5-2.

The proposed grazing expansion, including grazing implementation of additional water and fencing infrastructure and monitoring are consistent with the U&M Plan and the impacts of this type of work was previously analyzed in the 2014 IS/MND. According to the Mindego Ranch Pond Rehabilitation Archaeological Survey Report, the installation of fencing and water infrastructure at Mindego Ranch are minor ground surface modifications or involve no subsurface excavation. Thus, there are no new significant effects or substantial changes to the environmental evaluation of cultural resources provided in the approved 2014 IS/MND that would occur with the implementation of the proposed project modifications. The project modifications evaluated in this addendum are consistent with the project as proposed in the 2014 IS/MND and with implementation of the applicable mitigation measures would not generate any new significant impacts related to cultural resources.

4.6 GEOLOGY AND SOILS

The 2014 IS/MND identified less-than-significant and no impacts/impact related to geology and soils.

The proposed minor project modification evaluated in this addendum (i.e., grazing pastures expansion, additional water and fence infrastructure and monitoring) is consistent with the project as proposed in the 2014 IS/MND and designed to the same standards and would not generate any new significant impacts related to geology and soils. Therefore, the proposed modifications to the project would not result in significant adverse geology, soils, or seismicity impacts to life or property.

4.7 GREENHOUSE GAS EMISSIONS

To estimate greenhouse gas (GHG) emissions for the approved project, GHG modeling was conducted using the Bay Area Air Quality Management District (BAAQMD)-approved California Emissions Estimator Model, Version 2001.1.1 (CalEEMod), which includes widely accepted emission factors for cattle. The 2014 IS/MND identified less-than-significant impacts associated with the generation of greenhouse gas emissions and less-than-significant impacts from climate change on the approved project.

The proposed minor project addition would include an expansion of grazing, including implementation of additional fencing and water system improvements and monitoring protocols. Within the 2014 IS/MND, GHG emissions from construction were estimated to be 132 metric tons of C02 equivalent per year (MT C02e/year) over the construction period and emissions from cattle were estimated to be 159 metric tons of C02 equivalent per year (MT C02e/year). The proposed project modifications would result in approximately 93 MT C02e/year over the construction period, and 18 MT C02e/year for the ongoing cattle operation.

As stated in the 2014 IS/MND, BAAQMD significance threshold for GHG emissions from construction (the BAAQMD threshold identified for operations-related GHG emissions) is 1,100 MTC02e/year.

The proposed minor project modification would result in short-term construction-related vehicle trips, but would not result in any new long-term operational-related vehicle trips. Construction would occur over a finite period of time after which all construction-related GHG emissions would cease, and the construction phase would not be the dominant source of GHG emissions from the project. The construction phase of the proposed project would result in less-than-significant greenhouse gas emission impacts. The ongoing grazing operation would also result in less-than-significant greenhouse gas emission impacts, therefore, the proposed project modifications would not result in new or more severe impacts.

4.8 HAZARDS AND HAZARDOUS MATERIALS

The 2014 IS/MND identified potentially significant impacts related to significant hazards involving hazardous materials or wildland fires. These impacts would be reduced to a less-than-significant impact with implementation of Mitigation Measures 3.8-1, 3.8-2a, and 3.8-2b. The 2014 IS/MND identified less-than-significant impacts related to hazards involving the routine transport, use, or disposal of hazardous materials, or the project occurring on a site that is listed as hazardous materials site, or within the vicinity of a private airstrip resulting in a safety hazard for people residing or working in the project area. No impacts were identified resulting from hazardous emissions or materials within the vicinity of an existing or proposed school, the project being located within two miles of an airport or an airport land use plan, interfering with an adopted emergency response or evacuation plan.

The proposed project site is not identified on the Cortese list or other State or county hazardous materials lists.

The proposed minor project modifications are consistent with the U&M Plan and all applicable mitigation measures related to hazards and hazardous materials will be followed in the implementation and operations of the proposed minor project modifications. Thus, there are no new significant effects or substantial changes to the environmental evaluation of hazards and hazardous materials provided in the approved 2014 IS/MND that would occur with the implementation of the proposed project modifications. The project modifications would not generate any new significant impacts related to hazards and hazardous materials.

4.9 HYDROLOGY AND WATER QUALITY

The 2014 IS/MND found that the approved project, with the implementation of the mitigation measures, would not result in significant hydrology and water quality impacts.

The original approved project was found to have potentially significant impacts related to water quality standards or waste discharge requirements regarding road and trail erosion and/or sedimentation. The approved U&M Plan includes actions, such as road and trail repair and maintenance projects to reduce erosion, that will produce long-term benefits to surface water quality. Any potential impacts would be reduced to a less-than-significant level with implementation of Mitigation Measure 3.9-1 (Storm water quality Best Management Practices).

The 2014 IS/MND identified less-than-significant impacts associated with groundwater supply or recharge, existing drainage patterns, runoff, non-point source pollution, exposure to flooding, seiche, tsunami or mudflow. No impacts were identified associated with flood hazards to housing or impeding or redirecting flood flows.

The original approved project includes cattle grazing within the Cuesta la Honda Guild watershed, However, the grazing expansion area under consideration is outside of the Cuesta La Honda Guild watershed. The proposed minor project modifications involve an expansion of grazing onto approximately 125 acres of grassland, implementation of grazing water infrastructure and fencing, and monitoring protocols. All applicable measures to address surface water impacts would be followed.

Because the proposed minor project modification is an expansion of the approved project, and is consistent with the approved U&M Plan, with implementation of the applicable mitigation measures in the 2014 IS/MND, the project will not result in significant hydrology or water quality impacts.

4.10 LAND USE AND PLANNING

Land use and planning impacts could occur if the project would physically divide an established community, if it would conflict with a land use policy adopted for the purpose of avoiding an environmental impact, or if it would conflict with an applicable habitat conservation plan or natural community conservation plan. The 2014 IS/MND identified less-than-significant impacts resulting from conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. The 2014 IS/MND identified no land use impacts resulting from the approved project physically dividing an established community or conflicting with an applicable habitat conservation plan or natural community conservation plan.

With the proposed minor modifications, the project remains still consistent with applicable land use plans and policies, would not divide an established community, and would not result in adverse land use impacts.

4.11 MINERAL RESOURCES

As discussed in the 2014 IS/MND, the approved project would have no impact on mineral resources and the minor project does not alter this conclusion. The proposed minor project expansion would not result in the loss of availability of a known mineral resource, and no mineral excavation sites are present within the project area.

4.12 NOISE

The 2014 IS/MND identified less-than-significant impacts related to exposure of persons to or generation of excessive noise and substantial temporary or periodic increase in ambient noise. No impacts were identified related to exposure of persons to groundborne vibration or a substantial increase in ambient noise levels.

As identified in the 2014 IS/MND, there are no sensitive receptors located on the project site. Like the approved U&M M Plan implementation, noise resulting from the implementation of the proposed grazing expansion, including construction of grazing infrastructure, would be minimal and would not exceed applicable noise standards or generate excessive ground vibrations. No new stationary or permanent noise sources are planned, and therefore there is no increase in ambient noise levels.

The 2014 IS/MND identified no significant impacts related to the implementation or operational use of the approved U&M Plan. As the proposed project modification is minor and consistent with the U&M Plan, the proposed modifications would not result in new or more severe noise impacts.

4.13 POPULATION AND HOUSING

The 2014 IS/MND identified less-than-significant impacts related to induced population growth or displacement of substantial numbers of existing homes. No impacts were associated with the displacement of a substantial number of people.

The proposed minor project modification does not include any new housing, businesses, supporting infrastructure or demolition of existing housing. The proposed minor project modifications would not result in impacts related to population and housing.

4.14 PUBLIC SERVICES

The 2014 IS/MND identified less-than-significant impacts related to fire protection, police protection, and parks. No impacts were identified relating to schools or other public facilities.

Consistent with the U&M Plan, the proposed minor project modification to expand grazing onto an additional 125 acres, would continue to meet the District's goal of decreasing risk of wildland fire due to the re-introduction of grazing on the property, which would reduce onsite fuels by controlling vegetation during the fire season. Law enforcement service in the vicinity of the project site is currently provided by the San Mateo County Sheriff's Department (criminal) and District rangers (resource protection) and the proposed minor modification would not result in increased demand for police protection such that new or expanded facilities are necessary to maintain current service levels. The proposed project modification would not construct housing or create jobs and, therefore, would not result in an increased demand for schools, parks, or other public facilities.

The proposed minor project modifications would not result in new or more severe impacts to public services.

4.15 RECREATION

The proposed minor project modification to expand grazing does not include additional public access beyond that considered in the 2014 IS/MND and the now existing public access will remain unaffected by the proposed minor project modification.

The proposed minor project modification would not result in new or more severe impacts to recreation.

4.16 TRANSPORTATION/TRAFFIC

The proposed minor project modifications consist of short-term minor construction activities and operations associated with the addition pasture area. The ongoing operations of the proposed minor project modification would not result in substantial additional vehicle trips and therefore, would not result in a significant impact due to increased traffic.

This would constitute a less-than-significant impact related to traffic and circulation.

4.17 UTILITIES & SERVICE SYSTEMS

The proposed minor project modification to expand grazing onto an additional 125 acres would be implemented in a manner consistent to the U&M Plan analyzed in the 2014 IS/MND. The modification would not include a restroom and therefore no wastewater would be generated and construction of new, or expansion of existing, wastewater treatment facilities is not required. The proposed minor project modification does not include any new drainage improvements beyond those considered in the 2014 IS/MND. The proposed water infrastructure improvements would use the existing, non-potable onsite spring fed water system and therefore, consistent with the 2014 IS/MND, would result in no impact related to water supply capacity. The proposed minor modification does not include any demolition beyond those considered in the 2014 IS/MND and trash is managed in a manner consistent with the 2014 IS/MND.

The proposed minor project modification would not affect utilities or service systems.

5 CONCLUSION

The proposed grazing expansion, including water and fencing infrastructure and monitoring protocols, would not alter any of the conclusions of the 2014 IS/MND. No significant environmental effects or a substantial increase in the severity of previously identified significant effects would result. The proposed minor project modifications would not affect any of the mitigation measures, including their feasibility or implementation. As mentioned above, none of the conditions listed in section 15162 of the CEQA Guidelines exist for the project modification described herein. Therefore, pursuant to section 15164 of the CEQA Guidelines, the differences between the approved project described in the 2014 IS/MND and the modification of the project as currently proposed and described in this addendum are minor and this addendum provides sufficient environmental documentation.

RESOLUTION NO. 20-__

RESOLUTION OF THE BOARD OF DIRECTORS OF THE MIDPENINSULA REGIONAL OPEN SPACE DISTRICT APPROVING AN ADDENDUM TO THE MITIGATED NEGATIVE DECLARATION FOR THE MINDEGO RANCH USE AND MANAGEMENT PLAN AND APPROVING MINOR PROJECT MODIFICATIONS

WHEREAS, pursuant to the California Environmental Quality Act (Public Resources Code § 21000 *et seq.*) ("CEQA"), the Midpeninsula Regional Open Space District (the "District") is the lead agency for environmental review of the Mindego Ranch Use and Management Plan Project (the "Project"); and

WHEREAS, on January 22, 2014, the Board of Directors of the District (the "Board") adopted the Initial Study/Mitigated Negative Declaration ("IS/MND") for the Project by approving Resolution No. 14-05; and

WHEREAS, subsequent to the adoption of the IS/MND and approval of the Project, the District identified certain minor modifications to the Project, including additional areas of grazing expansion, grazing infrastructure and monitoring (the "Project Modifications"); and

WHEREAS, the Project Modifications are desirable to the District because they will: 1) enhance the District's ability to fulfill the goals of the Project, which is to establish a grazing program that aligns with the District's mission by protecting sensitive species habitat and reduce fuel loads within Mindego Ranch and Russian Ridge Open Space Preserve; and

WHEREAS, the District has prepared an Addendum to the IS/MND in accordance with CEQA section 21166 and CEQA Guidelines section 15164 to describe the Modifications, which is attached hereto and incorporated herein by this reference (the "Addendum"); and

WHEREAS, the Project Modifications constitute minor technical changes and would not alter any of the conclusions, or result in new significant impacts to the environment, there is no substantial increase in the severity of previously identified significant impacts, and no new mitigation measures are required.

NOW, THEREFORE, BE IT RESOLVED AND APPROVED by the Board of Directors as follows:

1. The Addendum to the IS/MND fully describes the proposed minor changes to the Project and has been prepared in compliance with CEQA (Cal. Public Resources Code section 21000 et seq.) and the CEQA Guidelines (Cal. Code of Regs. section 15000 et seq.)
2. The Addendum reflects the Board of Directors' independent judgment and analysis.
3. In accordance with CEQA Guidelines section 15164, the Addendum, considered together with the IS/MND, adequately addresses the potential environmental impacts associated with the Project Modifications.

4. The documents and other materials constituting the administrative record of the proceedings upon which the Board's decision is based are located at the Midpeninsula Regional Open Space District, Administration Office, 330 Distel Circle, Los Altos, CA 94022.
5. The Addendum is hereby approved by the Board and shall be considered a part of the District's environmental review of the Project.

* *

PASSED AND ADOPTED by the Board of Directors of the Midpeninsula Regional Open Space District on _____, 2020, at a Regular Meeting thereof, by the following vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

ATTEST:

Jed Cyr, Secretary
Board of Directors

APPROVED:

Karen Holman, President
Board of Directors

APPROVED AS TO FORM:

Hilary Stevenson, General Counsel

I, the District Clerk of the Midpeninsula Regional Open Space District, hereby certify that the above is a true and correct copy of a resolution duly adopted by the Board of Directors of the Midpeninsula Regional Open Space District by the above vote at a meeting thereof duly held and called on the above day.

Jennifer Woodworth, District Clerk

Exhibit A: Addendum to the Initial Study/Mitigated Negative Declaration for the Mindego Ranch Use and Management Plan

RESOLUTION NO. 20-__

RESOLUTION OF THE BOARD OF DIRECTORS OF THE MIDPENINSULA REGIONAL OPEN SPACE DISTRICT APPROVING AN ADDENDUM TO THE MITIGATED NEGATIVE DECLARATION FOR THE MINDEGO RANCH USE AND MANAGEMENT PLAN AND APPROVING MINOR PROJECT MODIFICATIONS

WHEREAS, pursuant to the California Environmental Quality Act (Public Resources Code § 21000 *et seq.*) ("CEQA"), the Midpeninsula Regional Open Space District (the "District") is the lead agency for environmental review of the Mindego Ranch Use and Management Plan Project (the "Project"); and

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WHEREAS, the Project Modifications are desirable to the District because they will: 1) enhance the District's ability to fulfill the goals of the Project, which is to establish a grazing program that aligns with the District's mission by protecting sensitive species habitat and reduce fuel loads within Mindego Ranch and Russian Ridge Open Space Preserve; and

WHEREAS, the District has prepared an Addendum to the IS/MND in accordance with CEQA section 21166 and CEQA Guidelines section 15164 to describe the Modifications, which is attached hereto and incorporated herein by this reference (the "Addendum"); and

WHEREAS, the Project Modifications constitute minor technical changes and would not alter any of the conclusions, or result in new significant impacts to the environment, there is no substantial increase in the severity of previously identified significant impacts, and no new mitigation measures are required.

NOW, THEREFORE, BE IT RESOLVED AND APPROVED by the Board of Directors as follows:

1. The Addendum to the IS/MND fully describes the proposed minor changes to the Project and has been prepared in compliance with CEQA (Cal. Public Resources Code section 21000 et seq.) and the CEQA Guidelines (Cal. Code of Regs. section 15000 et seq.)
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5. The Addendum is hereby approved by the Board and shall be considered a part of the District's environmental review of the Project.

* *

PASSED AND ADOPTED by the Board of Directors of the Midpeninsula Regional Open Space District on _____, 2020, at a Regular Meeting thereof, by the following vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

ATTEST:

Jed Cyr, Secretary
Board of Directors

APPROVED:

Karen Holman, President
Board of Directors

APPROVED AS TO FORM:

Hilary Stevenson, General Counsel

I, the District Clerk of the Midpeninsula Regional Open Space District, hereby certify that the above is a true and correct copy of a resolution duly adopted by the Board of Directors of the Midpeninsula Regional Open Space District by the above vote at a meeting thereof duly held and called on the above day.

Jennifer Woodworth, District Clerk

Exhibit A: Addendum to the Initial Study/Mitigated Negative Declaration for the Mindego Ranch Use and Management Plan

MINDEGO HILL RANCH
GRAZING MANAGEMENT PLAN

PREPARED FOR:

Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022-1404
Attention: Mr. Kirk Lenington, Resource Planner

PREPARED BY:
SAGE Associates
1396 Danielson Road, Santa Barbara, CA 93108
(805) 969-0577 ph (805) 969-5003 fx sage@silcom.com

MROSD May 2008
Amended January 2013

TABLE OF CONTENTS

Figures, Tables, and Photographs *following section 3 in the text*

Figures

Tables

Photos

Appendices

Materials on recommended Conservation Management Practices are on file with MROSD and available from the NRCS and Cooperative Extension.

EXECUTIVE SUMMARY

Mindego Hill Ranch Grazing Management Plan

The Mindego Hill Ranch Grazing Management Plan was prepared by Sage Associates in May of 2008 at the request of Mr. Kirk Lenington-Resource Planner, for the Midpeninsula Regional Open Space District (MROSD).

This plan incorporates materials supplied by Ms. Stella Cousins-Open Space Planner for MROSD including a base aerial photograph map, a location map, an existing facilities and infrastructure map, a vegetation map with vegetation acreages and descriptions. Additional information was obtained from the LSA Resource Assessment of the Mindego Hill (True Ranch) (2002) on file with MROSD; and USDA Soil Survey information. A field assessment was conducted in late April-early May of 2008 by Sage Associates to update grazing and resource information and to determine water and fence locations and representative potential monitoring photo points.

The 1,047-acre Mindego Hill Ranch (True Ranch, ranch, or Mindego Hill or Mindego or POST Mindego Ranch descriptive terms are also used in various reports) is located in San Mateo County between Skyline and Alpine Roads west of, and adjacent to the MROSD Russian Ridge Open Space Preserve. The ranch, owned by the True family for the past 50 years, was acquired by POST (Peninsula Open Space Trust) and was subsequently acquired by MROSD.

Mindego Hill has been the site of cattle ranching since 1859, when Juan Mendico settled in the area with ranch and residential infrastructure located northeast of Mindego Lake.

The ranch contains approximately 330 acres of grassland that are available for cattle grazing where accessible along ridges, swales and foothill sideslopes. Elevations range from about 1,000 feet in the north and south part of the ranch to 2,1430 feet at Mindego Hill. Topography varies from gently sloping ridgetops and swales to very steep hillside areas.

The ranch includes northerly and westerly frontages on Mindego Creek, Mindego Lake, stockponds, and Knuedler (also spelled Knudler and Kneedler) Lake. Also present as habitat that is not grazed are coastal redwoods, Douglas fir, Madrone, coast live oak, California buckeye, tanoak, and other hardwoods, and mixed chaparral to round out the remaining acreage.

MROSD Goals are to Manage District land with livestock grazing that is compatible with public access; to maintain and enhance the diversity of native plant and animal communities, manage vegetation fuel for fire protection, sustain the local agricultural economy, and preserve and foster appreciation for the region's rural agricultural heritage. In order to implement this goal, the purpose of this plan is to provide a framework around which resource managers can make rangeland management decisions on the properties with adaptive management feedback.
As stipulated in this plan, conservation management practices components are to be implemented by the MROSD and grazing lessee, for all grazing areas, and are included specifically to apply to Livestock Grazing and Rangeland Management; Livestock and Wildlife Water Development; Livestock and Wildlife Fencing Maintenance; Land Management; Roads and Infrastructure Maintenance; and Wildlife, Water Quality, and Habitat Management on the 330-acre portion of the ranch that is to be used for grazing land operations. The remaining 717 acres include brushland and woodland that are not suitable for livestock grazing but provide valuable wildlife habitat and cover.

Operation and Infrastructure Requirements: Cattle coming onto the ranch will be off-loaded at a new corral location water trough just to the southeast of the entrance road near gate RR12. The cattle shall be fed for 24 hours in the corrals and then rotated into the pastures. To minimize introduction of noxious weeds, only locally sourced and or certified weed-free hay shall be fed.
For invasive plant control-continuous grazing shall occur in all pasture areas from February into June depending on available forage. New grass growth should be four to six inches or residual dry matter should be

three to five inches prior to the commencement of grazing. Rest of any one pasture is not recommended since invasive plant growth will increase without grazing pressure.

Total carrying capacity estimates for the 330 acres of rangeland on the ranch are about 330 animal unit months or about 27 animal units per year or about 66 animal units for five month (one animal unit is 1,000 pounds of grazing animal such as a large cow). Average weight 500- pound stocker steers or heifers grazing for five months would equate to 132 head. These are estimates, and first year stocking in a normal rainfall pattern should start with no more than the lower number in the above ranges. Stocking intensity may require a downward or upward adjustment depending on rainfall amounts and distribution and temperatures. The lessee shall be able to make necessary stocking adjustment during the grazing season in order to achieve the performance standards as closely as possible. Performance standards are included below per average slope:

0 to 30% slopes: an average minimum of two inches to three inches of residual dry matter – approximately an average of 600 – 1,000 pounds per acre as slopes become steeper.

Greater than 30% slopes: an average minimum of three to four inches of residual dry matter – approximately an average of 1,000 to 1,200 pounds per acre as slopes become steeper.

To improve RDM distribution and resource management, salt blocks and protein supplements shall be placed by the lessee at least 1/8 mile away from accessible water sources and any future public access roads and trails. Salt locations should be moved periodically to further improved forage utilization and so as not to over utilize any given area. No hay shall be fed other than in the corrals, as stipulated in the lease.

For reliable well-distributed cattle and wildlife water, the future lessee and MROSD-installed water infrastructure improvements will require repair/replacement of four existing water troughs, five new troughs, one or two new water tanks, moving of an existing water tank, as well as gravel pads for the water tanks and all troughs, an electric booster pump, pipe fittings, float valves, pressure regulators/air vents, and escape ramps will also be needed to complete the installation. Water infrastructure implementation costs are estimated to be about $28,650.

Perimeter fencing, exclusionary fencing, drift fencing, lake fencing, and new gates and gate repair and installation are estimated to be about $10,500. The aforementioned improvements may be eligible for rent credit through the lessee's arrangements with MROSD.
MROSD roads and road infrastructure maintenance should be coordinated with the future cattle lessee. Roads are minimally maintained and are in good condition at this time. However, over the years, stretches of road will require periodic water bar diversions, culvert and potential gully maintenance. Secondary ranch roads shall be minimally graded and mowed in order to maintain a natural ground cover to help prevent erosion.

During the grazing season, fencing and water infrastructure maintenance and repairs are the responsibility of the lessee.

The monitoring program for grazed MROSD lands must ensure that the specified rangeland uses are in compliance with the applicable land use regulations and the land stewardship goals, objectives, and implementing guidelines. Rangeland/habitat health checklists and photo point monitoring forms are to be utilized for the rangeland-monitoring program on an annual basis in the fall prior to rainfall. The monitoring program implementation shall be the responsibility of MROSD staff. In addition, the cattle grazing schedule, herd type, and stocking rates shall be provided to MROSD by the grazing lessee in the fall prior to monitoring and shall be included with the fall MROSD monitoring report. Monitoring results can also be used as a guideline for any future adaptive management changes that may be shown to be necessary from the monitoring.

1.0 INTRODUCTION

1.1 Background and Location

Sage Associates prepared the Mindego Hill Ranch Grazing Management Plan in May of 2008 at the request of Mr. Kirk Lenington-Resource Planner, for the Midpeninsula Regional Open Space District (MROSD).

This plan incorporates materials supplied by Ms. Stella Cousins-Open Space Planner for MROSD including a base aerial photograph map, a location map, an existing facilities and infrastructure map, a vegetation map with vegetation acreages and descriptions. Additional information was obtained from the LSA Resource Assessment of the Mindego Hill (True Ranch) (2002) on file with MROSD; and USDA Soil Survey information. A field assessment was conducted in late April-early May of 2008 by Sage Associates to update grazing and resource information and to determine water and fence locations and representative potential monitoring photo points.

The 1,047-acre Mindego Hill Ranch (True Ranch, ranch, or Mindego Hill or Mindego or POST Mindego Ranch descriptive terms are also used in various reports) is located in San Mateo County between Skyline and Alpine Roads west of, and adjacent to the MROSD Russian Ridge Open Space Preserve (Figures 1 and 2). The ranch, owned by the True family for the past 50 years, was acquired by POST (Peninsula Open Space Trust) and was subsequently acquired by MROSD.

Mindego Hill has been the site of cattle ranching since 1859, when Juan Mendico settled in the area with ranch and residential infrastructure located northeast of Mindego Lake (Figures 2 and 3). The True family will continue to run livestock on the ranch into the summer or fall of 2008.

The ranch contains approximately 330 acres of grassland that are available for cattle grazing where accessible along ridges, swales and foothill sideslopes. Elevations range from about 1,000 feet in the north and south part of the ranch to 2,143 feet at Mindego Hill. Topography varies from gently sloping ridgetops and swales to very steep hillside areas (Figure 2).

The ranch includes northerly and westerly frontages on Mindego Creek, Mindego Lake, stockponds, and Knuedler (also spelled Knudler and Kneedler) Lake. Also present as habitat that is not grazed are coastal redwoods, Douglas fir, Madrone, coast live oak, California buckeye, tanoak, and other hardwoods, and mixed chaparral to round out the remaining acreage.

The MROSD future stewardship of the ranch supports the protection of valuable habitat, watershed and scenic resources while supporting environmentally sustainable grazing use within the Mindego Creek and Alpine Creek watersheds of the ranch.

1.2 Purpose, Goals, and Policies of the Grazing Management Plan

The purpose of this plan is to provide a framework around which resource managers can make rangeland management decisions on the ranch with adaptive management feedback once MROSD begins the grazing management and monitoring. The plan addresses appropriate management practices for soil and water conservation, erosion control, pest management, nutrient management, water quality, and habitat protection on the 330-acre grassland portions of the ranch that are to be used for grazing land operations that have suitable cattle access. Some of the westerly grassland and other dense shrublands are not suitable for grazing due to the inability of cattle to access these areas because of slope, or dense tree or brush cover and shallow soils. The remaining approximately 717 acres include water bodies, forest, shrubland, brushland, and

woodland that are not suitable for livestock grazing but provide very valuable wildlife habitat and cover.

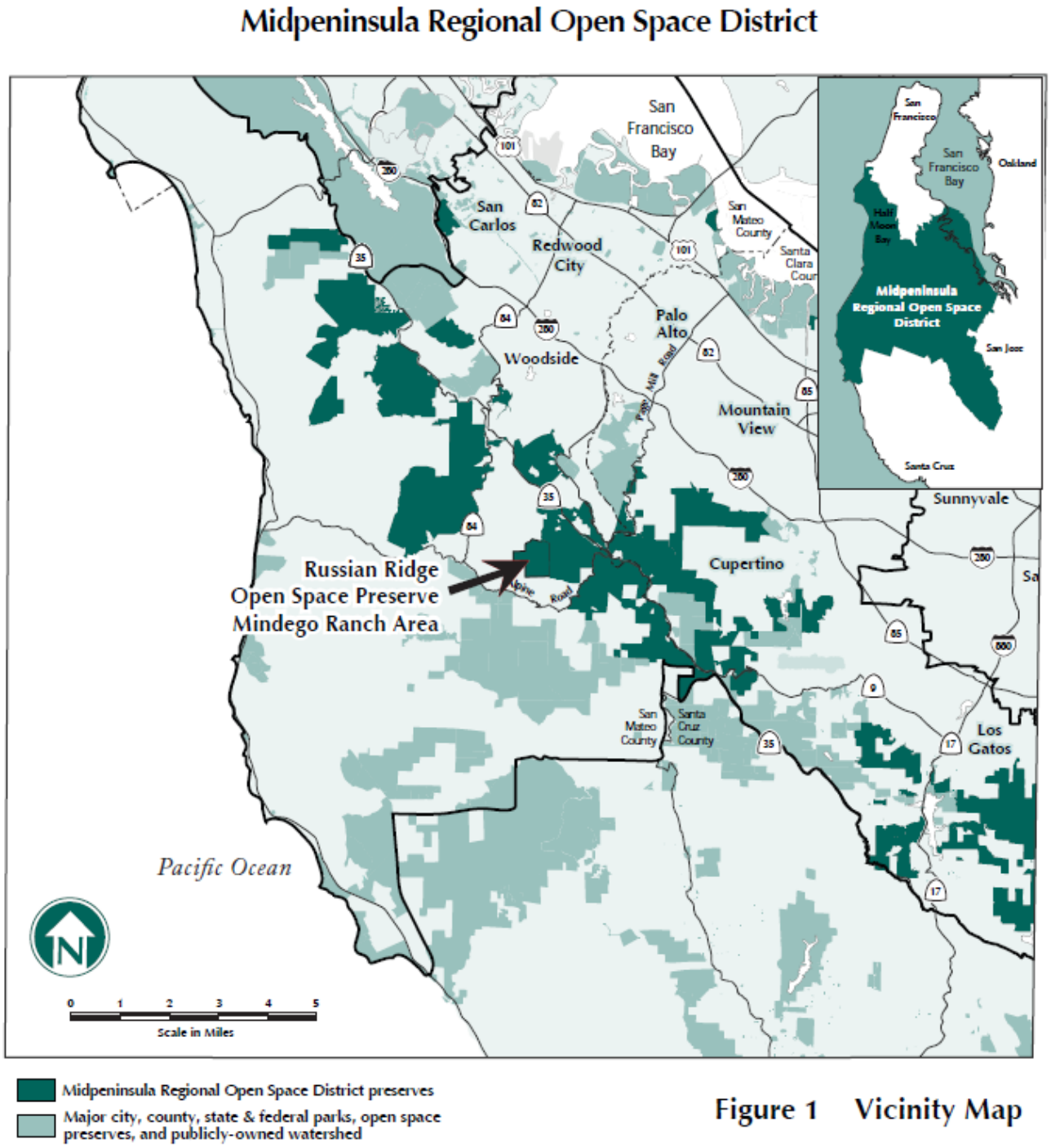


Figure 1 Vicinity Map

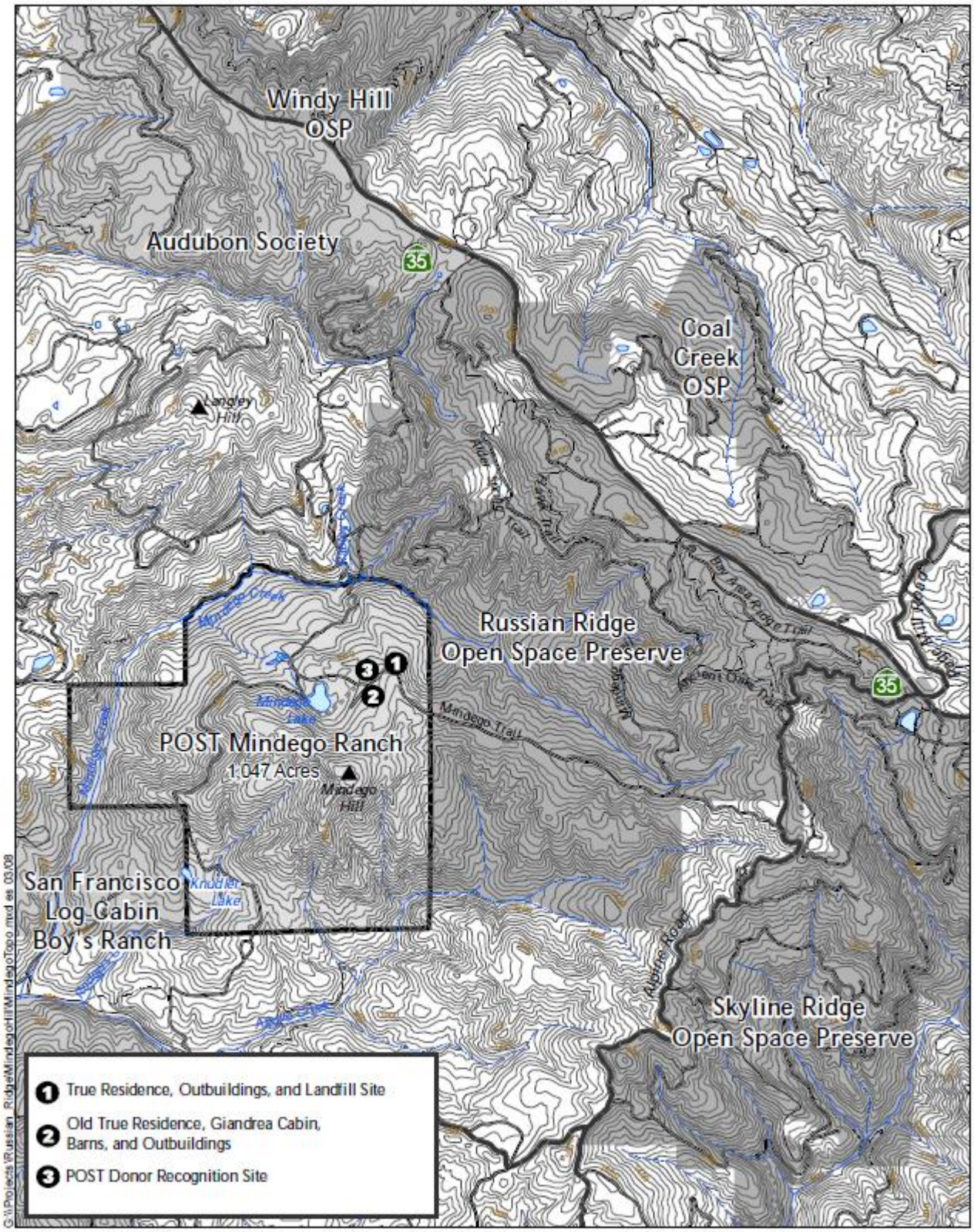
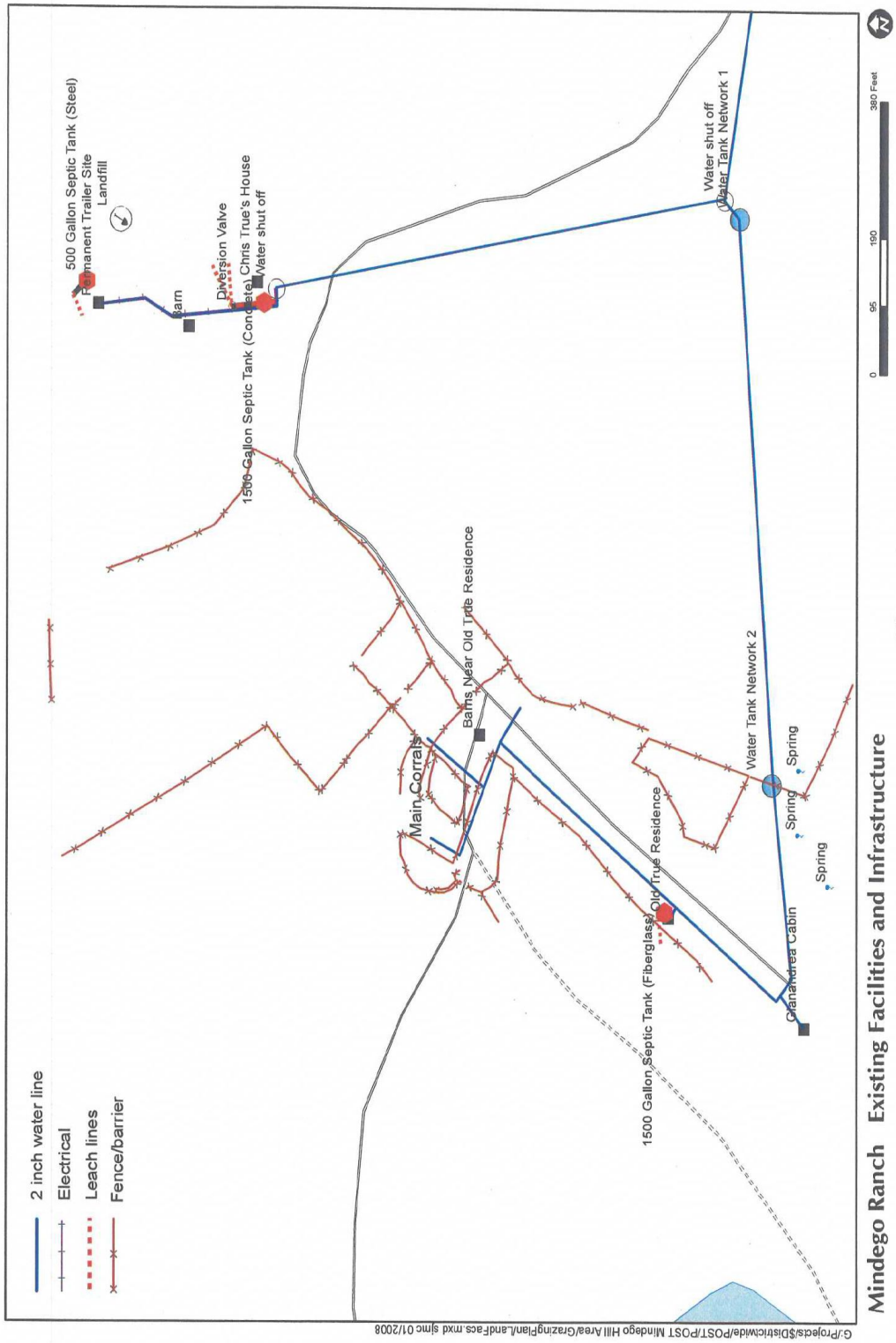


FIGURE 2 Location and Topographic Map



Mindego Ranch Existing Facilities and Infrastructure

Figure 3

1-4

The Mission Statement of the MROSD is:

"To acquire and preserve a regional greenbelt of open space land in perpetuity; protect and restore the natural environment; and provide opportunities for ecologically sensitive public enjoyment and education."

In the spirit of the Mission Statement, in September 2006 the MROSD staff formulated Goals, Policies, and Implementation Measures for potential areas of grazing land within the District.

Goal: Manage District land with livestock grazing that is compatible with public access; to maintain and enhance the diversity of native plant and animal communities, manage vegetation fuel for fire protection, sustain the local agricultural economy, and preserve and foster appreciation for the region's rural agricultural heritage.

Policies and Implementation Measures:

1 Ensure that grazing is compatible with and supports wildlife and wildlife habitats.

- *Inventory and assess sensitive habitats to identify areas requiring special protection. The conservation of these areas will take precedence over other uses and management practices that are determined to have an adverse effect on these resources.* Section 4 of the plan.

- *Prepare site-specific management plans by a certified rangeland manager for preserves where grazing will be utilized as a resource management tool.* Section 7.1 of the plan.

- *Manage agricultural leases and easements to protect and enhance riparian areas and to maximize the protection or enhancement of water quality.* Sections 5.2.3.3 and 5.2.3.5 of the plan.

2 Provide necessary infrastructure to support and improve grazing management where appropriate.

- *Utilize fencing that allows wildlife movement and fosters habitat connectivity.* Section 5.2.1.2 of the plan.

- *Encourage and assist grazing tenants on District land to provide range improvements to restore or conserve wildland resources and to enhance range condition.* Section 5.2.1.2 of the plan.

- *Inventory and assess roads and trails on District lands to identify significant erosion and sediment sources abandon and where feasible restore to a natural condition poorly designed or sited roads.* Sections 3.4 and 5.2.2 of the plan.

- *Provide water sources and protect water quality from degradation resulting from grazing animals.* Sections 5.2.1.2 and5.2.3.5 of the plan.

3 Monitor vegetation response to grazing on District lands.

- *Monitor forage utilization and distribution by grazing animals to assure appropriate amounts of residual dry matter remain on the ground to achieve desired resource management objectives.* Section 6 of the plan.

- *Monitor livestock use levels and infrastructure condition to insure conformity with lease provisions to contribute to improved management.* Section 6 of the plan.

- *Monitor wildland conditions with an emphasis on documenting the location, distribution and abundance of native grasses, wildflowers, and other native flora and fauna.* Section 6 of the plan.

• *Monitor non-native vegetation response to grazing with an emphasis on documenting the location, distribution and abundance of target invasive species.* Sections 4.2, 5.2.3.4 and 6 of the plan.

4 *Utilize different livestock species to accomplish vegetation management objectives.*

• *Research the effective use of cattle, goats, sheep, and horses to manage vegetation on District lands.* Section 5.2.1.1 of the plan.

5 *Provide public access in a manner that does not fragment the grazing operation unless no feasible alternative is available.*

• *Grazing operators on District lands or lands under easement to the District shall be consulted when public access is being planned and considered for the property to minimize conflicts between the public and the grazing operation.* On-going with operators.

Additional validation of the MROSD purposes, goals, and policies for working landscapes comes from The California Rangeland Resolution that recognizes the critical importance of California's rangelands along with practices that benefit sensitive species that are fully compatible with normal ranching practices, maintaining and enhancing working landscapes, and public education about the benefits of rangeland grazing. The resolution has been signed by federal and state agencies, and conservation organizations and is included at the end of this section. University research has also shown that social benefits of working landscapes help to safeguard ecosystems, protect open space, and maintain traditional ranching culture (Brunson and Huntsinger (2008). Further support for managed cattle grazing for sensitive habitats and species, includes ongoing university research that seeks to explain why some threatened aquatic invertebrates such as the California tiger salamander and the California red-legged frog appear to be more abundant in grazed than in ungrazed stockponds (DiDonato, 2007). (See Figure 8)

California Rangeland Resolution

The undersigned recognize the critical importance of California's privately owned rangelands, particularly that significant portion that encircles the Central Valley and includes the adjacent grasslands and oak woodlands, including the Sierra foothills and the interior coast ranges. These lands support important ecosystems and are the foundation for the ranching industry that owns them.

WHEREAS, these rangelands include a rich and varied landscape of grasslands, oak woodlands, vernal pools, riparian areas and wetlands, which support numerous imperiled species, many native plants once common in the Central Valley, and are home to the highest diversity and density of wintering raptors anywhere in North America;

WHEREAS, these rangelands are often located in California's fastest-growing counties and are at significant risk of conversion to development and other uses;

WHEREAS, these rangelands, and the species that rely on these habitats, largely persist today due to the positive and experienced grazing and other land stewardship practices of the ranchers that have owned and managed these lands and are committed to a healthy future for their working landscapes;

WHEREAS, these rangelands are a critical foundation of the economic and social fabric of California's ranching industry and rural communities, and will only continue to provide this important working landscape for California's plants, fish and wildlife if private rangelands remain in ranching;

THEREFORE, we declare that it is our goal to collaboratively work together to protect and enhance the rangeland landscape that encircles California's Central Valley and includes adjacent grasslands and oak woodlands by:

- Keeping common species common on private working landscapes;
- Working to recover imperiled species and enhancing habitat on rangelands while seeking to minimize regulations on private lands and streamline processes;
- Supporting the long-term viability of the ranching industry and its culture by providing economic, social and other incentives and by reducing burdens to proactive stewardship on private ranchlands;
- Increasing private, state and federal funding, technical expertise and other assistance to continue and expand the ranching community's beneficial land stewardship practices that benefit sensitive species and are fully compatible with normal ranching practices;
- Encouraging voluntary, collaborative and locally-led conservation that has proven to be very effective in maintaining and enhancing working landscapes;
- Educating the public about the benefits of grazing and ranching in these rangelands.

1-8

California Rangeland Resolution Signatories

Agricultural - Natural Resources Trust of Contra Costa County
Alameda County Board of Supervisors
Alameda Co. Resource Conservation District
Amador Resource Conservation District
American Farmland Trust
American Land Conservancy
Audubon California
Bureau of Land Management
Butte County Resource Conservation District
Butte Environmental Council
Calaveras Co. Resource Conservation District
California Association of Resource Conservation Districts
California Cattlemen's Association
California CattleWomen's Association
California Chapter of the International Soil and Water Conservation Society
California Department of Conservation
California Dept of Fish and Game
California Dept of Food and Agriculture
California Dept of Forestry and Fire Protection
California Farm Bureau Federation
California Grazing Lands Coalition
California Invasive Plant Council
California Native Grasslands Association
California Native Plant Society
California Oak Foundation
California Open Lands
California Rangeland Trust
California Resources Agency
California Wildlife Foundation
California Wool Growers Association
Cal-Pac Section Society of Range Management
Central Sierra Region of Resource Conservation Districts
Central Valley Land Trust Council
City of Livermore
Community Alliance with Family Farmers
Contra Costa Resource Conservation District
Contra Costa County Board of Supervisors
Defenders of Wildlife
Ducks Unlimited
El Dorado Resource Conservation District
Endangered Species Coalition
Environmental Defense
Glenn County Resource Conservation District
Institute for Ecological Health
Jumping Frog Research Institute
Land Trust for Santa Barbara County
Marin Agricultural Land Trust
Mariposa Co. Resource Conservation District
Napa County Board of Supervisors
National Wild Turkey Federation
National Cattlemen's Beef Association
Natural Resources Conservation Service
Nevada County Board of Supervisors
Nevada Co. Resource Conservation District
Nevada County Land Trust
Northern California Regional Land Trust
Placer Co. Resource Conservation District
Placer Land Trust
Rocky Mountain Elk Foundation
Sacramento River Watershed Program
Santa Barbara County Farm Bureau
San Joaquin Raptor/Wildlife Rescue Center
San Joaquin Valley Conservancy
San Luis Obispo County Board of Supervisors
Sierra Foothills Audubon Society
Sonoma County Board of Supervisors
State Water Resources Control Board
Sustainable Conservation
Tehama County Resource Conservation District
The Nature Conservancy
Trust for Public Land
Tuleyome
Tuolumne Co. Resource Conservation District
University of California
US Fish and Wildlife Service
US Forest Service
VernalPools.org
Western Shasta Resource Conservation District
Wildlife Conservation Board
WildPlaces
Xerces Society for Invertebrate Conservation

March 14, 2008

2.0 REGIONAL AGRICULTURAL USES IN SAN MATEO COUNTY

tThe MROSD Grazing Management goals state:

"Livestock ranching is a small but vital part of the Bay Area's agricultural economy. As with any business that depends on local infrastructure and services, livestock ranching is increasingly threatened with each ranch that goes out of business. Every livestock rancher depends on services and supplies including veterinary care, feed sales and delivery, farm and ranch infrastructure supplies, and livestock transportation services. As land is taken out of ranching, all of these services and supplies are incrementally affected and may cease to operate, increasing the burden for families and businesses who choose to keep ranching".

In a regional context, for San Mateo County, agricultural production continued to provide a significant total gross value of $168,523,000 for 2006-an increase of 3.9 percent above 2005. The 2007 crop report was not yet completed at the time that this plan was prepared. Specific 2006 production values for San Mateo County included the following:

COMMODITY	GROSS VALUE
Floral and Nursery Crops	$136,021,000
Vegetable Crops	$22,655,000
Forest Products	$4,045,000
Livestock	$2,343,000
Fruit and Nut Crops	$2,043,000
Livestock and Apiary Products (cheese, eggs, wool)	$756,000
Field Crops	$660,000

Cattle and calves comprised 2,837 head in 2006-up from 2,407 head in 2005, with a total gross value of $1,802,000-up from $1,363,000 in 2005. Sheep and lambs comprised 924 head in 2006-up from 854 head in 2005, with a total gross value of $91,000-up from $83,000 in 2005. Livestock are grazed on about 30,000 acres of rangeland in San Mateo County. For every dollar on agricultural production, a multiplier of 3.5 may be applied to approximate production, employment, and associated values. Thus, the economic value of agriculture in San Mateo County is about $590,000,000 (San Mateo County Department of Agriculture, 2006). For every dollar on agricultural production, a multiplier of 3.5 may be applied, thus, the economic value of agriculture in San Mateo County is about

Existing Future agricultural activities on MROSD lands will contribute to the overall agricultural productivity of San Mateo County, and to that of the adjacent counties of Santa Clara and Santa Cruz. Currently, the Driscoll Ranch, Tunitas Creek Ranch, and Big Dipper/Silva Ranch are being utilized for cattle grazing under MROSD management and monitoring. The MROSD La Honda Creek Open Space Preserve may also be utilized for grazing in the future.

3.0 RANGELAND MANAGEMENT

3.1 Historical Agricultural Uses

The Mindego Hill Ranch has been utilized for cattle grazing since 1859. The True family has grazed livestock on the ranch for the last 50 years and will continue to do so into the fall of 2008.

A telephone interview with Ms. Veronica True in January 2008, who has been on the ranch for 30 years, included the following information.

• Current grazing operations average about 120 cow/calve pairs, 15 to 20 horses, and 10 bulls year around with supplemental feeding from about August into winter.

• Livestock water is supplied from lakes, springs, and creeks, water tanks and with three maintained water troughs near the house.

• There are two small holding fields on 50 acres, and 20 acres near the house with the remaining ranch grazed as one large pasture.

• Stock trailer access with a four-wheel drive truck is adequate for moving livestock.

• The ranch grazing areas are limited by steep slopes, and some brush with some invasive thistles. They mow the thistles in the spring and do not use herbicides. They would like to see Russian Hill grazed in order to reduce thistles in that area.

• Corrals are portable. Perimeter barriers and fencing are adequate for gentle cattle.

• Coyotes and feral dogs have been a problem with newborn calves.

3.2 Existing Rangeland Soil Agricultural Characteristics

To assess existing grazing land conditions 30 representative photos were taken of the ranch on April 30th and May 1st of 2008 and are included below. The photo locations are shown regionally on the Photo Location Map (Figure 4). These photos serve a dual purpose by showing existing grazing land areas and habitat conditions and selected photos can also be utilized for photo monitoring of grazing land and habitat conditions in the future as discussed in Section 6.0.

For convenience, a “quick glance” list of photo location numbers and titles are summarized below. The photo numbers may be referred to in subsequent text discussions and tables.

Photos of Mindego Hill Ranch

1 Mindego Hill Ranch entrance and Mindego Hill
2 View to Russian Ridge Open Space Preserve
3 Ranch entrance area with Russian Ridge Open Space Preserve
4 Water tanks near the ranch entrance
5 Proposed relocated water tank and water trough locations
6 Proposed water trough location
7 Very steep side slope with cattle grazing
8 Top of Mindego Hill with cattle grazing
9 Upland ridges from Mindego Hill
10 Upland ridges from Mindego Hill with Knuedler Lake
11 Corral, and barn area of ranch
12 Horse arena
13 Corrals with Mindego Lake in background

14 Water tanks and trough
15 Mindego Lake and gully
16 Mindego Lake
17 Mindego Lake and Mindego Hill
18 Graded road, gully erosion, and roadside thistles
19 Ungraded road surface
20 Silted in stockpond
21 Overgrown road to Mindego Creek
22 Old hay meadow with spring, coyote brush, and poison oak
23 Proposed water tank and trough location-Mindego Hill is in background
24 Cattle grazing lower ridge area on south side of ranch
25 Proposed water trough location
26 Ridge view of Knuedler Lake
27 Lower ridge areas on south side of ranch
28 Knuedler Lake with old fence/property line
29 Lower hillsides and meadow on south side of ranch
30 Red Man 12-year old retired rodeo bull. Avoid!! (random location)

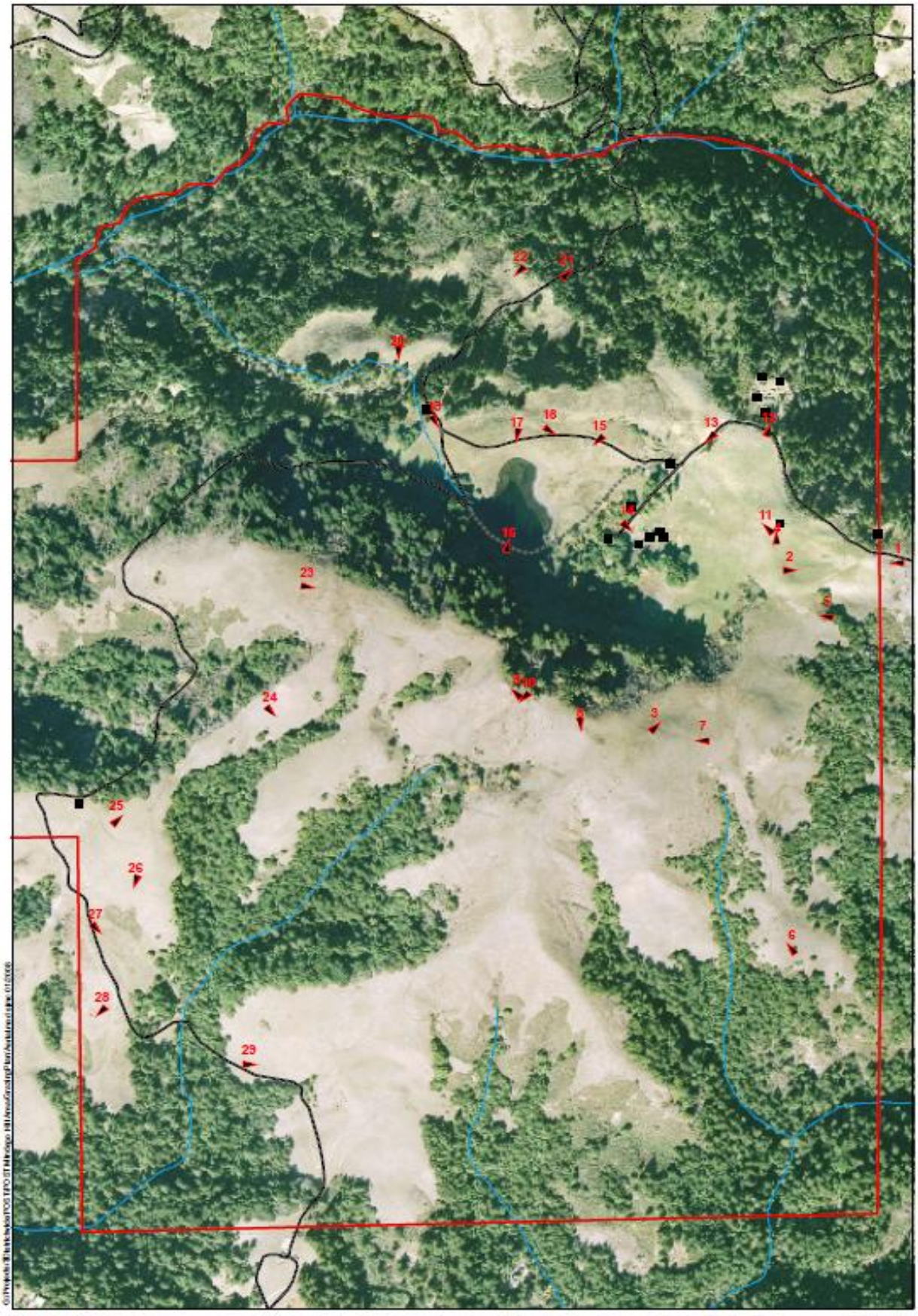


Figure 4

Aerial Photograph and Photo Location Map

MINDEGO HILL RANCH PHOTOS

Photo 1: Mindego Hill Ranch entrance with Mindego Hill in background. View is to west.

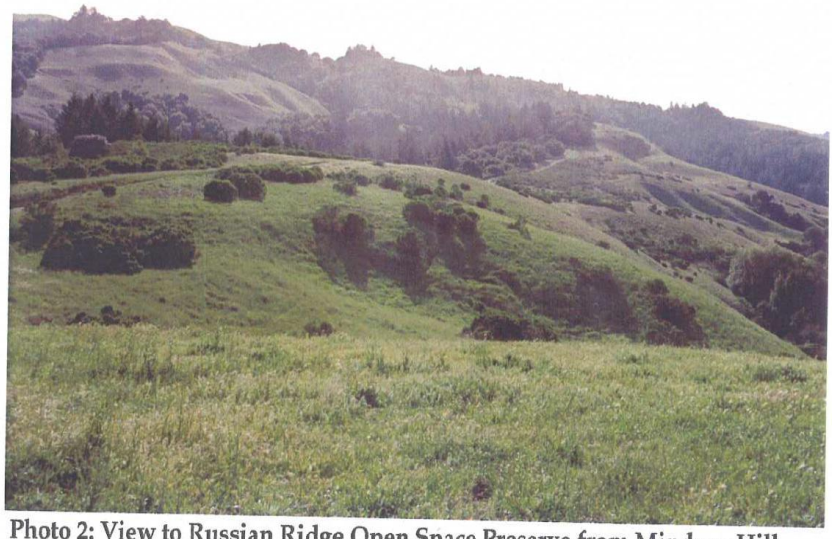


Photo 2: View to Russian Ridge Open Space Preserve from Mindego Hill Ranch entrance. View is to east.

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MINDEGO HILL RANCH PHOTOS

Photo 3: Ranch entrance area with Russian Ridge Open Space Preserve to right. View is to northeast.

Photo 4: Water tanks near the ranch entrance. View is to north.

MINDEGO HILL RANCH PHOTOS

Photo 5: Proposed relocated water tank location in saddle and proposed water troughs to right and left of fenceline. View is to northwest.

Photo 6: Proposed water trough location. View is to northwest.

MINDEGO HILL RANCH PHOTOS

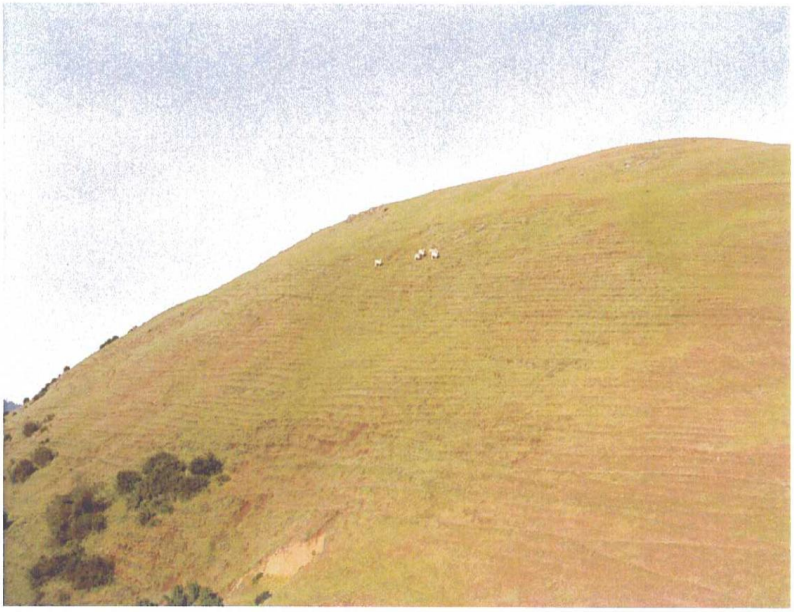

Photo 7: Very steep side slope with cattle grazing. View is to west.

Photo 8: Top of Mindego Hill with cattle grazing. View is to southeast.

MINDEGO HILL RANCH PHOTOS

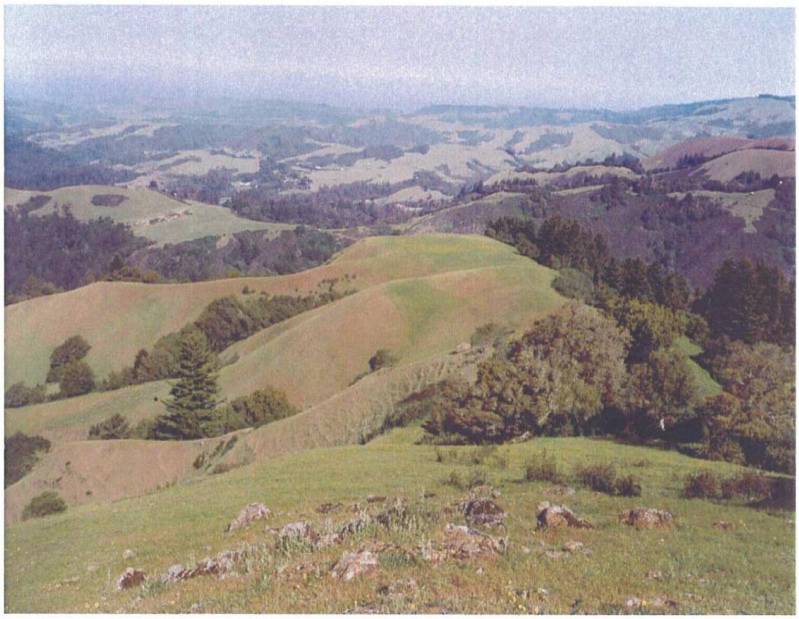

Photo 9: Upland ridges from Mindego Hill. View is to northwest.

Photo 10: Upland ridges from Mindego Hill with Knuedler Lake in background. View is to southwest.

MINDEGO HILL RANCH PHOTOS

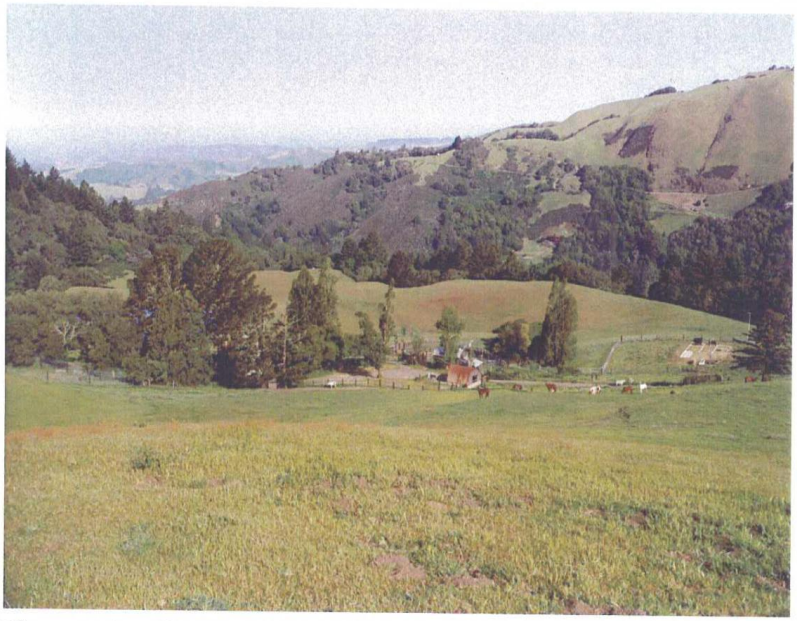

Photo 11: Corral and barn area of ranch. View is to northwest.

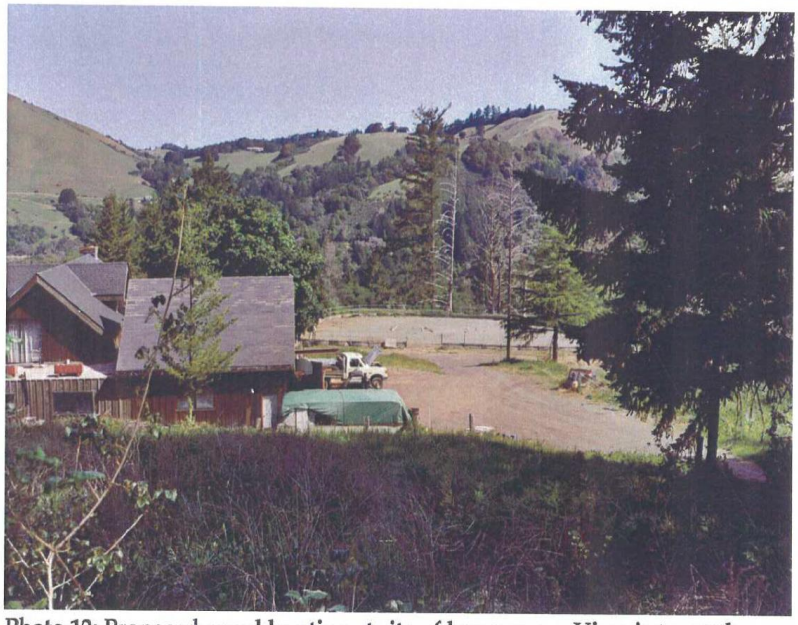

Photo 12: Proposed corral location at site of horse arena. View is to north.

MINDEGO HILL RANCH PHOTOS

Photo 13: Corrals with Mindego Lake in background. View is to southwest.

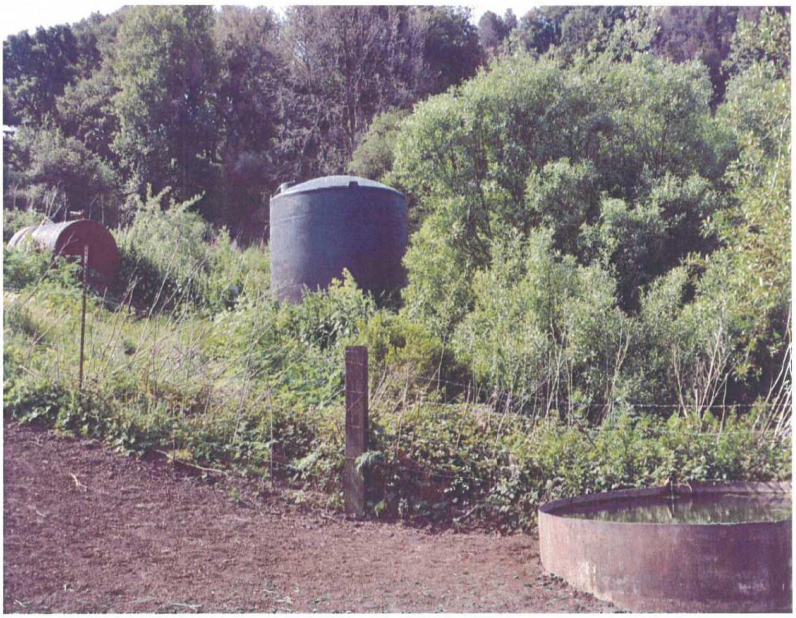

Photo 14: Water tanks and trough. View is to southeast.

MINDEGO HILL RANCH PHOTOS

Photo 15: Mindego Lake. Note gully in midground. View is to southwest.

Photo 16: Mindego Lake. View is to north.

MINDEGO HILL RANCH PHOTOS

Photo 17: Mindego Lake and Mindego Hill. View is to south.

Photo 18: Graded road, gully erosion, and thistles. View is to southeast.

MINDEGO HILL RANCH PHOTOS

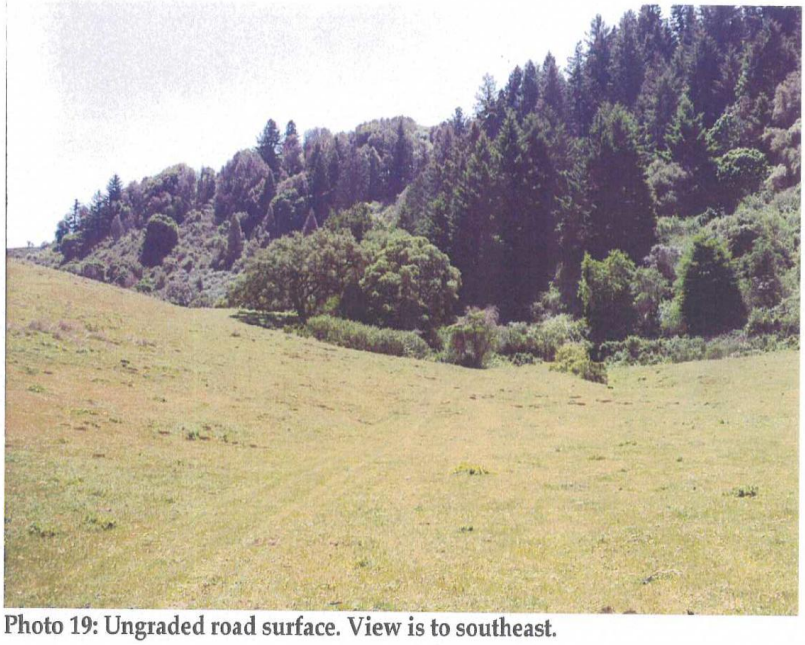

Photo 19: Ungraded road surface. View is to southeast.

Photo 20: Silted-in stockpond. View is to south.

MINDEGO HILL RANCH PHOTOS

Photo 21: Overgrown road to Mindego Creek. View is to northeast.

Photo 22: Old hay meadow with livestock water at spring in center of photo and coyote brush and poison oak encroaching on meadow. View is to southwest.

MINDEGO HILL RANCH PHOTOS

Photo 23: Proposed water tank and trough location. Mindego Hill is in background. View is to east.

Photo 24: Cattle grazing lower ridge area on south side of ranch. View is to southeast.

MINDEGO HILL RANCH PHOTOS

Photo 25: Proposed water trough location. Water line would come down ridge from tank site in Photo 23. View is to east.

Photo 26: Ridge view of Knuedler Lake. View is to south.

MINDEGO HILL RANCH PHOTOS

Photo 27: Lower ridge areas on south side of ranch. View is to southeast.

Photo 28: Knuedler Lake with old fence/property line. View is to southwest.

MINDEGO HILL RANCH PHOTOS

Photo 29: Lower hillsides and meadow on south side of ranch. View is to northeast.

Photo 30: Red Man 12-year old retired rodeo bull. Avoid!!

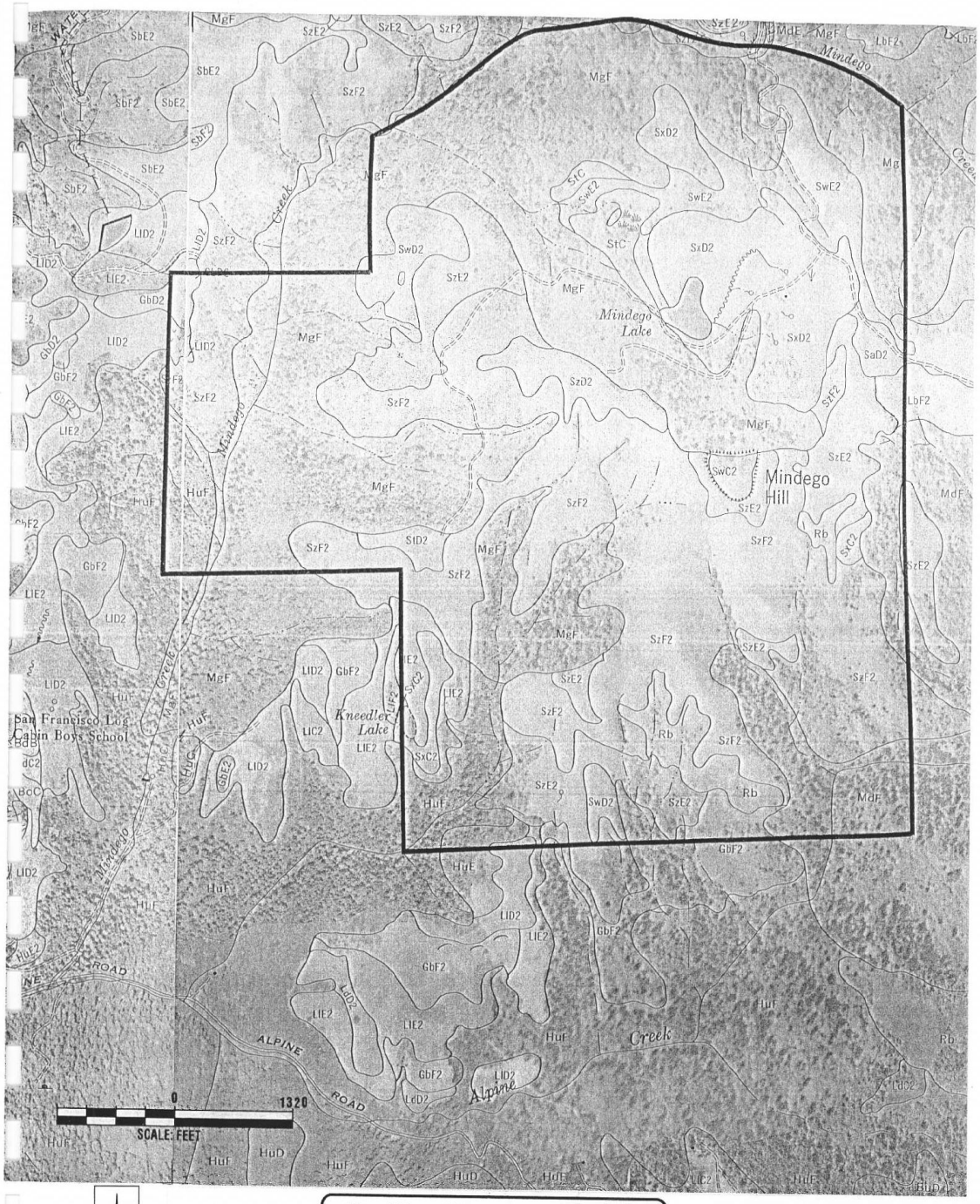

Figure 5 **Soils Survey Map**

See Table 1 for explanation of symbols. USDA, 1961.

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TABLE 1: MINDEGO HILL RANCH RANGELAND AND SOIL CHARACTERISTICS-Page 1

SOIL SERIES-TEXTURE and SOIL SURVEY MAP SYMBOL (USDA)	RANGE SITE (USDA) and PRIMARY HABITAT	ACRES	AVERAGE SLOPE % EROSION HAZARD (USDA)	AVERAGE CANOPY COVER % (Field)	AVERAGY YEAR RANGELAND DRY MATTER PRODUCTIVITY per Range Site (USDA) (AUMs/Acre)	REQUIRED RESIDUAL DRY MATTER Per AVERAGE SLOPE (NRCS)(UCCE) (pounds/acre)	LIVESTOCK USE LIMITATIONS	RANGELAND/ HABITAT HEALTH (Field)	DOMINATE GRAZING SUITABILITY (Field)	ESTIMATED CARRYING CAPACITY AVERAGE YEAR Animal Unit Months (AUMs)
Gazos-loam GbD2	Loamy grass, forest	3 acres	11 to 21% moderate	0 to 50%	1.5	600	no access	Normal	Unsuitable	0
Gazos-loam GbF2	Loamy Very Steep shrub, forest	6 acres	>40% very high	100%	0	1,200	brush, trees, slope, erosion	Normal	Unsuitable	0
Hugo and Josephine-loam HuE	Not Assigned forest	4 acres	30 to 45% high	100%	0	NA	trees, slope, erosion	Normal	Unsuitable	0
Hugo and Josephine-loam HuF	Not Assigned forest	36 acres	>45% very high	100%	0	NA	trees, slope, erosion	Normal	Unsuitable	0
Laughlin/Sweeney-loams eroded LbF2	Loamy Very Steep forest, shrub, grass	3 acres	>45% very high	0 to 100%	0.5	1,200	brush, trees, slope, erosion	Normal	Lower-Unsuitable	1.5
Lobitos-loam LlD2	Loamy forest, shrub, grass	2 acres	16 to 30% moderate	0 to 100%	1.5	700	no access	Normal	Unsuitable	0
Lobitos-loam LlE2	Loamy Steep trees, shrub, gras	16 acres	30 to 41% high	0 to 100%	0.5	1,000-1,200	trees, brush, slope, erosion	Normal to Extreme	Moderate-Unsuitable	8
Mindego-clay loam MdF	Not Assigned forest	47 acres	>45% very high	100%	0	NA	trees, slope, erosion	Normal	Unsuitable	0
Mindego-stony clay loam MgF	Not Assigned forest	307 acres	>45% very high	100%	0	NA	trees, slope, erosion	Normal to Extreme	Unsuitable	0
Rough broken land Rb	Not Assigned forest, shrub	23 acres	>41% very high	100%	0	NA	brush, rocks, slope, erosion	Normal	Unsuitable	0
Santa Lucia-loam SaD2	Loamy grass, shrub	5 acres	16 to 31% moderate	0 to 25%	2	700-800	brush	Normal to Extreme	Moderate	1
Sweeney-clay StC	Clayey grass, shrub, forest	19 acres	7 to 15% slight	0 to 100%	2.5	700	weeds	Normal to Extreme	Higher-Lower	40
Sweeney-clay StD2	Clayey grass, forest, shrub	6 acres	15 to 30% moderate	0 to 100%	2	800	trees, brush	Normal to Extreme	Moderate-Lower	10

continued next page

Sources: U. S. Department of Agriculture Soil Survey San Mateo Area California 1961; Supplement to Soil Survey of San Mateo Area California, 1969; Soil Survey Santa Cruz County, 1980; University of California Guidelines for Residue Management on Annual Range, 1982 and 2003; NRCS Prescribed Grazing, 2007; and SAGE Associates field assessments 2008.

SAGE Associates

TABLE 1: MINDEGO HILL RANCH RANGELAND AND SOIL CHARACTERISTICS-Page 2

SOIL SERIES-TEXTURE and SOIL SURVEY MAP SYMBOL (USDA)	RANGE SITE (USDA) and PRIMARY HABITAT	ACRES	AVERAGE SLOPE % EROSION HAZARD (USDA)	AVERAGE CANOPY COVER % (Field)	AVERAGE YEAR RANGELAND DRY MATTER PRODUCTIVITY per Range Site (USDA) (AUMs/Acre)	REQUIRED RESIDUAL DRY MATTER Per AVERAGE SLOPE (USDA)(UCCE) (pounds/acre)	LIVESTOCK USE LIMITATIONS	RANGELAND/ HABITAT HEALTH (Field)	DOMINATE GRAZING SUITABILITY (Field)	ESTIMATED CARRYING CAPACITY AVERAGE YEAR Animal Unit Months (AUMs)
Sweeney-clay loam SwC2	Fine Loamy grass, shrub, trees	4 acres	7 to 15% slight	0 to 100%	1	500	trees, brush, water	Normal to Extreme	Higher-Lower	4
Sweeney-clay loam SwD2	Fine Loamy grass, shrub, forest	19 acres	15 to 30% moderate	0 to 100%	1	600-800	trees, brush	Normal to Extreme	Higher-Lower	15
Sweeney-clay loam SwE2	Fine Loamy Steep shrub, forest, grass	59 acres	30 to 45% high	0 to 100%	0.1	1,200	trees, brush, slope, erosion	Normal to Extreme	Lower	6
Sweeney-clay loam SxC2	Fine Loamy grass, shrub	9 acres	7 to 15% slight	0 to 25%	2	600	brush, water	Normal to Extreme	Higher	15
Sweeney-clay loam SxD2	Fine Loamy grass, shrub	81 acres	7 to 15% slight	0 to 100%	1.5	600	brush, trees, gully	Normal to Extreme	Higher-Moderate	120
Sweeney-stony clay loam SzD2	Fine Loamy grass, shrub	17 acres	7 to 15% moderate	0 to 25%	2	600	brush, trees	Normal to Extreme	Higher	30
Sweeney-stony clay loam SzE2	Fine Loamy Steep grass, brush, forest	90 acres	30 to 45% high	0 to 100%	0.5	1,000	trees, brush, water, erosion	Normal to Extreme	Higher-Lower	40
Sweeney-stony clay loam SzF2	Fine Loamy Very Steep grass, brush, forest	285 acres	>45% very high	0 to 100%	0.2	1,200	trees, brush, slope, erosion, rocks, water	Normal to Extreme	Higher-Unsuitable	50
TOTALS										330 acres grassland ~330 AUM ~27 AU/Year ~66 AU/5 months Historic: 120 AU/Year with supplemental feeding
End										

Sources: U. S. Department of Agriculture Soil Survey San Mateo Area California 1961; Supplement to Soil Survey of San Mateo Area California, 1969; Soil Survey Santa Cruz County, 1980; University of California Guidelines for Residue Management on Annual Range, 1982 and 2003; NRCS Prescribed Grazing, 2007; and SAGE Associates field assessments 2008.

SAGE Associates

The Mindego Hill Ranch encompasses 21 Soil Series across the approximately 1,047 acres (U. S. Department of Agriculture - USDA, 1961, and 1969). These soils are shown on the USDA Soils Survey Map (Figure 5).

For brevity, the soil agricultural characteristics of the 21 Soil Series are included in Table 1. This Table summarizes the available USDA Soil Survey data along with up to date field observations and a total cattle grazing carrying capacity estimate.

Salient soil agricultural characteristics are summarized below by table column. The introduction and placement of these tables in this section facilitates reference and discussion of the content in later sections of this plan. The terms rangeland/grazing land, and the terms soil types/soil series have the same meaning in this plan.

Column 1: Soil Series-Texture and Soil Survey Map Symbol (USDA): includes the Soil Series name and soil texture, the Soil Survey map symbol per the United States Department of Agriculture (USDA) mapping.

The last soil listed on Page 2 of Table 1 will be used as an example since this is the largest soil type on the ranch that is utilized for cattle grazing. The Soil Series (or soil type) is named Sweeney, the texture is stony clay loam, and the Soils Survey Map symbol is SzF2.

Column 2: Includes the USDA Range Sites that are comprised of Soil Series that have similar textures and produce similar types and amounts of forage. These sites are used as the basis for forage production estimated by the USDA Natural Resources Conservation Service (NRCS) and the University of California Cooperative Extension (UCCE). Range Sites within the rangeland areas of the ranch include Clayey - 2, Fine Loamy - 5, Fine Loamy Steep - 2, Fine Loamy Very Steep - 1, Loamy - 3, Loamy Steep - 1, and Loamy Very Steep - 2. Five Soil Series are not assigned Range Sites due to their marginal forage production, dense canopy cover, and timbered or brushland areas (Photo 21). The most productive forage producing areas include the grasslands of the Clayey, Fine Loamy and Loamy Range Sites (Examples-Photos 1, 3, 9, 10, 22, 24, 26, 27, and 29).

The SzF2 soil is in the Fine Loamy Very Steep Range Site that is limited in usable forage production by the steep side slopes (Photo 7) and/or vegetative canopy cover.

Also included in this column are the Primary Habitats per the Vegetation Map (Figure 6). Primary habitats include grassland, shrubland, woodland, and forest. The Clayey, various Fine Loamy, and various Loamy Range Sites are comprised of various percentages of grassland, weedy ruderal, and shrubland, with minor woodland and forest concentrations in drainages. Weedy ruderal and purple star-yellow star thistle vegetation types are comprised of grassland and shrubland with higher concentrations of noxious or weedy plants. See Section 4.0 for a more complete explanation of vegetation types.

The SzF2 soil has Primary Habitats comprised of grassland, shrubland, and forest.

Column 3: Includes the acres for the various Soil Series.

The SzF2 soil encompasses about 285 acres of the ranch.

Column 4: Includes the average slope percentage and erosion hazard for each Soil Series per USDA mapping. Swales and ridgetops generally slope from five to 16 percent, side hills range from about 15 to 45 percent, and steeper slope and canyon areas are greater than 45 percent. Slopes greater than 45 percent are less well utilized by livestock and may also have a dense canopy cover and require more ground cover to reduce erosion. Slope is factored into estimated carrying capacity determinations. Most soils have some areas that are less steep that depicted by the average slope category. Erosion hazards range from slight to very high and are predicated upon soil texture, and slope. Soils located on steeper slopes would be more erosion prone. Soil creep is apparent on the steeper side slope areas (Photo 7) and is due to the natural down slope movement of soil due to gravity and the use of side slope trails by cattle and wildlife.

The SzF2 soil has average slopes that are greater than 45 percent and a very high erosion hazard. This soil does have some ridgetop areas (Photo 25) that are less steeply sloping than the steeper side hill areas (Photo 7).

Column 5: Shows the average percent canopy cover for the vegetation on each Soil Series as observed in the field. The higher percentages of canopy cover greater than about 25 percent, such as in coyote bush and in chaparral, woodland, and forest, results in a lesser amount of palatable grazing forage and usable grazing areas. For example, 50 percent canopy cover could reduce forage production by 50 percent (Photo 22). Total canopy cover of 100 percent brush or forest would reduce forage production to essentially zero (Photo 21). Canopy cover is factored into estimated carrying capacity determinations.

The SzF2 soil has a canopy cover that averages from 0 to 100 percent with shrubland, chaparral, woodland, and forest encroachment and concentrations in the grassland areas creating the canopy cover that can reduce grassland productivity by shading and physically occupying the grassland areas.

Column 6: Shows the average year rangeland dry matter productivity per Range Site in animal unit months (AUMs) per acre as determined by the USDA in the Soil Surveys, UCCE in published research, and by assessing the amount of forage and canopy cover observed in the field. Favorable years will produce more forage and unfavorable years will produce less forage, hence the variation in productivity. Rainfall amounts and distribution, and temperatures can greatly influence rangeland productivity in any given year. By convention, rangeland productivity is measured as dry matter in pounds per acre. For example, a 1,000-pound cow will consume about three percent of its body weight in the equivalent of dry forage per day. Approximately 11,000 pounds of dry forage will be consumed by a 1,000-pound cow (an animal unit) per year or about 30 pounds per day or slightly more than 900 pounds per month. See Appendix B for tabular carrying capacity summaries as prepared by NRCS, and UCCE.

The less steeply sloping Clayey, Fine Loamy, and Loamy Range Sites have the greatest usable forage. As slopes increase, more forage must be left on the side slopes to help prevent erosion; and as canopy cover increases, less forage is available.

The SzF2 soil can support about 0.2 animal unit months per acre. It would take about sixty acres to support one animal unit grazing for one year. The steep side slopes and canopy cover reduces the available forage and thus the carrying capacity of this soil.

Column 7: Lists by Range Site the required recommended required residual dry matter (RDM) per average slope per USDA NRCS and University of California Cooperative Extension (UCCE) guidelines. A moderate level of rotational grazing is recommended by both the USDA and UCCE so that all forage types are more evenly utilized, reseeding of annual and perennial grasses is encouraged, and erosion is controlled. A minimum of approximately 600 to 1,000 pounds per acre of residual dry matter (RDM) is required by this plan on slopes from zero to 30 percent, and 1,000-1,200 pounds per acre on slopes greater than 30 percent. The RDM requirements in this plan are slightly higher than NRCS and UCCE guidelines because of the potential for periods of intense rainfall and the pre disposed erosion potential for the steeper soils.

The SzF2 soil RDM should be about 1,200 pounds per acre due to average slope of >45 percent and a very high erosion hazard. Less sloping ridgetop areas or swales would require less RDM (Photo 25).

Column 8: Lists Livestock Use Limitations by Soil Series that may include woodland-forest cover, steep slopes, erosion, brush cover, cattle access, weeds, rocks, and poor forage production.

The SzF2 soil has trees, brush, slope, erosion, and rocks as limitations to grazing.

Column 9: Rangeland health indicators have been developed in 1997, and modified in 2007, by the USDA Natural Resource Conservation Service (NRCS formerly the Soil Conservation Service) in order to assess departures from normal rangeland characteristics. Overall normal rangeland health maintains or improves soil fertility, reduces erosion and sedimentation, improves water quality, allows for plant community biodiversity

and management, and provides suitable habitat for wildlife. Observations are made in the field that rely on rangeland health checklists. Rangeland health across the ranch grasslands is quite variable due to infestations of invasive thistles. Thus, rangeland health varies from Normal to Extreme depending on the specific location and thistle concentrations.

The SzF2 soil has Normal to Extreme rangeland health designations because of variable invasive plant concentrations.

Column 10: Portrays the dominant grazing suitability as observed in the field for each pasture area. A summary of grazing suitability limitations is also included and discussed further in later sections. Basically, livestock use limitations such as weeds, brush, slope, livestock water availability, forage productivity, livestock access, and soil quality determine whether an area has a higher, moderate, lower, or unsuitable suitability.

The SzF2 soil has a Higher-Unsuitable grazing suitability because of the described limitations.

Column 11: Includes estimated carrying capacity determinations in an average forage production year in animal units. One animal unit per year equates to one animal unit grazing for 12 months or 12 animal unit months. An animal unit month is how much forage dry matter a 1,000-pound grazing animal will consume in one month (typically 900 pounds). An animal unit is 1,000 pounds of grazing animal such as a cow/calve pair, two-500 pound steers, or five-200 pound sheep, etc.

The carrying capacity summary at the end of the column is based on historic use, USDA production estimates, and field observations by Sage Associates (2008).

Total carrying capacity estimates for the 330 acres of grassland on the ranch are about 330 animal unit months or about 27 animal units per year or about 66 animal units for five months. Average weight 500- pound stocker steers or heifers grazing for five months would equate to about 132 head. These are estimates, and first year stocking in a normal rainfall pattern should perhaps start slightly lower at about 60 animal units for five months.

Summaries of the above columns will be utilized in many of the following plan sections.

3.3 Existing Rangeland Operations and Management

The ranch at the time of the field assessments in late April-early May of 2008 included grazing of a variety of livestock including horses, Brahma cows and calves (Photo 8), Brahma steers (Photo 7), cross bred Angus/Brahma cows and calves (Photo 24) and Brahma bulls (Photo 30).

3.3.1 Rangeland Uses and Livestock Grazing Suitability

The 330 acres of grassland are suitable for livestock grazing due to the abundance of the annual grassland forage, however, noxious plants do reduce suitability at this time. The ranch soils and habitats do allow for management practices to occur that will be favorable for enhancing grassland bio-diversity and to manage fuel loads.

The following general observations were made of the ranch during the field assessments and mapping for the plan that will influence the implementation of future rangeland and habitat management practices as discussed in Section 5.

• Topography and slopes vary from nearly level ridge tops and swales to very steeply sloping side hills and canyons. The steeper side slopes are more difficult to graze.

• Rangeland areas vary from 100 percent annual grassland to ungrazed habitats containing dense areas of brushland, shrubland, and woodland.

• Range conditions for palatable livestock forage are excellent where concentrations of wild oats, soft chess, fescue, vetch, clovers, rye grass, filaree, and bur clover predominate to poor where thistles predominate. Old hay feeding areas along roads and at the corrals contribute to the highest concentrations of purple star, yellow star, milk, bull, Italian, Spanish, and distaff thistle varieties (Photos 11, 13, and 18). Other rangeland areas may contain scattered thistles or may be open grassland (Photo 29).

• Livestock water infrastructure is limited to the holding fields and corrals (Photos 11 and 14). Other water sources include the lakes (Photos 16 and 28), a silted-in spring/stockpond (Photo 20), and surface springs (22).

• Cattle grazing distribution and access would improve with water infrastructure improvements since cattle trail from the south side of the ranch around Mindego Hill to Mindego Lake. The Douglas Fir/Coast Redwood woodland south and west of Mindego Lake contains numerous cattle trails.

• Access roads are minimally maintained (Photo 19) with some grading (Photo 18) and provide sufficient pasture access for a four-wheel drive vehicle. Some roads are no longer maintained west of the cabin, to Mindego Creek, and southeast of and below Mindego Hill.

• Perimeter fencing appears to be adequate for the existing grazing operation. Natural livestock barriers of steep topography coupled with rock and dense vegetation have been utilized as perimeter and pasture barriers historically. Corrals are inadequate and the steel panels will be removed by the True's. A new corral location and additional pasture drift fencing and gates will be needed.

• Site erosion is negligible as related to cattle grazing and natural erosion. Natural soil does occur in some of the steeper side slopes. One erosion gully exists east of Mindego Lake (Photos 15 and 18) that is probably a result of road runoff.

From the field assessments, the dominate livestock grazing suitability was determined for the ranch which reflects the Higher, Moderate, Lower, or Unsuitable livestock grazing suitability areas as summarized in Table 1. These areas may transition rapidly from one designation to the other depending on slope, and the amount of shrubland, brushland, and forest encroachment into the grasslands.

Higher suitability areas have no constraints to grazing. Slopes average zero to about 30 percent. Livestock water potential improvements and fencing are needed to achieve a higher suitability rating once grazing commences. Access is good. Non-forage canopy cover ranges from about 0 to 25 percent and is comprised primarily of areas of some coyote bush, and/or thistle. Harding grass may occur in some of the rangeland but is considered as forage if grazed properly. Typical areas include grassland-dominated swales, ridge tops, and flats (Photos 8, 24, 27, and 29). Coyote bush and thistle may occur in these areas and will require management (Photo 22).

Moderate suitability areas can be well utilized; however, slopes average 30 to 45 percent with average non-forage canopy cover to about 75 percent consisting mainly of areas of shrubland, brushland, and woodland. Livestock water development is needed. Typical areas include steeper ridge side-slopes (Photos 1 lower area, and 23). Livestock will readily use these areas but it requires more energy to graze the slope areas or to walk further to water. More residual dry matter must be left on side slopes to help prevent erosion. Thistle may also occur.

Lower suitability areas are utilized less, or are more difficult for livestock access and water availability. Slopes average usually greater than 45 percent and/or average non-forage canopy cover varies from 25 to 100 percent (Photos 7, 9, and 10). Typical areas include partial brushy and woodland steep side-slopes, and difficult to access grassland in upland areas. Abundant edge areas exist. In grassland areas, more residual dry matter is required on the steeper side slopes to help prevent erosion. Livestock water development is needed. Cattle can utilize many of these areas but with greater energy expenditure due to more difficult access.

Unsuitable areas are primarily utilized for livestock shelter and shade with minor areas of interior livestock forage (Photos 17 and 21). Average slopes may be greater than 45 percent with non-forage canopy cover up to 100 percent. Typical areas include dense brushy uplands, rock outcrops, timbered canyons, woodlands, and steep slopes that cannot be traversed by livestock. Areas are commonly used for nesting, denning, and browse by wildlife and as wildlife trails, corridors and shelter. Wildlife water is abundant in most larger drainage areas that are inaccessible to livestock due to steepness, or dense vegetation.

3.3.2 Livestock Stocking and Distribution

Rangeland assessments typically equate stocking rates to a particular "level" or intensity of cattle grazing as is summarized below from UCCE research.

Stocking Intensity	Visual Characteristics of Rangeland
Light	**Little or no patchy appearance; unused plant matter greater than five inches and small objects on ground are not visible. Plant decadence and invasive plant infestations may occur.**
Moderate	**Two to five inches of unused plant material remains; little bare soil; patchy vegetation appearance (UCCE recommended).**
Heavy	**Less than two inches plant material remains; small objects and bare soil are highly visible.**

A moderate level of grazing is recommended by NRCS and UCCE so that all forage types are more evenly utilized, reseeding of annual and perennial grasses is encouraged, and erosion is controlled. Heavy grazing does not leave adequate RDM for reseeding and erosion control. Light grazing, even with rigorous planned pasture rotation, often allows animals to pick and choose the more palatable plants while leaving less desirable plants such as mustard, fennel, and thistles to more readily reproduce even though overall RDM levels may be higher. Coyote bush encroachment into grassland is also encouraged by light grazing or non-grazing of grassland areas.

At the time of the site assessment in April and May of 2008 livestock grazing was occurring with ample spring grassland cover due to rains in January and February but a dry March and April. South facing slopes and areas of shallow soils were starting to turn brown as grasses and forbs were maturing. No salt blocks were on the range at this time.

Cattle were extensively trailing from the south side of the ranch to Mindego Lake for water and heavily trampling the spring location on the south side of the lake and utilizing the riparian willow on the south and west side of the lake.

Cattle distribution is predicated by management practices, available water, cross fencing, temperatures, slope, and access. Placement of livestock watering locations and salt locations can improve distribution and manipulate grazing patterns away from sensitive riparian resources (George, 2007).

Cattle distribution is excellent to poor depending primarily on water availability access, and slope (See Section 3.3.6). Ranch roads and trails provide existing access.

With the proposed management practices discussed in Section 5, cattle distribution should improve.

3.3.3 Rangeland/Habitat Health and Residual Dry Matter

Rangeland evaluations in previous years relied on a description of range conditions that compared the present forage production capacity of an area to a desirable standard that was a product of long-term grazing

management. Numerically, range condition and production standards were formulated whereby the following percentages of desirable range grasses and forbs included:

Range Condition	**Production* = percent of potential forage capacity**
Excellent	**75 to 100%**
Good	**50 to 75%**
Fair	**25 to 50%**
Poor-Very Poor	**less than 25%**

Overall existing range conditions on the ranch range from excellent to very poor depending on the type of forage or invasive vegetation present in the grassland areas. Areas of invasive thistle, and some coyote bush reduce range conditions by out competing both native perennial and introduced palatable annual grassland forage species. Areas of invasive plants will require proper management in the future. Annual grasslands of the ranch do provide good livestock forage. Small concentrations of purple needlegrass were observed but are limited in extent. Grazing management is essential to help control the invasive thistles.

In recent years, descriptions of rangeland conditions have focused on evaluating rangeland/habitat health, and residual dry matter observations. These factors are dependent on long-term stewardship management and climatic conditions and take into account the health of all plant communities and not just grasslands.

Rangeland and habitat health indicators have been developed by the Natural Resource Conservation Service for California in 2007 in order to assess departures from normal rangeland and habitat characteristics. Overall normal rangeland and habitat health maintains or improves soil fertility, reduces erosion and sedimentation, improves water quality, allows for plant community biodiversity and management, and provides suitable habitat for wildlife. Rangeland and habitat health evaluations include the following soil, water, and vegetation indicators as classified from normal to extreme conditions: See Appendix B for a more detailed definition of the 2007 revised Indicators.

INDICATORS	NORMAL	TO	EXTREME
Rills	No recent formation	to	Severe and well defined.
Water Flow Patterns	Minimal soil erosion	to	Active flow erosion
Soil Pedestalling	Minimal pedestalling	to	Rocks and plants pedestalled
Bare Ground	Small bare areas	to	Large bare areas that are connected
Gullying	Natural stable channels	to	Active head cuts/down cutting
Wind Erosion/ Deposition	None to infrequent	to	Extensive wind scouring/deposits
Litter Movement	Uniform Distribution	to	Concentrated Movement
Soil Surface Stability	Organic Matter	to	Loose powder
Soil Surface Loss	Normal top soil per soil type	to	No top soil present
Plant Types/Runoff	Controlled by vegetation	to	Vegetation increases runoff
Soil Compaction	Trails/water troughs	to	Most of site
Plant Community Changes	Closely matches historic climax community mix of annual and native perennial plants	to	Climax community decreasing with invasive plants dominant

Plant Mortality/Decadence	Uncommon	to	Common over site/severe stress
Litter Amount	Common for climate	to	Absent
Plant Growth AnnualProduction	Growth exceeds 80% of potential production	to	Growth less than 20% of potential production
Invasive Plants	Not present or expected	to	Dominate the site
Perennial Plant Reproduction	Seed and tiller reproduction are common	to	Severe reduction in seed and tiller production

During rangeland/habitat health studies the above Indicators are evaluated in categories that range from normal with none to slight deviations from normal, to not normal with extreme deviations from normal. The above table and Appendix B gives the range from normal to extreme.

Other than the invasive plants, the vast majority of the ranch has normal or near normal rangeland and habitat health based on the assessment of the rangeland/habitat health Indicators and the comparison with the Soil Survey (1961, and 1969) for baseline conditions of the various Range Sites within the ranch. Coyote brush encroachment is limited to one old hay meadow (Photo 22) where an old hay rake was found covered with coyote brush and poison oak. Management of the invasive plants will be a challenge because of their widespread proliferation but grazing is essential to aid in their control. Areas of thistles reduce rangeland health from Near Normal to Extreme depending on the concentration.

Residual dry matter (RDM) is a measure of the amount of dry vegetation left on the ground, typically measured in the end of the summer or fall, prior to rainfall. Appropriate levels of RDM strive to minimize thatch, which can inhibit new plant growth, while maintaining adequate levels of vegetation to prohibit soil erosion. UCCE (2003), and USDA NRCS (2007) recommended minimum residual dry matter of about 600 to 1,000 pounds per acre for slopes up to 30 percent and about 1,200 pounds per acre is recommended for slopes greater than 30 percent. These RDM levels correspond to an average minimum of two to about five inches of stubble height. USDA NRCS residual dry matter material includes palatable forage and ground litter and stalks that may not be palatable so pounds per acre weights may be slightly higher in grasslands than for the UCCE recommended minimum heights. UCCE recommended minimums include the amount of palatable residual dry matter required to maintain a sustainable moderate level of grazing (i.e. where residual forage can average about two to five inches in height with higher growth patchy areas and is sufficient to prevent erosion, and to provide a seed crop), per average Soil Survey slope categories as recommended by the University of California Cooperative Extension (1982 and 2003) for annual grasses in coastal rainfall areas.

Estimates of pounds per acre of RDM are obtained by fall clippings of one square foot of palatable dry forage, weighing in grams, and multiplying by 100 to achieve the pounds per acre of RDM. Visual estimates of RDM can also be made whereby about four inches of RDM equates to about 1,000 pounds per acre.

3.3.4 Livestock Facilities

Livestock facilities include old corrals (Photos 11 and 13). A horse arena (Photo 12) is currently used for horse training.

3.3.5 Livestock Fencing

Livestock-tight perimeter fencing and natural barriers appears to be adequate at this time. The small pastures/holding fields near the house and along the driveway require fence and gate repair to remain serviceable (Photo 11).

The perimeter fence that bisects Knuedler Lake (Photo 28) has not been maintained for a number of years and cattle access both sides of the lake at this time.

Natural slope, rock, topographic, and brush barriers have been historically utilized to contain cattle on the ranch. The brush barriers would be ineffective if wildfire should burn the boundaries of the grassland areas.

3.3.6 Livestock Water Sources

Livestock water sources are inadequate at this time because of their poor distribution. Improved springs supply and four water trough locations for the holding fields (Photos 11, 12, 13, and 14). Mindego Lake, Knuedler Lake, stockponds, and springs provide other water sources (Photos 16, 22, and 28).

Livestock water sources are shown on the Figure 7 map in Section 5.

Water troughs consist of steel or aluminum with automatic float valves or hoses. Gravel pads and wildlife escape ramps are absent at the troughs. These water troughs are maintained and functional at this time.

Developed springs near the corrals and houses are boxed and fenced and were overflowing the water tanks at the time of the field assessment.

An improved water supply and distribution system is needed in order to assure adequate livestock water and grazing distribution, and to improve water quality for cattle and wildlife.

3.4 Existing Rangeland Road Access and Maintenance

The main ranch access road is a well-maintained gravel-entrance road. Other ranch roads are infrequently maintained dirt and are minimally graded, or have good vegetative cover to reduce road-related runoff and erosion (Photos 19). The access road below the corrals requires gully maintenance (Photos 15 and 18). Primary roads are shown on Figures 2 and 7. Some old roads on the ranch are no longer maintained such as the road west of the cabin in the woodland above Mindego Lake (Photo 17), the road west of the ranch entrance (Photo 1), and the road to Mindego Creek (Photo 21).

4.0 EXISTING NATURAL RESOURCE CONDITIONS

4.1 Natural Resources

Natural resources of the ranch are described more completely in the 2002 LSA Resource Assessment and MROSD vegetation types (2008). This section of the plan therefore necessarily focuses on the natural resources that are adjacent to, or may be directly affected by grazing operations.

4.1.1 Vegetation Communities

Vegetation communities shown for the ranch on the Figure 6 Vegetation Map include the following:

Mixed Broadleaf Hardwoods such as California Bay, Tanoak, and Madrone – about 114 acres.
Douglas Fir and Coast Redwood – about 418 acres.
Coast Live Oak Series – about 61 acres
California Buckeye Series – about 15 acres.
Mixed chaparral – about 10 acres.
Coyote Brush (mesic to xeric) – about 63 acres.
Poison Oak Series – about 5 acres.
Weedy Ruderal – about 13 acres.
California Annual Grasslands – about 308 acres.
Yellow Star Thistle – about 13 acres.
There are also about 6 acres of built-up land and 7 acres of water.
The vegetation communities that may be affected by grazing operations include the following:

California Annual Grassland-Weedy Ruderal

Grazing areas of the ranch are primarily included in the California annual grassland Yellow star thistle, Weedy ruderal, and Coyote Brush plant communities but may also include small concentrations of native bunchgrasses and other endemic plants. Weedy ruderal contains concentrations of Harding grass *(Phalaris aquatica)*, velvet grass *(Holcus lanatus)* and various thistles that are described in Section 4.2.

Non-native annual grasses observed included:

- Wild oats *(Avena barbata)*
- Soft chess *(Bromus hordeaceus)*
- Ripgut brome *(Bromus diandrus)*
- Rattlesnake grass *(Briza maxima)*
- Mediterranean barley *(Hordeum marianum)*
- Filaree *(Erodium spp)*
- Burclover *(Medicago polymorpha)*
- Clover *(Trifolium ssp)*
- Red brome *(Bromus madritensis)*
- Purple false brome *(Brachypodium distachyon)*
- Vetch *(Vicia ssp)*
- Ryegrass *(Lolium spp)*

Native plants observed included:

- Purple needlegrass *(Nasella pulchra)*
- Blue wildrye *(Elymus glaucus)*
- Creeping wildrye *(Leymes triticoides)*
- Rushes *(Juncus spp)*
- Sedges *(Carex ssp)*

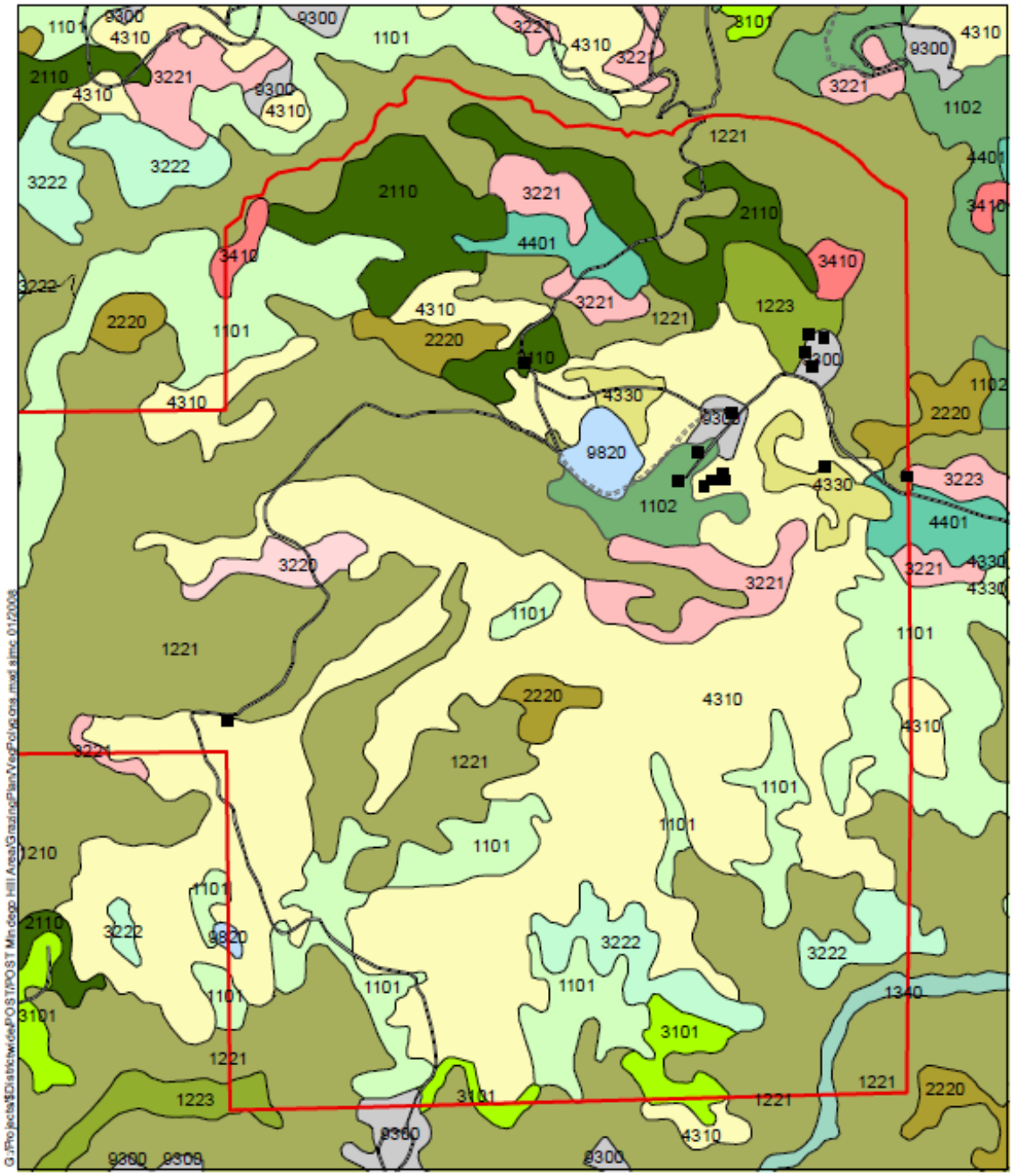

Figure 6

Mindego Hill

Vegetation Types

Coastal Brush Mesic to Xeric

Coyote bush *(Baccharis pilularis)* associated with this community would typically occur in various densities within many of the rangeland areas. Without wildland fire this community will eventually become the predominate plant community in an otherwise grassland assemblage. Occurrences of coyote brush on the ranch is limited to one old hay meadow (Photo 22) and steeper slopes on the south side of the ranch that do not produce grass due to the shallow soils.

Chaparral, Coast Live Oak, Buckeye, Mixed Broadleaf Hardwoods, Douglas Fir, Coast Redwood

These communities are usually found at the edges of the rangeland grasses and extend into the canyons and drainages of the ranch. These areas are unsuitable for livestock grazing due to steep slopes, dense canopy cover, limited livestock access, and a lack of palatable forage but are valuable habitats for wildlife.

One area of Douglas Fir/Coast Redwood is heavily trailed above Mindego Lake by cattle on the southwest side of the ranch accessing the lake for water. Cattle also use extensively use the south and west shore of the lake and the spring area that feeds the lake on the south.

Special Status Plant Species

LSA (2002) reported that suitable habitat was present on the site for Western leatherwood *(Dirca occidentalis)*, Ben Lomand buckwheat *(Eriogonum nudum var decurrens)*, Wooly-headed Lessingia *(Lessingis hololeuca)*, Robust monardella *(Monardella villosa ssp globosa)*, and Dudley's lousewort *(Pedicularus dudleyi).* These species are not federally or state listed but are listed as species of concern by the California Native Plant Society and have not been actually observed on the ranch. The plants may occur predominately in forest, woodland, and chaparral habitats that are minimally affected by cattle grazing.

4.1.2 Wildlife

The vegetative communities provide foraging, nesting, breeding and protection for a variety of birds, mammals, amphibians, reptiles, fish and insects.

The well-vegetated drainages provide important wildlife migration corridors-if not too brushy-offering protective cover through otherwise adjacent open rangelands. The mature trees are particularly valuable to wildlife where there is both dense understory and canopy that provides cover and shelter for many species.

Wildlife of the Grasslands and Shrublands

Several species of birds rely on open expanses of grasslands for hunting and foraging, including the northern harrier, red-tailed hawk, turkey vulture, American kestrel, great horned owl, and common barn owl. Grasslands that are bordered by woodlands are particularly important for raptors, because the birds can use the large trees as "hawking" sites to observe the activities of prey within nearby grassland habitats. California toad and pacific newt may occur in the grasslands seasonally. Western skink, western fence lizard, California alligator lizard, common kingsnake, western rattlesnake and gopher snake are the most common species expected to frequent grasslands. Mammals expected to use the grasslands include California ground squirrel, Botta's pocket gopher, western harvest house, and California vole. Mammalian predators, including coyote, long-tailed weasel, and badger depend on grasslands for foraging and denning sites. Grasslands are an important foraging habitat for mule deer and for mountain lions that prey on deer. Grasslands that are bordered by woodlands or dense brush are excellent foraging areas for small mammals such as the pallid bat, cottontail and brush rabbits, and mice.

Wildlife observed during the field assessments at Mindego Lake included great blue herons, American coots, mallard ducks, domestic swan, bullfrogs, coast range newts, belted kingfishers, and kildeer. A common garter snake was observed at Knuedler Lake. Other wildlife observed included three mule deer, barn swallows, red-tailed hawks, common crows, ravens, Cooper's hawk, western bluebirds, Stellar's jays, scrub jays, California quail, and Anna's hummingbird.

Special Status Wildlife Species

Steelhead trout *(Oncorhynchus mykiss)* a federally listed threatened species may occur in Mindego Creek and Alpine Creek (LSA, 2002) away from the cattle grazing areas. Mindego Creek is in a steep-sided canyon that is heavily wooded and inaccessible to cattle (Photo 21).

California red-legged frog *(Rana aurora draytonii)* a federally listed threatened species and the San Francisco garter snake *(Thamnophis sirtalis tetrataenia)* a federally and state listed endangered species have suitable habitat present on the ranch (LSA, 2002). Red-legged frogs frequent perennial stock ponds and have been observed to co-exist with cattle grazing where cattle help to remove some of the vegetation from pond areas (Bush, 2006; DiDonato, 2007). Sage Associates field observations of stockponds in cattle grazing areas indicate that red-legged frogs and garter snakes thrive if bullfrogs *Rana catesbeiana)* are absent.

4.2 Invasive and or Noxious Species

Most of the invasive and or noxious species include both plants and animals that were introduced from Europe, Asia, or Africa and have since escaped into the rangeland, and wildland areas. They can disrupt grazing and agricultural activities and can crowd out native plants and animals, degrade wildlife habitat, and make areas more susceptible to flooding and erosion. The San Mateo County Agricultural Commissioner's Office has up to date information on these species and can be helpful in providing information on new species that may be encountered on the preserve in the future and are not included in this plan at this time.

The most prolific invasive noxious plants that were found within the rangeland areas of the ranch today include the following: Wooly distaff thistle *(Carthamus lanatus)*, Purple-star thistle *(Centaurea calcitrapa),* Yellow-star thistle *(Centaurea solstitialis)*, Bull thistle *(Cirsium vulgare)*, Milk thistle *(Silybum marianum)*, Poison hemlock *(Conium maculatum),* Spiny clotbur/Spanish thistle *(Xanthium ssp),* Harding grass *(Phalaris aquatica)*, and Italian thistle *(Carduus pycnocephalus).* Sudden Oak Death *(Phytophthora ramorum)* is also discussed below. Purple star thistle, yellow star thistle, Italian thistle, and Bull thistle are listed as weeds of concern by the San Mateo County Agricultural Commissioner (2007).

Coyote bush (*Baccharis pilularis*) a native shrub, also was observed to be invading one meadow in the annual grasslands of the ranch and will be discussed below.

The MROSD is currently involved in management of many of the invasive noxious species including the various thistles in other areas that they manage. Spot herbicide applications are acceptable but only by certified applicators per San Mateo County Agricultural Commissioner's Office regulations. A brief description of the above plant species are included below with treatment practices discussed in Section 5.

Wooly distaff thistle: Native to the Mediterranean, this thistle is an aggressive rangeland pest that displaces forage plants and makes access difficult. The thistle has spiny flower heads, and the leaves have long, stout marginal spine and may attains heights of more than four feet. A winter annual that germinates in the fall and matures to produce seed in the following summer.

Identified around the springs and mostly on hillsides in the southern area of the ranch.

Purple star thistle: A noxious invasive weed that severely degrades rangelands. The thistle typically grows as a biennial, completing its life cycle in two years. Mature plants are covered with stout, sharp spines. Purple starthistle poses a dual risk for livestock ranchers; it degrades forage quality by displacing palatable plants and

by hindering or blocking access to grazing areas. Its sharp spines can also injure eyes, noses, and mouths of grazing animals and wildlife.

The spiny plant can achieve heights of one to 4 feet with purple colored spines and flower heads. Reproduction is by prolific seed production which is distributed by wind, water, animals, vehicles, and contaminated feed or seed. The plant prefers deep fertile soil, and disturbed areas, and often grows in bottomland areas and along roads.

Purple star thistle can be found primarily along the edges and centerline of roads, and in some disturbed areas such as along stockpond edges and in rangeland areas. Heaviest concentrations are where contaminated hay was fed along roads, fencelines, and near corrals. This plant is found scattered over nearly all of the rangeland areas of the ranch.

Yellow star thistle: Is also a noxious invasive weed that severely degrades rangeland and farmland. The plant was introduced into California in the mid-1800s and now infests about 10 million acres of the state. The plant is toxic to horses, and its spines may cause mechanical injuries to grazing or browsing animals. Dense stands can impede or block animal movement and reduce quantity and quality of rangeland forage. Because it grows in the summer and achieves high densities, it threatens the survival of native summer-active plants.

The thistle can achieve heights of from one to 4 feet and is also a prolific seed producer. Contaminated hay, and old farm fields are commonly the source of yellow star thistle, and disturbed soil areas are also especially susceptible to thistle infestation.

Mostly concentrated in the mapped areas of Figure 6 near Mindego Lake and the corrals.

Bull thistle: A biennial thistle originally from the Europe, western Asia and North Africa, Bull thistle currently is most common in coastal grasslands, and disturbed pasture areas and along roadsides. Its basal rosettes blanket the ground, severely reducing the establishment of other plants. Bull thistle reproduces from seed only after fall rains, with flowering peaking in July and early August. Seeds released are wind-dispersed, and may remain dormant in the soil for several years. Soil and vegetation disturbance, and drought favor an increase in the thistle.

Found scattered under oaks and along graded roadsides.

Milk thistle: Milk thistle can be an annual, winter annual or biennial herb, native to the Mediterranean region. It is a pioneer species that colonizes disturbed areas, including grazed areas under oak trees and along riparian corridors. Dense stands out-compete native plants as well as forage for livestock and wildlife. The rosettes may reach up to three feet in diameter, effectively shading out other plants. Thick infestations hamper the movement of wildlife and livestock, frequently limiting access to water. Milk thistle accumulates nitrate, making it lethal to livestock that eat the plant. Seeds remain viable for nine years; and older seeds have higher germination rates.

Found scattered under oaks and along graded roadsides.

Italian thistle: A winter annual originally from the Mediterranean, Europe, Asia and Africa, Italian thistle currently is widespread in temperate zones. It is common in the Coast Ranges within oak savannas and disturbed areas, including grasslands, pastures, rangeland, and roadsides. Italian thistle dominates large areas and excludes native species, impacting both flora and fauna. Its basal rosettes blanket the ground, severely reducing the establishment of other plants. Italian thistle reproduces from seed only, flowering from September through December. Up to 20,000 seeds can be produced by a single plant in one season. Seeds are wind-dispersed, and may remain dormant in the soil up to 8-10 years. Soil and vegetation disturbance, and drought favor an increase in Italian thistle.

Found scattered through the grassland and roadside areas.

Poison hemlock: Native to Europe, North Africa and Asia, poison hemlock has spread throughout the United States and other countries. It is a biennial, and spreads only by seed. Seeds are dispersed by water, mud, wind, animal fur, and by humans on clothing, boots, and machinery. Seeds have a very long dispersal period, ranging from June through February. The seeds can germinate in a wide range of soil, moisture and temperature conditions, and can remain viable in the soil for up to three years. Poison hemlock spreads quickly after the rainy season in areas cleared or disturbed. It is highly competitive and prevents the establishment of native plants by over-shading; it does not appear to be allelopathic. It is poisonous to vertebrates, causing death primarily by respiratory paralysis after ingestion (within 2-3 hours in livestock).

Poison hemlock occurs commonly adjacent to riparian woodlands, moist areas, roadsides, and encroaches into some of the grassland areas.

Harding grass: A waist-high coarse perennial grass with grayish to bluish green leaves. Flowering heads are dense spike-like and two to five inches long. Native to the Mediterranean region it was introduced for its value as livestock forage and has since spread beyond introduced areas by seeds and will out compete other native perennial grasses.

Found near the ranch entrance and mapped in Figure 6.

Coyote bush: A dominant component of the coastal sage scrub plant community. Coyote bush is a native bright green evergreen shrub with whitish or yellowish disk-shaped flowers that bloom in the fall. The plant has a low browse value for cattle but does provide forage variety and Vitamin A on dry grass rangeland where it is browsed in the summer and fall (Sampson, 1963).

Coyote bush was observed to be encroaching into the old hay field grassland area (Photo 22).

French broom: An invasive plant with yellow flowers was observed in a small area above Mindego Creek on the north side of the ranch.

Sudden Oak Death (SOD): Sudden oak death is caused by *Phytophthora ramorum* a fungus. Tanoak, coast live oak, and black oak appear to be most susceptible to the fungus. Crown death with or without the formation of reddish sappy lesions is commonly observed. Lab tests are needed to determine if sudden oak death did actually occur but we have found such tests to be inconclusive in areas of Monterey County. Sudden oak death has been reported by the San Mateo county Agricultural Commissioner to be found along Skyline Boulevard.

Not observed on the ranch, though several old dead oak trees were found above Mindego Creek.

An invasive animal species that may affect rangeland areas, spring, seeps, and stockponds, is the feral pig *(Sus scrofa).*

Feral pig: The feral pigs were introduced into California by the Spanish in the 1500's. Pigs may inhabit oak and other woodlands, coastal sage scrub, chaparral, and grassland habitats, although they seem to prefer oak woodlands and riparian habitats. Pigs are highly adaptable, reproduce rapidly, and lack effective predators. Potential predators of feral pigs include mountain lion, bobcat, and coyote all species present within the properties

Feral pigs reach sexual maturity at age 6-8 months, and may breed year-round; most females have two litters per year. Litter sizes average 5 piglets, with a high mortality rate (70-90%). It should be noted that even with this mortality rate, an average of 5 piglets per litter and two litters per year would result in a 33% annual population increase. Average life span is about 10 months, with some individuals surviving 5-6 years.

Pigs are opportunistic omnivores that tend to exploit seasonally available food resources. They will eat berries, insects, roots, bulbs, soil grubs, and even small vertebrates, such as birds, snakes, mammals, lizards and bird eggs. They will eat carrion if available. Pigs feed heavily in oak woodlands on the mast crop, and

cause extensive ground disturbance through there rooting foraging behavior. Feral pigs reduce the recruitment of oak trees by direct consumption of acorns and indirectly by uprooting oak seedlings. The pigs also disrupt the growth of other native plants. In-stream habitats, riparian woodlands, and oak woodlands can be heavily degraded by the trampling, rooting, foraging, and wallowing behaviors of feral pigs. Pigs directly compete with mule deer, wild turkey and black bears for acorns, a critically important seasonal food source. Pigs cause extensive damage to native plants and wildlife, rangelands, agricultural crops, and landscaping. They degrade natural wetland habitats and increase erosion and sedimentation within riparian zones. Feral pigs may also transmit diseases to domestic livestock, including swine brucellosis, trichinosis, foot and mouth disease, African swine fever, pseudorabies, leptospirosis., and may serve as a reservoir for bovine tuberculosis.

Feral pigs wallows were observed in the spring area of Photo 22 in the old hay meadow on the north side of the ranch.

5.0 GRAZING MANAGEMENT PLAN IMPLEMENTATION

5.1 Implementation of the Plan

The management of MROSD grasslands through the utilization of livestock grazing will promote grassland bio-diversity through the implementation Mindego Hill Ranch Grazing Management Plan.

A crucial part of grazing management is adaptive management; that is, management that responds to regional markets, industry health, and production trends that in turn influence a lessee's fiscal responsibility. Management can include decisions regarding livestock markets, livestock trends, pests, climate changes, energy costs, resource constraints, and water resource uses. As livestock management and resource management science progresses, unforeseen future management changes can be made that consider such resources through applying the University of California Cooperative Extension and Natural Resource Conservation Service conservation current and future management recommendations.

5.2 Grazing Conservation Management Practice Components

Conservation management practices components are to be implemented for all grazing areas, and are included specifically to apply to Livestock and Wildlife Water Development; Livestock and Wildlife Fencing Development; Land Management; Roads and Infrastructure Maintenance; and Wildlife, Water Quality, and Habitat Management. Table 2 provides an "at a glance" summary of the selected conservation management practices that are discussed in the following sections.

NRCS, UCCE, and California Construction Handbook construction specifications and conservation management practice standards are to be considered as guidelines as applicable in this plan, and updated versions are readily available from the District or those agencies. These specifications and practices to be referenced include: Prescribed Grazing; Water Well, Water Pipelines, Water Troughs or Tanks for livestock and wildlife water; Spring Development; Road, Stockpond, and Gully Maintenance items such as Rock Rip Rap, Earth Dike Water Bar Diversions, Slope Drains, Outlet and Inlet Protection for culverts, and Straw Bale Barrier placement.

Many of the proposed conservation management practices have already been implemented by MROSD on other lands under their care. These practices help to reduce erosion and sedimentation, improve water quality, and protect natural resources.

The site-specific proposed conservation management practices often referred to as best management practices in this plan are consistent with those local and regional resource and livestock management practices that are encouraged by various local, state and federal agencies including but not limited to the California Regional Water Quality Control Board, California EPA, California Department of Fish and Game, University of California Cooperative Extension, the Agricultural Commissioner's Office for San Mateo County, Natural Resource Conservation Service, Resource Conservation Districts, Bureau of Land Management, and the U.S. Fish and Wildlife Service.

5.2.1 Grazing Management

The livestock grazing management and implementation of the conservation management components is the responsibility of MROSD, which will seek the complete cooperation of the grazing lessee. The selection of a future lessee that will work with MROSD on implementing the requirements of this plan is crucial. Longevity of the lessee is especially important; the lease terms are planned be for a five-year increment with subsequent five-year renewal options.

5.2.1.1 Proposed Rangeland Conservation Management Practices

The application of conservation management practices are an integral part of the long-term implementation of the grazing management plan. These conservation management practices are applicable to any domestic grazing animal(s) on the properties now and in the future including, but not limited to, horses, cattle, sheep, and goats.

Livestock Considerations:

The ultimate choice of livestock type in part depends on the livestock that are being grazed in the area that would be available for MROSD grasslands. Available operators may have one or more types of livestock in need of forage; common species and breeds and their attributes are described below.

• Cattle – English breeds such as Angus, Charolais, Hereford, Holstein, or using
English breed cross breeds would be favorable over less complacent animals such as Mexican steers or Brahma that range more vigorously and are more apt to test fences and natural barriers. Public safety and predation is another issue in considering bulls, or cows with newborn calves. Ideally, gentle cow/calves, mid-weight heifers or steers, dry cows, or dairy replacement heifers would be favored in many cases depending on distribution.

Coyote and feral dog predation has been identified as potential problems on the ranch along with steep slopes, less than ideal water, and poor access. A stocker operation, or cows with older calves may therefore be favored for this ranch.

• Sheep – are grazers that are still utilized in the county. Sheep, without herding, may graze grass closer than cattle. Sheep with herding would be ideal for distribution, however, sheep are more susceptible to predators and dogs and would need to be confined at night.

• Goats – are browsers, similar to deer, and are very effective at stripping vegetation from shrubs. Goats would require day herding to avoid heavy grazing, and would also need to be penned at night. Goats would be most effective at browsing on mustard, thistle, and coyote bush but would tend to leave branches and stalks.

• Horses – are more opportunistic grazers and will browse on shrubs. Horses are least favored for MROSD grasslands because of solid shod hoof impacts that compact soil (versus an unshod cloven-hoofed animal, trailing tendencies, dentition that can uproot or damage plants, and safety since children are attracted to horses that can, kick, bite, or trample. Equestrian trail uses are fine with horses since grazing would not be substantial.

• Other – this may include future possibilities such as llamas that would be acceptable as long as performance standards are met if consistent with MROSD guidelines. Llamas grazed with cattle or sheep can act as an effective deterrent to coyote or feral dog predation due to the llama’s aggressive behavior towards those predators.

Livestock Grazing and Rangeland Management:

Livestock grazing and rangeland management shall be based on an approximation of the ranch carrying capacity whereby general rangeland dry matter productivity averages for the property has been determined from the NRCS Soil Surveys, and UCCE range clippings and research. Adherence to specified performance standards shall determine the actual operational carrying capacity that may vary from year to year based on climatic conditions and rotation.

The University of California grazing management courses emphasizes that overgrazing is a function of time and uniformity of utilization is a function of stock density. High stock density for short periods of time results in more uniform utilization-less picking and choosing-by cattle. Higher stock density for shorter periods of time increases competition for feed and causes cattle to be less selective about what they graze.

Overgrazing occurs when animals remain in a pasture too long so that regrowth gets regrazed or when cattle return to a pasture too soon before plants have recovered from the previous grazing. Light stocking combined with too much time in a pasture leads to a selection of more palatable plants where less palatable plants are left ungrazed. The longer plants remain ungrazed, the more decadent, coarser, and less digestible they become.

Grazing timing and rotation are based on management goals. For this plan, the major goals are too manage the grassland bio-diversity by properly grazing the annual grasses that may lead to enhancing any perennial grass composition and reducing thistle concentrations in the future, and the reduction of fuel loads in the event of a wildland fire. An additional short term goal is the reduction of weeds that impact forage value, particularly purple star and distaff thistles.

Seasonal or year-round cattle grazing would be feasible for the ranch.. The below listed challenges should be taken into consideration when selecting a grazing season:

1) Limited livestock water would be in less demand than in the summer;

2) Larger numbers of cattle could be grazed on the north and south pastures that would more readily utilize the annual grasses, the Harding grass, and the thistles;

3) Annual grass growth would be started on the steep southerly slopes before grazing would commence in order to reduce erosion potential;

4) Perennial grasses would be utilized less and may increase in abundance; and

5) Less conflict with summer and fall recreational uses of the ranch.

Cattle coming onto the ranch will be off-loaded at the arena corrals and water trough. The cattle shall be fed for 24 hours in the corrals (for weed control from manure) and then rotated into the north and south side pastures and holding fields. To minimize introduction of noxious weeds, only certified weed-free and/or locally sourced hay shall be fed and only at the corrals. The holding fields will also be grazed but may be used for holding animals prior to shipping as long as the RDM standards are met. Because of the abundance of thistles, at this time it is proposed that the north and south pastures, and the holding fields be continuously grazed into June or possibly July depending on forage production, so that the thistles are constantly under grazing pressure. A larger number of cattle will be in the north pasture at any one time because of the pastures larger area.

Year-long rest of any pasture is not recommended, unless burned, because of the already existing ample seed supply and because of the tendency of invasive plants such as thistle, and coyote bush to expand without grazing pressure. Beginning each December, the RDM must at least meet minimum performance standards in the pastures or four inches of green grass growth must be present in the pastures.

The stocking rates of the pastures will vary since the pastures are not equal in size, water availability, or forage quality or productivity.

Total carrying capacity estimates for the 330 acres of grassland on the ranch are about 330 animal unit months or about 27 animal units per year or 66 animal units for five months. Average weight 500-pound stocker steers or heifers grazing for five months would equate to about 130 head. These are estimates, and first year stocking in a normal rainfall pattern should be flexible. Stocking intensity may require a downward or upward adjustment depending on rainfall amounts and distribution and temperatures as the grazing season progresses. The lessee shall be able to make necessary stocking adjustment during the grazing season in order to achieve the performance standards as closely as possible as well as to control thistle growth.

Performance standards are included below per average slope:

0 to 30% slopes: an average minimum of two inches to three inches of residual dry matter – approximately an average of 600 – 1,000 pounds per acre per NRCS and UCCE definition. Description: In some areas rangeland will show evidence of extensive grazing. Residual vegetation is patchy with some areas grazed to less than one inch and other areas with greater vegetation remaining. Bare ground showing evidence of pocket gopher activity may exist. Golf ball objects are clearly visible at a distance of 10 feet and mostly visible at a distance of 20 feet.

Greater than 30% slopes: an average minimum of three to four inches of residual dry matter – approximately an average of 1,000 - 1,200 pounds per acre per NRCS and UCCE definition. Description: In some areas rangeland will typically show clear evidence of grazing. Seed stalks may be heavily utilized or trampled. Considerable ground cover and leaf litter may be present in some areas. Some bare soil will be apparent including pocket gopher activity, visible from a distance of 20 feet. Many golf ball sized objects are partially visible at a distance of 10 feet, and some may be barely visible at a distance of 20 feet.

Commonly observed key rangeland forage species within the pastures grassland areas include soft chess, annual rye, ripgut brome, filaree, rose clover, bur clover, and wild oats.

Areas that are to be considered exempt from the above performance standards include the following:

• Pastures that are burned, roads, tanks and unfenced pond sites, and rock outcrops.

• Areas within 100-yards of watering troughs, water tanks, salt and mineral licks, holding fields/traps, animal handling corrals, or where animals may naturally congregate due to topography or weather.

• Areas of low fertility due to insufficient soil depth or quality, sand, and steep slopes regardless of grazing pressure.

• Areas with extensive tree or shrub canopy cover.

• Areas subject to periodic insect infestations such as from grasshoppers and crickets.

• Areas subject to feral pig ground damage, or other wild animal use and disturbance.

Seasonal climatic data including rainfall and distribution, prolonged drought of two or more years, flooding, and high and low temperatures shall be included in evaluating the performance standards in the pasture areas. For example, during drought conditions 50% of unfavorable year grassland production within the NRCS Range Sites should be managed to remain as residual dry matter.

The above grazing management recommendations are consistent with UCCE, NRCS, RWQCB, and BLM grazing management objectives or standards. The above standards are at a recommended "moderate" level of grazing which has been recommended for sustainable livestock performance and range protection (Jensen, 2000). Studies by Holechek and Galt (2000) also corroborate that specific levels of residual vegetation levels needed for range protection are utilized for the California annual grassland type.

• Salt locations are based on the National Range Handbook standards that require salt locations to be no more than 1/2 mile apart on rough rangeland. Upland swales, ridgetops and livestock trail intersections away from water sources and away from public-used trails and roads shall be utilized for the placement of salt. Cattle will typically go from salt to forage to water so to make the most of the forage utilization and to improve grazing distribution, salt and supplements shall be placed away from water sources. To improve RDM distribution and resource management, salt blocks shall be placed at least 1/8 mile away from accessible water sources and public access roads and trails. Salt locations should be moved periodically to further improved forage utilization and so as not to over utilize any given area.

• Supplemental feeding is not allowed, except in the following circumstances: 1) Distribution of supplements (vitamins, minerals, protein) to aid in the achievement of District resource management goals and livestock movement and 2) feeding in the corral areas when cattle are off loaded and held or shipped from the premises. As discussed above, any hay shall be locally sourced and/or certified weed free.

5.2.1.2 Rangeland Infrastructure Requirements

Prior to the beginning of the grazing season, and assessment of infrastructure and range condition is important because of wear and tear or other changes during the off season. A site inspection shall be conducted by MROSD and the grazing lessee in prior to the grazing season to assess rangeland RDM conditions, green feed growth, and infrastructure. (see also Monitoring, section 6).

Upon determining the necessary upgrades in a given year, off season infrastructure repairs shall be completed by MROSD prior to commencement of the grazing season or use of a particular area. During the grazing season, fencing and water infrastructure maintenance and repairs shall be the responsibility of the lessee. Work above and beyond upkeep of infrastructure must be previously approved by MROSD, and is addressed as “Rent credit for performance of work” in the lease.

Determining the locations of livestock and wildlife water development and livestock and wildlife fencing modifications were based on the April and May 2008 field assessments. These proposed new locations are shown on Figure 7. Specific locations are to be determined in the field. Stella Cousins was shown many of these locations. The infrastructure improvements are proposed to aid in the operational management of livestock, and rangeland and natural resources. Existing troughs are comprised of variable sizes and materials and may need to be repaired or replaced in the future. All replacement troughs shall be placed on gravel pads. Wildlife escape ramps shall be installed on all troughs.

<u>Livestock and Wildlife Water Development:</u>

Livestock water facility development was generally designed based on the National Range Handbook standards that require the following:

- **A clean, dependable water supply;**
- **Adequate size to allow livestock to water within a two hour period;**
- **Spacing of watering areas 1/4 to 1/2 mile in rough terrain; and**
- **A 10-20 gallon per day requirement per a 1,000 pound animal.**

Studies by U.C. Cooperative Extension have shown that when higher quality trough water is available instead of ponds, calves often weigh an extra 50 pounds at weaning. Yearling steers can gain an extra three-tenths to four-tenths of a pound per day (Western Livestock Journal, 2001). Historic research and experience has shown that stock water developments do divert livestock use, improving grazing distribution and forage management flexibility. For example, having clean trough water available away from streams diverted cattle use from those areas. As long as the grass was green on the uplands, the majority of the cattle stayed on the hillsides and came down only to water and loaf. After the upland grass dried, use of the riparian areas increased, however, cattle still used water troughs and loafed near the troughs away from the riparian areas (Chamberlain and Doverspike, 2001). Water development combined with existing pasture cross fencing, benefits management, livestock, wildlife, and wetland habitats positively.

Proposed water trough improvement replacements are dispersed along ridgelines and swales, and to the extent possible, away from public access roads and trails, that will aid in the distribution of cattle and will improve the existing water supply. Troughs are also located away from existing natural water sources so as to benefit wildlife, to reduce siltation, and to improve water quality and the potential for wetland habitat management. The MROSD shall install wildlife-friendly water troughs-both existing and proposed troughs-whereby a wooden, concrete, rock, or mesh “escape ramp” is installed inside the trough to allow trapped birds and mammals to not drown. Water quality is thereby also improved for livestock and wildlife. For flow-through

water troughs, outlets should be rock or concrete lined to reduce erosion, improve water quality, and provide water for smaller animals and birds.

New roads should not have to be constructed for any of the proposed waterline, and trough installation. Waterbar diversions will be required as a conservation management practice on any bulldozer trails established for access of equipment and materials or on any trenching that may occur on slopes. The new water trough locations are all accessible by old roads in various states of maintenance. Clearing, limbing, and spot grading will be necessary to access the water line and trough locations along the old unmaintained roads.

The following water development should be accomplished prior to cattle entry onto the ranch (see Figure 7 for locations): If not complete or if not started, then graze anyway using the existing water supplies. If a season is missed, the spread of the invasive thistles will be extreme.

1. Start at the existing water tanks near the ranch entrance (Photo 4) and relocate the poly tank into the saddle to the west (Photo 5). Install water lines to two new troughs on each side of the fenceline. Leave a stub in the water line for possible future water troughs and grazing in the Russian Ridge Open Space Preserve to the east (Photos 2 and 3).

2. Install the water line along the old road to the southern trough (Photo 6)

3. Start at the existing water tank and trough (Photo 14) install an electric booster pump utilizing the existing electrical service. Install water line up the old road west of the cabin to the grassland ridge. Install a 10,000 gallon or two 5,000 gallon water tanks and trough (Photo 23). Install water line along ridge to south to southern water trough location (Photo 25). Portions of the water line may need to be above ground galvanized pipe due to rock outcrops on the ridge. Probably best to stay on the west side of the ridge at the tree dripline.

4. Maintain existing water troughs as necessary including gravel pads and wildlife escape ramps.

Estimated water related costs*, include the following:

Materials:		
Valves/fittings/steel pipes	=	$1,500
20 tons 1 1/2” gravel or crushed rock	=	$800
5 – precast concrete troughs 8’x4’x2’ @ $500	=	$2,500
Aluminum may be used in less accessible areas, assumes that all are replaced which may not be the case.		
PVC 1 1/4 inch Schedule 40 pipe – 3,000 feet @ $1.25/foot	=	$3,750
PVC 3/4 inch Schedule 40 pipe – 5,000 feet @ $0.70/foot	=	$3,500
2 – 5,000 gallon low profile poly water tanks @ $2,800	=	$5,600
1 – electric booster pump	=	$1,000
Labor: estimate or provided by lessee for lease credit	=	$10,000
TOTAL	=	**$28 650**

NRCS specifications are included in Appendix B as a guide for spring development, water tanks and troughs, and water line installations.

Existing and any future spring developments that may occur as needed shall be fenced or covered to preclude livestock and feral pigs. All of the water supply improvements will provide an additional dependable year-around good water quality water source for livestock and wildlife.

Livestock and Wildlife Fencing Development:

The following fencing and repairs shall be completed by a cattle lessee and/or the MROSD: See Figure 7 for general locations.

1. Check all livestock perimeter barriers, and repair all perimeter fencing to the satisfaction of a cattle lessee and the MROSD. About 1/4 mile of perimeter fencing is no longer usable at Knuedler Lake and may require replacement if a grazing arrangement is not reached with the adjacent landowner.

2. Repair interior pasture fencing and gates.

3. Establish corrals at a suitable location to allow year round access by grazing tenants while reducing potential conflicts with recreational uses (Photo 12).

4. Establish drift fencing and gates at two access road locations along ridge north west of Mindego Hill

5. Establish new fence and repair/replace old fence on south/southwest edge of Mindego Lake. This fence will protect the spring runoff into the lake and the riparian habitat along the south/southwest shoreline from cattle grazing. Pedestrian gates or "v" creeps shall be established for access at each end of the fence. Weed eradication will be necessary in this exclusion area.

6. If the old road to Mindego Creek (Photo 21) is reopened for pedestrian access, then a gate and drift fence will need to be placed in the approximate location shown in Figure 7 to exclude cattle from accessing the creek.

Estimated fence related costs*, include the following:

Materials and Labor:		
Four strand barbed wire lake, drift fences 1,500 feet @ $4/foot	=	$6,000
Existing fence repair	=	$1,000
Seven – 16 foot new steel gates	=	$3,500
Total	=	**$10,500**

Continualgrazing coupled with mowing-invasive plant control, and water and fence development, will improve management options and ease of the moving of livestock, pasture management, natural resource management, and riparian management through cattle grazing. RDM standards, water quality, and rangeland/habitat health will all benefit. Managing the grazing will also reduce existing trampling, trailing, and soil compaction in the woodland above Mindego Lake.

During the grazing season, fencing and water infrastructure maintenance and repairs shall be the responsibility of the lessee, as detailed in the lease.

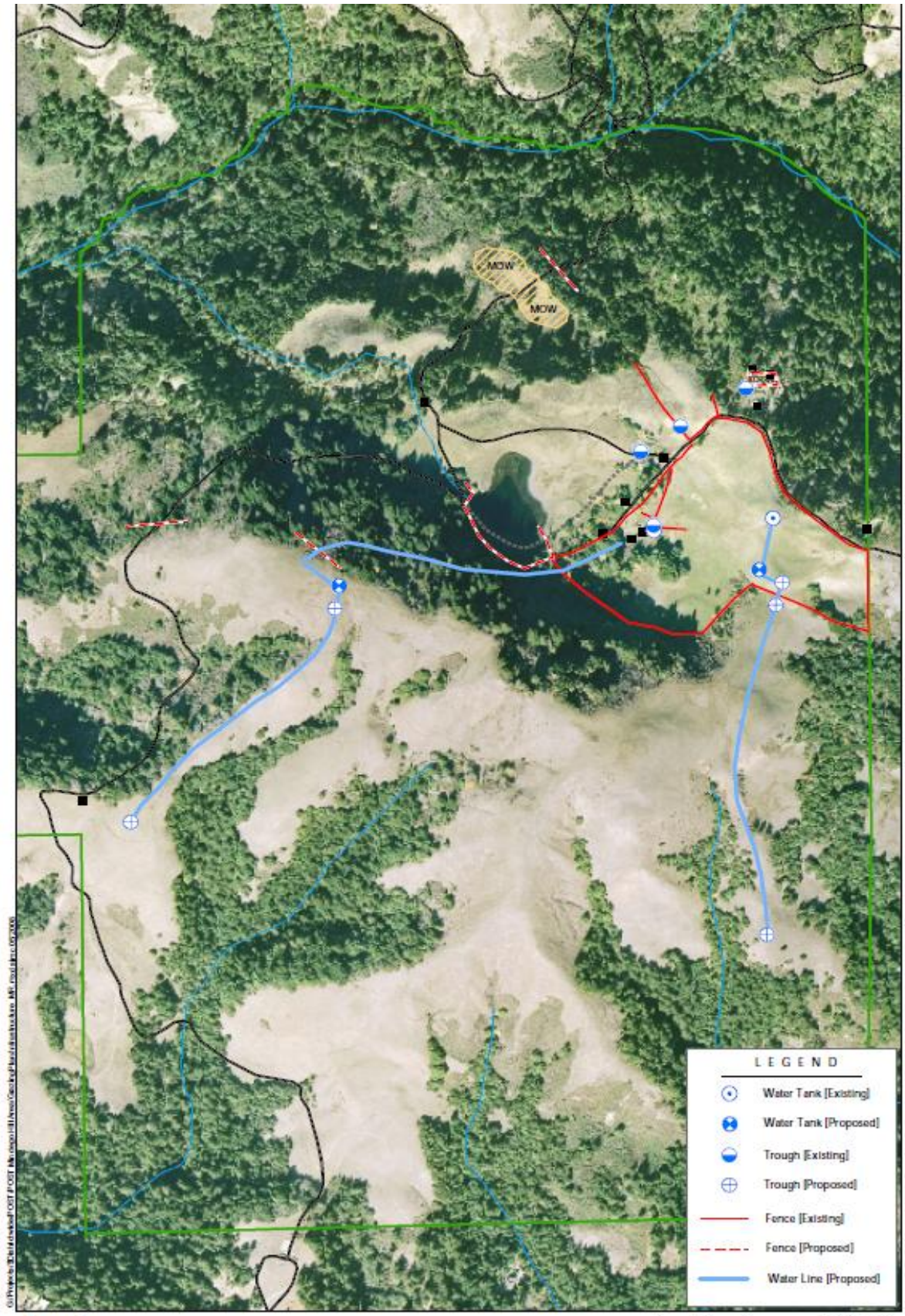

Figure 7

Proposed Infrastructure Map

5.2.2 Safety and Road Maintenance Requirements

Roads and road infrastructure maintenance are well maintained and are in good condition. In time, roads will require periodic water bar diversions, culverts, gully repair, and related maintenance. Secondary ranch roads will be minimally graded and mowed in order to maintain a natural ground cover to help prevent erosion. These roads may be mowed to reduce fire hazard. Any new culverts will require riprap protection at inlets and outlets. Gully maintenance may extend to areas that receive access road runoff such as the gully above Mindego Lake (Photos 15 and 18) that should be stabilized by possibly rerouting the road upslope and controlling runoff. MROSD must perform or pre-approve all road related maintenance, except in emergencies, as outlined in the lease.

The following conservation management practices shall be followed on access roads and gullies:

Management Item	**Mindego Hill Ranch Access Roads Conservation Management Practices**
Grading	**Minimize grading for repairs and maintenance. Allow grass cover to be established and mowed on most road surfaces. Cant road surface to sheet water.**
Erosion Control	**Install water bars across road slopes, install road drains, install V ditches, and rip rap outlets. Drainage diversions to reduce sheet washing and rilling of road surfaces shall be placed at least every 200 feet on roads with gradients greater than eight percent. Maintain cattle guard by removing sediment and provide clean out.**
Dust Control	**Post speed limits to 5 MPH, maintain cover crop on road, soil seal road surfaces if necessary. Utilize minimal grading.**
Existing Gullies	**If renewed erosion occurs, place riprap in gully to control erosion. Straw bales may also be placed in gullies. Willow cuttings may be planted in wet gullies. Utilize certified weed-free straw bales.**
Drainages	**Do not side-cast material into drainages. Utilize existing drainage crossings or span new crossings with suitable bridging that does not disturb channel bank or channel bottom. If culverts are used at smaller drainage crossings, then, provide inlet and outlet protection with riprap material. Grade drainage crossing only after water flow has ceased.**
Reseeding	**Reseed and mulch cut and fill slopes. Install necessary sand bags, straw bales to retard erosion until slopes are revegetated. Use certified weed free straw.**

Road maintenance shall be the responsibility of the MROSD. As a guide, conservation management practices for road repair, erosion control and maintenance are available from the District along with the recommended Conservation Management Practices information.

5.2.3 Natural Resources Management

Adoption of the rangeland management policies described herein will aid in the conservation of the natural resource habitat conditions throughout the grazing land on the ranch.

Land, Wildlife, Water Quality, and Habitat Management

Plant communities and wildlife habitats throughout the ranch will benefit from rangeland management practices, allowing the continued natural growth of native plant communities, and the concomitant improvement of wildlife habitat values and invasive plant management. Benefits to the natural resources of the ranch through grazing and rangeland management will result from measures that will improve water quality in the springs and lakes, increase slope stability, reduce sedimentation, and reduce soil compaction and trailing.

5.2.3.1 Vegetation

Annual grassland plant communities will benefit from suggested removal of invasive, native and non-native plants, which presently can out-compete native, plants and encroach into grassland areas. Livestock management practices will continue to result in managed rangeland habitat conditions, allowing native plants to expand their abundance and plant communities to expand their diversity and areal extent.

Grassland/Coastal Scrub Habitats

Grasslands, and coastal scrub, communities occur on uplands and will be managed, where applicable, by the proposed prescribed grazing practices that have been previously discussed.

Grasslands will be grazed through improved rotational pasture grazing and timing that results in achieving, at a minimum, the RDM performance standards, concomitant with maintaining overall rangeland health. Performance standards and improved rotation, will favor grassland bio-diversity.

Coastal scrub will continue to flourish since livestock and wildlife frequent the edge areas and deer actively browse well into the interior of the coastal scrub. Deer and cattle browsing encourages new plant growth and sunlight within the community. Coyote bush despite livestock and wildlife browsing, are encroaching upon areas of annual and perennial grasslands. One coastal scrub area will require mechanical management through mowing in order to maintain the grasslands and the grassland/coastal scrub edge areas and wildland mosaics.

Erosion Control Using Native Plants

Bio-remediation using the native plants may be used to restore the eroded gully near Mindego Lake, and roadwork, as needed.

Prescribed Burn Management

This section is included as a possible future management tool, however, at this time no specific areas would require burning.

The use of fire as a fuel management tool on gently to moderately sloping areas of coyote bush dominated coastal scrub and weedy ruderal areas, should increase upland water infiltration and help in fuel management. Prescribed burning appears to be less effective at controlling coyote bush because of its high moisture content in the green leaves. Where fire has been used in the coast ranges, a combination of a follow-up Roundup herbicide treatment for two consecutive years after the prescribed burning approximately 90 percent control is achieved with the combination burning and herbicide treatments (Hill-El Sur Ranch, pers. comm. 2006). Therefore, any prescribed burning of coyote bush must be in the fall when fires would burn hotter and should be over a pilot area to determine effectiveness.

Brush management techniques for improving cattle and wildlife forage will be limited to crushing and/or burning of coyote bush dominated coastal scrub in areas on average slopes of less than 30 percent where deeper soil profiles typically occur. Typical vegetation includes coastal sage, coyote bush, and poison oak. This will prevent increases in surface runoff, erosion and sedimentation during the improvement period. Additional requirements would include the following: provision of a 50 foot vegetated buffer strip between drainage courses; riparian vegetation will not be disturbed; high soil erosion areas will be avoided; all cultural resource areas shall be avoided; equipment will be excluded from drainage channels; burning will leave a mosaic pattern of burned and unburned vegetation; no spring burning will be allowed due to potential high runoff, and nesting bird impacts; and in heavy fuel load areas mechanical clearing around trees shall be completed prior to burning.

Cooperation will be required from MROSD fire units with possible assistance from the California Department of Forestry (CDF) and local air pollution agencies under their permitting requirements.

A minimum of fire lines should be established. Hand clearing of some firelines can occur and existing roads can be used as firelines. Dead brush can also be spot burned in the fall or winter to minimize the construction of firelines. Brush can be crushed a year in advance to improve the effect of the burn. Minimal ground disturbance shall occur. If fire lines have to be cut, then, site-specific conservation management practices for reseeding and for waterbar diversions shall be followed. This program can be repeated every five to seven years. Grazing of the burned areas shall be deferred until new grass growth has been established. Native grass broadcast reseeding is encouraged in the burn areas.

Prescribed burning is included as a possible future management tool but is not required at this time. Liability, costs, permitting, and logistics may make this option impractical at this time but the practice is still a possibility for future adaptive management.

5.2.3.2 Wildlife

Wildlife resources will continue to be managed in part through the continued implementation of rangeland management practices as previously described. Because grassland plants will also continue to benefit from livestock control and the removal of invasive plants, native plant communities such as perennial grasses may begin to flourish.

Predators

Mountain lion, coyote, and feral dogs may present predator problems to small calves on the ranch. Coyote and feral dog predation has been documented by the Trues so future problems may occur. Grazing of larger calves or stocker animals may reduce this problem. Fish and Game trapping is another possibility if needed.

Wildlife Game Animals

Feral pig management through MROSD-approved trapping is most important to rangeland management in order to reduce damage to wetland, ponds, and spring sources – if needed.

Wildlife Corridors

Wildlife and livestock movement corridors will not be adversely affected by the proposed rangeland management practices. Mowing of dense areas of coyote bush will provide more edge areas, grassland mosaics, improve wildlife movement, and provide additional browse of mowed coyote bush sprouts. Proposed pasture drift fencing will still allow for wildlife movement through natural livestock barriers.

Wildlife Water

Wildlife water sources will be improved through placement of reliable year around wildlife-friendly water troughs. New and existing water troughs will contain wildlife escape ramps. Protection of spring water sources will also continue to improve wildlife water quantity and quality adjacent to these areas.

Trees

MROSD will be responsible for all removal or modification of live and dead trees, unless they pose an immediate danger to ranch operations or the public. Such trees provide important habitat for cavity nesting bird species and for bats. Taller dead trees also provide important “hawking” sites for raptors to hunt from, providing and unobstructed view. Dead trees should be considered an important part of integrated pest management because of the habitat they provide to beneficial wildlife. Raptors also help to control ground squirrels and gophers.

Ponds/Lakes

On-going natural siltation of the ponds will continue to occur (Photo 20). Maintenance of any pond may be necessary in the future and will be the responsibility of the MROSD. Since these ponds contain suitable habitat for red-legged frogs, San Francisco garter snake, and other amphibians and reptiles, any pond maintenance will require interagency interaction with the California Department of Fish and Game and the U.S. Fish and Wildlife Service. Maintenance is needed at this time for the stockpond shown in the above photo. Exclusionary fencing of the south and southwest edge of Mindego Lake will improve water quality and riparian habitat.

Springs

Springs on the ranch that are used as livestock and wildlife water trough sources are to boxed, and fenced to preclude cattle. Fencing to exclude feral pigs may be needed in the future since wallowing can destroy spring boxes. clog pipes, disrupt or stop spring flow, and reduce water quality.

5.2.3.3 Riparian Corridors

Riparian corridors are primarily located in woodland drainages that are inaccessible to livestock and contain little forage value. Even so, if cattle were to accidentally enter the riparian corridors, studies corroborate that overall wetland species composition is not sensitive to periodic intense grazing use if coupled with moderate grazing levels on uplands (Allen-Diaz and Jackson, 2000).

The new larger water troughs are located outside of riparian corridors, and shall be utilized to improve the livestock water use management by providing a larger volume of water and shorter livestock “stand around time”. New, larger water troughs, supplements, and salt blocks are to be placed in upland areas in order to draw livestock and wildlife away from the riparian corridors and water sources.

The small riparian area around the south shore of Mindego Lake is to be fenced. Mindego Creek is not accessible to ranch livestock. If the old road to Mindego Creek is reopened, then, a gate and drift fence will be needed as shown on Figure 7 and Photo21.

5.2.3.4 Invasive and or Noxious Species

This plan recommends the implementation of management measures for invasive plant and animal species found within the ranch boundaries that could affect existing and future rangeland areas. This plan discusses management options for invasive noxious non-native species that compete with native plant species and are of little value to livestock and/or wildlife, resulting in an over-all reduction in habitat values to both flora and fauna and negatively affecting grassland areas. A balance must be struck regarding maintenance requirements since many of these invasive plants originated from outside the property and are regional problems that may be uncontrollable.

This plan may be amended by the MROSD to cover additional invasive plants or animals if their populations become problematic in the future as determined by annual monitoring visits. Collaborative efforts with other agencies aimed at target invasive noxious species shall be encouraged for long-term management options for existing and future invasive noxious species. Agencies may include California State Parks, California Conservation Corps, BLM, U.S. Forest Service, U.C. Cooperative Extension, Natural Resource Conservation Service, and the San Mateo County Agricultural Commissioner’s Office. Control and removal may not necessarily be viable management options depending on infestations. All herbicide application shall follow the San Mateo County Agricultural Commissioner’s office restricted pesticide permit application requirements.

The following treatment practices have proven effective as a means to help control the species listed below. Current MROSD-initiated treatment practices, if different than below, may continue or the following treatment practices may be implemented. New treatment practices may also be utilized with MROSD approval as part of the adaptive management requirement of this plan. Suggested rangeland management techniques discussed

in previous portions of this plan, including rotational grazing at a moderate level of intensity, will help to control, but not eradicate, many of the plant species discussed below.

The Russian Ridge Open Space Preserve to the east of the ranch entrance does contain some yellow star thistle and possibly some other invasive plants. Rangeland conditions of the preserve are higher than the ranch so it is doubtful that noxious weeds spread from the preserve to the ranch in any abundance. However, future grazing of the preserve is suggested in combination with the ranch to aid in noxious plant control. A water trough stub line from the ranch to the preserve has been suggested since no trough water exists on the preserve ridge east of the ranch. Cattle moved from the ranch to the preserve shall be held for 24 hours in the arena corrals to reduce the spread of noxious plants through manure.

Wooly distaff thistle: The following procedures may be used to help eradicate the plant:

• Control all isolated plants and small outlying populations to prevent establishment of new stands.

• Implement yearly control measures before flower maturity and seed set or remove and dispose of seed heads or mature flowering heads. Control methods may have to be repeated several times during a season for plants with staggered maturities.

• Limit ground disturbance.

• Maximize vegetative cover of affected areas. Reseeding bare areas and maintaining recommended residual dry matter and riparian stubble height levels will help prevent establishment of new seedlings.

• Hoeing can be effective in controlling small infestations and controlling plant spreading into adjacent areas. Hoeing should occur when the plants are in the rosette stage or after they have bolted but before the flowers start to show color. If the flowers show color, then, the plants should be removed from the site and disposed of properly. Plant crowns should be dug up, removing at least 1.5 inches of taproot below ground to prevent resprouting.

• As a last resort, systemic herbicide spraying may be done in late winter or early spring, ideally in January or February. Most plants will be small rosettes at this time and may be difficult to locate. Broadleaf selective herbicides are the best choice. In late spring or summer, non-selective herbicides may be used. Additional eradication methods may also be acceptable, for example, discussions with other ranchers have indicated that a mixture of Roundup and Transline herbicides has been very effective at controlling infestations.

• Localized prescribed burning may not be effective since the taproot will usually be undamaged and plant resprouting will occur.

Purple star thistle: Management of purple starthistle is the most difficult because the plants can germinate from fall through spring, therefore plant maturity can be staggered within a stand. This makes control particularly difficult as different growth stages respond differently to different control techniques.

The following procedures may be used to help eradicate the plant:

• Control all isolated plants and small outlying populations to prevent establishment of new stands.

• Implement yearly control measures before flower maturity and seed set or remove and dispose of seed heads or mature flowering heads. Control methods may have to be repeated several times during a season for plants with staggered maturities.

• Limit ground disturbance.

• Maximize vegetative cover of affected areas. Reseeding bare areas and maintaining recommended residual dry matter and riparian stubble height levels will help prevent establishment of new seedlings.

Specific control measures for purple star thistle may include the following:

• Hoeing can be effective in controlling small infestations and controlling plant spreading into adjacent areas. Hoeing should occur when the plants are in the rosette stage or after they have bolted but before the flowers start to show color. If the flowers show color, then, the plants should be removed from the site and disposed of properly. Plant crowns should be dug up, removing at least 1.5 inches of taproot below ground to prevent resprouting.

• Mowing is not an effective control method because plants in the rosette stage generally grow below the height of a mower bar and because the robust taproot will resprout if top growth is removed. Mature plants that are mowed may become bushier and will be more prolific seed producers.

• Systemic herbicide spraying should be done in late winter or early spring, ideally in January or February. Most plants will be small rosettes at this time and may be difficult to locate. Broadleaf selective herbicides are the conservation choice. In late spring or summer, non-selective herbicides may be used. Additional eradication methods may also be acceptable; for example, discussions with Yolo County ranchers have indicated that a mixture of Roundup and Transline herbicides has been very effective at controlling infestations.

• Grazing management may aid in control where cattle willbrowse on immature seedlings and help to retard their growth.

• Prescribed burning may not be effective since the taproot will usually be undamaged and plant resprouting will occur.

Yellow star thistle: Management of any yellow starthistle infestations may be accomplished by a variety of measures including the following:

1) Mowing of erect tall plants at the early flowering stage (late spring-early summer depend on conditions) will help to control or eradicate the plant. Mowing must cut below the lowest branch of the main stem. Re-mowing may be necessary. If mowing is done too early, then, star thistle can take advantage of the reduced competition for space, light, and water.

2) Prescribed burning may only be effective if done in multiple three-year periods. Single-year fire treatments are ineffective at controlling the plant.

3) Grazing can be effective at controlling the thistle when the plant is green and contains 11 to 28 percent crude proteins. However, grazing early (February/March) and allowing late season grazing rest (May/June) can favor star thistle production. Too heavy or too light grazing can also favor starthistle production.

4) Use of herbicides such as Clopyralid (Transline) may also be acceptable means of controlling star thistle. Transline is a growth-regulator herbicide that arrests development of the growing points of the plants. It was recently registered for use in non-crop areas of California, including pastures, rangeland, and wildlands. Transline has proven to be safe for use on grasses, and also has excellent pre-emergent thistle control qualities at very low use rates. Applications at the early rosette stage of plant development between January and April at an application rate of at least one ounce per acre has shown to be an effective means of control. Spot application of this herbicide may also be considered as an aid in thistle eradication.

5) Planting of clovers and/or perennial bunch grasses as competitive plants in combination with mowing or grazing can further reduce the star thistle infestations.

6) Minimizing the grading of road surfaces and ground disturbances will further reduce plant densities and seed germination areas.

7) Feed only certified weed-free hay.

Bull thistle: Mowing and hand cutting shortly before plants flower is an effective means of control. Spot application of the herbicide 2,4 D has been shown to be effective during the rosette growth stage. Cattle and horses may also eat the plant prior to the growth of the harder and larger spines.

Milk thistle: Thistles seedling require light to germinate, and do not compete well in areas with cover crops of grasses or native plants. Thistles are the most susceptible to hand control during the seedling state, or as they grow from seedlings to rosette. Fall is the best time for chemical control of annual thistles; while the early spring rosette stage is most susceptible for biennial thistles. As a last resort, herbicides are most effective during life states other that the rosette stage. Clopyralid, glyphosate (as Roundup), 2,4 D ester, MCPA have all been shown to be effective. Livestock grazing using sheep or goats has shown promising results in trials in Australia. Seedlings cannot establish in areas of dense groundcover, and thus should be considered for control of re-invasion after initial control measures.

Italian thistle: Herbicides are most effective during life states other that the rosette stage; Clopyralid, glyphosate (as Roundup) is effective.

Livestock grazing using sheep or goats has shown promising results in trials in Australia. Seedlings cannot establish in areas of dense groundcover, and thus should be considered for control of re-invasion after initial control measures.

Poison hemlock: Because poison hemlock is poisonous to humans, it is recommended that gloves and masks be worn while removing this species. Soil disturbance must be minimized in any control method. Hand pulling is effective for small infestations; it is not necessary for the entire root system to be removed. Timing is critical; however, since pulling when seeds are viable would spread the seeds.

Mowing in spring and late summer over several seasons can be effective; subsequent mowing may be required to control newly sprouted plants emerging from the soil seed bank. Post-emergent herbicides shown to be effective include 2,4 D ester, 2,4 D amine, and glyphosate plus surfactant, all applied in late spring. (Author's note: surfactants are generally not approved for use in wetland or streamside areas.) Glyphosate plus surfactant (trade name: Roundup) has been effective at the rate of 1.0 lb/acre, especially at the rosette stage.

French broom: Hand removal, mowing, and treatment of cut stumps with Roundup is effective.

Harding grass: Rotational grazing when new shoots form in the spring may help to reduce plant density, however, other annual and perennial grasses are more palatable so care must be taken not to overgraze. Herbicides are not suggested due to the shear expanse of the plant. Prescribed burning after mid-January appears to retard growth. Mowing prior to seed set in May or June and follow up rotational grazing can also help to control plant density. Spraying of Harding grass with molasses or a liquid feed supplement should increase the grazing palatability.

Coyote bush: If the MROSD is to manage grassland bio-diversity and fuel loads, then, reduction of coyote bush (also hemlock and thistles) into grassland areas shall be implemented as a part of this plan. Field experience has shown that early summer to early fall mowing, before seeds are set is effective at helping to control the spread of coyote bush and other invasives into grassland areas. Follow up intensive rotational grazing is important as new grow shoots occur from the mowed areas. The mowing should be at a two-inch height to avoid ground disturbance and follow existing topographic contours in a curvilinear fashion. Mowed slopes shall be 20 percent or less-usually what a wheel tractor can be operated on with necessary wheel and bumper weights. A setback of 25 feet from all drainages or gully areas shall be observed. In sandy soil areas, to control erosion, mow only where there is a developed grass understory. Repeated mowing will be necessary in three to five years. For summer and early fall mowing, a fire control brush rig may be needed because of the potential for spark-generated fires. Spring mowing shall not occur because of potential impacts to ground

nesting bird species. Otherwise, mowing shall be restricted to foggy mornings in the summer and early fall before 10AM.

This plan therefore proposes that mowing shall occur in areas of infestation followed by rotational grazing into the old hay meadow shown in Figure 7 and Photo 22. Carrying capacity may be increased by 25 percent or more with the reduction of coyote bush canopy cover in grassland areas. Wildfire fuel loads will be decreased. Native trees including willows shall not be mowed. Mowing can begin next year prior to seed setting of the various plants.

Sudden Oak Death: Treatment may include leaving the tree in place if inaccessible or burying or burning so as not to spread the fungus. Driving, riding, or walking under the dripline of the dead tree may spread the fungus to other areas and may need to be regulated by the MROSD if identified on the ranch in the future. Most importantly do not remove the tree from the infected area, which will reduce the chance of spreading the fungus to other areas.

Feral pigs

Exclusionary fencing of springs; and trapping for control as authorized by the MROSD. Springs, seeps, ponds, and watercourses within rangeland areas are especially susceptible to damage from feral pigs. As discussed above, spring sources, should continue to be fenced or boxed to exclude feral pigs.

5.2.3.5 Water Quality

The Mindego Hill Ranch is located within the San Francisco Coastal South watershed area (LSA, 2002). Mindego Creek, is a part of the San Gregorio Creek basin, which has been classified as an impaired water body due to sedimentation/siltation and high levels of coliform by the San Francisco Regional Water Quality Control Board's 303(d) List of Impaired Water Bodies in the San Francisco Bay Region. Cattle grazing on the ranch are excluded by several hundred yards from Mindego Creek so the creek water quality would not be affected by the grazing operation. Other more general concerns are alluded to below.

Non-Point Source Pollution results from land use practices where waste is not collected and disposed of in some identifiable manner. Non-point sources of pollution include: urban drainage, agricultural runoff, road construction activities, mining, grassland management, logging and other harvest activities, and natural sources such as effects of fire, flood, and landslide. Management of rangeland and cropland may have a vast effect upon water quality, but currently very little regulation. Because the source of pollution is difficult to determine, regulation and enforcement has also been difficult. With more political pressure upon water quality governing bodies to control the water quality more effectively within their jurisdiction, agricultural practices may not continue to be exempt. Therefore, agriculture operations need to be proactive in determining what standards are likely to be and implementing their own monitoring protocols in order to determine whether they will be in compliance.

Suggested practices for protection of sensitive areas such as stream banks, wetlands, estuaries, ponds, lakeshores and riparian zones include: exclusion of livestock, providing stream crossings, construction of hardened water access for drinking, providing alternative drinking water sources, salting and providing shade away from sensitive areas and the use of improved grazing management such as rest rotational grazing to reduce impact upon sensitive areas (CCSWRCB, 2003).

Specific RWQCB suggested water quality management practices include the following that are consistent with the required conservation management practices of this plan.

Grazing Water Quality Management

• Implement one or more of the following to protect sensitive resources such as streambanks, wetlands, ponds, riparian zones, by excluding livestock, providing stream crossings or hardened access to water,

provide alternate water sources, locate salt and supplements away from water, and improve animal grazing management.

• Utilize USDA NRCS planning approaches to maintain grazing lands to reduce erosion.

Wetland and Riparian Water Quality Management

• Maintain riparian functionality within the watershed. For example, photographic observation of stream channels will help determine whether stream functionality is improving or decreasing. Representative riparian corridor areas should be photographed for increased woody and herbaceous growth in the stream channel, reduced sloughing of the stream bank and for increased amount of water present in the stream during the fall low flow periods. Increased stream functioning conditions will help reduce sedimentation and will increase the amount of infiltration of water into the rangeland. Increased infiltration of water during high flow periods will increase the amount of water available to riparian plants, thereby increasing biomass and beneficial species. It will also increase water levels during low flow periods, which will help to decrease water temperatures.

• Encourage the use of programs that restore wetlands and riparian areas.

• Reduce erosion and, to the extent practicable, retain sediment onsite during and after earth disturbances.

• Use vegetative filter strips to remove sediments and reduce pollutants from entering riparian and wetland systems.

Erosion and Sediment Control Water Quality Management

• Utilize prescribed grazing and riparian management techniques such as rotational grazing, and residual dry matter management.

Conservation management practices as proposed in this plan are consistent with the above management practices suggested by the RWQCB including riparian fencing, erosion control, water troughs, rotational grazing, and residual dry matter performance standards. It must be noted that feral pigs also contribute to bank erosion/sedimentation and coliform levels within drainage systems that the feral pigs frequent.

TABLE 2: SUMMARY OF SELECTED CONSERVATION MANAGEMENT PRACTICE OPTIONS
MINDEGO HILL RANCH GRAZING MANAGEMENT PLAN

X	CMPs SELECTED	DESCRIPTION OF CMPs
LIVESTOCK GRAZING AND RANGELAND MANAGEMENT		
X	Prescribed grazing/salt placement	Improves forage and use of grazing and salt areas.
X	Mowing invasive plant management	Improves forage/access for grazing.
LIVESTOCK AND WILDLIFE WATER DEVELOPMENT		
X	Water lines, tanks and troughs	Provides additional reliable/well-distributed water
		that will be placed away from sensitive resources.
LIVESTOCK AND WILDLIFE FENCING DEVELOPMENT		
X	Future option for additional pastures	Creates management options for rotational grazing
	or pasture cross fencing	and allows for sensitive resources management of
		the grazing areas. Reduces trailing.
X	Exclusionary fencing of spring sources	Protects appropriate spring sources from livestock
		damage and improves water quality.
LAND MANAGEMENT		
X	Invasive plant control other than	Provides for habitat protection and management of
	mowing	invasive plants.
X	Restoration planting	Utilize native plants for restoration of gully.
ROAD AND INFRASTRUCTURE MAINTENANCE		
X	Rip rap and straw bale placement	Retards culvert, and gully erosion.
X	Minimal road maintenance grading	Grade only where necessary for repairs.
X	Water bars	Install to drain water from steep road areas.
WILDLIFE, WATER QUALITY, AND HABITAT MANAGEMENT		
X	Exclusionary fencing or boxing of	Protects spring sources and vegetation from
	springs	feral pig damage.
X	Mechanical mowing	Maintains edge area between grassland and scrub.
X	Prescribed burning	Improves wildlife habitat and reduces fuel load.
X	Rotational grazing	Fuel management and reduces invasive plants in
		grassland areas.

6.0 MONITORING PROGRAM

The monitoring program for grazed MROSD lands must ensure that the specified rangeland uses are in compliance with the applicable land use regulations and the land stewardship goals, objectives, and implementing guidelines.

Monitoring programs will adhere to the MROSD guidelines listed below.

- *Monitor vegetation response to grazing on District lands.*

- *Monitor forage utilization and distribution by grazing animals to assure appropriate amounts of residual dry matter remain on the ground to achieve desired resource management objectives.*

- *Monitor livestock use levels and infrastructure condition to insure conformity with lease provisions to contribute to improved management.*

- *Monitor wildland conditions with an emphasis on documenting the location, distribution and abundance of native grasses, wildflowers, and other native flora and fauna.*

- *Monitor non-native vegetation response to grazing with an emphasis on documenting the location, distribution and abundance of target invasive species.*

To satisfy the above requirement, the following checklists and photo point monitoring forms are to be utilized for the rangeland monitoring program on an annual basis in the fall prior to rainfall. The monitoring program implementation shall be the responsibility of the MROSD staff. In addition, the yearly rotation schedule, herd type, and stocking rates shall be provided to the MROSD by the grazing lessee prior to the fall monitoring, and included with the fall monitoring report.

Natural climatic changes, geologic processes, and biologic cycles that are beyond the lessee control shall be noted, as applicable, in the checklist monitoring discussion summaries. Natural processes may include, but are not limited to, drought, flooding, landslides, pre-existing soil erosion, fault movements, wildfires, and vegetation responses to climate changes such as global warming, invasive noxious plants, pathogens, and pests.

Monitoring shall require the use of techniques consistent with the University of California Cooperative Extension, the U.S. Department of Agriculture Natural Resources Conservation Service, and the U.S. Department of the Interior Bureau of Land Management monitoring and management practices for working landscapes.

The following photo point monitoring checklist and the rangeland/habitat health checklist have been established for evaluating the Mindego Hill Ranch rangeland grazing areas and include the following:

The checklists include those items that require yearly inspection to assure that rangeland management practices are consistent with this grazing management plan. Existing photos utilized in this plan may also be utilized as photo points for the monitoring. We suggest that photo points be used that best characterize the grazing management. A completed photo point and checklist, including the monitoring methodology used in the completion of the checklist, is included in Appendix A. The photo point and checklist completion shall be repeated yearly in the fall. Additional photo point locations may be added at the discretion of the MROSD.

Monitoring results can also be used as a guideline for any future adaptive management changes that may be shown to be necessary from the monitoring. For example, prolonged drought may cause a reduction in carrying capacity in order to still achieve the minimum residual dry matter performance standards.

6.1 Photo Point Checklist #1 Description of Monitoring Items:

Representative photo points are instrumental in determining overall landscape and vegetative changes over time that may be related to management, climate, natural processes such as fire and flood, and biological processes. A photo point form is included as Photo Point Monitoring Checklist #1 and shall be utilized yearly in the fall by the monitors for each photo point location. Some of the initial photo point determinations in this plan can be used to provide the representative baseline condition for that specific area of the rangeland that is to be monitored as long as grazing occurs. All chosen photo point locations shall be shown on an ortho-photo topographic base Monitoring Photo Location Map along with GPS coordinates and direction of photo for each photo point and entered into the MROSD GIS mapping system. A larger-scale map can be made available if desired. Photo points shall be representative of rangeland, and resource community landscapes within the grazed areas. At each photo point location, a description of the monitoring items checklist shall be completed through the methodology described at the end of this section on a completed example of Photo Point Checklist #1 and Rangeland-Habitat Health Checklist #2 that are used to specifically illustrate the methodology.

___ Rangeland-Habitat Health – if this can be determined from the photo then complete Checklist #2 for each applicable photo point location. Not applicable photos could include a photo of road maintenance or water trough infrastructure. A detailed description of the various rangeland health indicators as revised by the NRCS in California in 2007 is included in Appendix B. (See also 6.2)

___ Residual Dry Matter (RDM) Average Inches per Slope %: ___0-30% ___>30% is based on UCCE (2003) and NRCS (2007) prescribed grazing performance standards included in Appendix B of this plan. The performance standard for a moderate level of grazing is an average minimum of two to three inches RDM for slopes of 0 to 30 percent (about 800 to 1,000 pounds per acre of dry matter) and three to four inches RDM for slopes greater than 30 percent (about 1,000 to 1,200 pounds per acre of dry matter). Adequate levels of residual dry matter are important for providing next years annual and perennial grassland seed crop, for promoting the vigor of perennial grasslands, for reducing erosion and sedimentation, and for preserving water quality and rangeland health.

Example for 0-30% slope: In some areas rangeland will show evidence of extensive grazing. Residual vegetation is patchy with some areas grazed to less than one inch and other areas with greater vegetation remaining. Bare ground showing evidence of pocket gopher activity may exist. Golf ball objects are clearly visible at a distance of 10 feet and mostly visible at a distance of 20 feet. In some areas rangeland will typically show clear evidence of grazing. Seed stalks may be heavily utilized or trampled. Considerable ground cover and leaf litter may be present. Some bare soil will be apparent including pocket gopher activity, visible from a distance of 20 feet. Many golf ball sized objects are partially visible at a distance of 10 feet, and some may be barely visible at a distance of 20 feet.

Example for greater than 30% slopes: In some areas rangeland may show evidence of considerable grazing use. Seed stalks may be heavily utilized. Ground cover is essentially complete. Little bare soil is apparent except for occasional pocket gopher activity and livestock/game trails. Some golf ball sized objects may be visible or only barely visible at a distance of 10 feet but seldom visible at a distance of 20 feet.

Exempt from the RDM performance standards include the following:

• Pastures that are burned, roads, tanks and reservoir sites, and rock outcrops.

• Areas within one hundred (100) yards of watering troughs, water tanks, supplements, salt licks, holding fields/traps, animal handling corrals, or where animals may naturally congregate due to topography or weather.

• Areas of low fertility due to insufficient soil depth, sand, or quality and steep slopes regardless of grazing pressure.

• Areas with extensive tree or shrub canopy cover.

• Areas subject to periodic insect infestations such as from grasshoppers and crickets.

• Areas subject to feral pig ground damage, or other wild animal use and disturbance.

A measure for impairment or non-compliance can be identified from Residual Dry Matter performance standards. In an above average rainfall year and in an average rainfall year, the residual dry matter performance standards should be met as described above. In below average rainfall years performance standards may be exceeded but not for more than two years in a row. In above average rainfall years, stocking may necessarily increase to achieve target performance standards. Lessee operational management should be able to adapt to lower rainfall amounts and distribution over a two-year period. Long-term impairment of resources will not be permanent if management changes meet performance standards within the two-year period.

___ Plant Communities Observed: Include a list of plant communities viewed in the photo such as annual grassland, coastal sage scrub, wetland, woodland, etc. based on Section 4 of this plan. Also include relative abundance of perennial grasslands if present per the categories in the checklist. Note if coyote bush areas have been mowed and plant resprouting over successive years of monitoring.

___ Wildlife Observed: Especially important for photo points at ponds, and grasslands per Section 4 of this plan. Note relative abundance.

___ Grazing Infrastructure Maintenance: Important for fencing and water trough and any water tank maintenance. Look for wildlife escape ramps on troughs, spring exclusionary fencing, and gravel pads at the troughs.

___ Access Road Maintenance Observations: Important items include minimal grading, mowing, culvert rip rap and gully repair.

___ Yearly Rainfall in Inches and Distribution: Annual precipitation records are an important part of any monitoring effort and shall be included in each yearly monitoring report on the spaces provided in the relevant monitoring checklists. A comparison with available average rainfall and average rainfall distribution records shall be made yearly to ascertain whether or not the rainfall was normal in monthly amount and distribution for the monitoring year.

___ Invasive Species: note species and relative abundance per the categories in the checklist.

In summary, the choosing of the representative photo point and the checking of the monitoring items is part of the monitoring protocol. It is expected that a walking transect of the foreground areas of the photo point be completed as a part of filling in the appropriate checklist items. Some photo points may be only representative of landscapes so no detailed checklist evaluations would be made other than to note landscape changes over time and the possible causes of such changes. The time spent at each photo point will necessarily be variable depending on the checklist requirements. Time may vary from a few minutes to about one half hour in most cases.

Checklist #1 as blank and completed forms is included in Appendix A. Additional pages may be attached as needed.

6.2 Rangeland Habitat Health, Checklist #2

Rangeland and habitat health will require a yearly evaluation in the fall of seventeen Indicators that are shown on Checklist #2 and are included in more detail in Appendix B. These factors have been previously discussed in the plan and will be utilized for the determination of overall rangeland and habitat health as well as for soil conditions, erosion occurrences, plant community and reproduction characteristics, invasive plant problems, and overall plant mortality and stress. Overall health of the habitat communities is easily incorporated in this

checklist per applicable representative photo point. These factors shall be observed and recorded in checklist form at each applicable designated photo point location. This method is to be used as a qualitative indicator to see what you may want to monitor quantitatively that can help guide management responses. Use the NRCS Range Site and soil description from the soil survey for baseline information as to what is considered normal for the particular soil series.

The rangeland and habitat health indicators have been developed by the Natural Resource Conservation Service (1997)(revised in 2007) for working landscapes in order to assess departures from normal characteristics. Overall normal rangeland health maintains or improves soil fertility, reduces erosion and sedimentation, improves water quality, allows for plant community biodiversity and management, and provides suitable habitat for wildlife.

For the evaluation, the rangeland and habitat health Indicators are evaluated in categories that range from normal with none to slight deviations from normal, to not normal with extreme deviations from normal that are to be filled in on Checklist #2. A summary discussion is also to be included for deviations from normal and for rainfall amounts and distribution.

A measure for change can be identified from the Rangeland-Habitat Health Checklist when listed indicators show “moderate to extreme or becoming not normal”. The MROSD and lessee should work together to reverse the changes as conditions are noted in the monitoring reports if due to grazing operational management. In working landscapes, changes can usually be reversed so as to avoid irreversible changes to the resources. Climatic, geologic, and biologic processes beyond the lessee control may also be a source of impairment and should be stated as such.

Rangeland-Habitat Health Checklist #2 as blank and completed forms is included in Appendix A.

The completed Checklists #1 and #2 shall be compiled and stored for long-term reference, a dedicated three ring binder is convenient. Monitoring shall commence during the first grazing season after the composition of this plan (Fall 2008). MROSD shall be responsible for safeguarding all monitoring records. Subsequent monitoring year checklists and information should be securely stored with previous years’ information for comparison and consistency.

Some of the representative photos used in this plan may also be utilized as photo monitoring points. For example, Photos 1, 2 3, 9, 17, and 26 can be used to monitor landscape changes over time; Photos 7, 8, 10, 24, 27, 28, and 29 can be used to monitor residual dry matter, rangeland/habitat health, and invasive plants; Photo 22 can be used to monitor existing coyote bush conversion mowing; and Photos 4, 5, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 25, and 28 can be used to monitor corral, trough, spring, fence and facility infrastructure, ponds/lakes, and roads use and maintenance.

A short executive summary shall be included in the monitoring report that summarizes the results of each monitoring year for each of the grazing areas and compared to the previous year(s) monitoring results in text and/or tabular form. The results of each monitoring year shall then be discussed amongst the MROSD staff to see if any adaptive management changes are required to be implemented.

The results of the yearly monitoring will determine if any anticipated or unanticipated adaptive management changes are necessary. This plan attempts to foresee anticipated changes and proposes conservation management practices that are responsive to such changes. However, unforeseen changes may occur that may require plan updates as determined by MROSD as a part of this plan or more detailed quantitative monitoring methods.

MROSD may also choose, in addition to the yearly monitoring, to have detailed research studies performed by academic researchers that would yield more in-depth data on rangeland trends and long-term habitat responses to grazing.

A graphic example of a representative Photo Point Monitoring Checklist #1 and Rangeland-Habitat Health Checklist #2 for Photo 19 are included in Appendix Ato illustrate the methodology for these two checklists. Future fencing of the back (south/southwest) side of Mindego Lake is proposed to protect the bank, the spring flow into the lake, reduce trailing of the woodlands above the lake, and increase the extent of the shade that the willows provide. Invasive plant management will be needed within the exclusionary fence area. The front (north) side of the lake shall remain unfenced for cattle water.

The photo point was chosen to illustrate annual grassland habitat, invasive plants, and riparian/lake/spring/woodland habitat. The photo was taken on May 1, 2008. The spring flows down the slope in the center of the photo. Weeds along the lakeshore are kept down due to grazing. Exclusionary fencing is proposed for the south shore area beginning to the left (east) side of the spring where weed management will be required. The actual future monitoring would be done in the fall before fall rains. The final GPS location should be recorded at that time once the precise photo point location is chosen.

Methodology for the sample photo point (Sample Completed Checklists are in Appendix A):

Choose a Representative Photo Point Location.

The area was chosen for the annual grassland, riparian, woodland and pond/lake aquatic habitats and the Mindego Hill and Mindego Lake viewshed. Cattle trailing in the woodland, spring, and south lakeshore riparian area is extensive. Invasive plants are common in the grassland area north of the lake.

Take the photo and record the compass bearing location of the photo and the GPS coordinates on the finalized photo point form. A permanent photo point marker such as a steel tee post or a flexible fiberglass marker may be used, but only if acceptable by MROSD.

Fill in the General Form Information.

This includes the monitoring form page and photo point number, the names of the monitors, the date, and the location. The location of the photo point will also be shown on a Monitoring Photo Location Map. This photo is the same as Photo 17 in the plan that is shown on the Photo Location Map.

Description of Monitoring Items.

Check the applicable monitoring items that you have photographed. Make your field observations of the area within this photograph. The field observations will require a walking transect of the field of view in the foreground, and midground of this photograph and filling in the appropriate checklist information. The midground will include a walk around the lake to check the status of the proposed exclusionary fencing, the weed maintenance within the excluded area, the riparian growth, the spring flow, the woodland trailing recovery southwest of the lake and the RDM and invasive plants north of the lake.

In the case of this photo we have checked the following:

X Rangeland-Habitat Health – proceed to completing Checklist #2 as shown on the next page.

Rangeland-Habitat Health – by checking this item, you must then complete Checklist #2 (completed in Appendix A) that evaluates rangeland/habitat health Indicators that are described in the plan. This checklist also requires a discussion of rainfall amounts and distribution.

Rangeland Health Indicators are evaluated for the Fine Loamy Range Site per the USDA Soil Survey (1961, and 1969) descriptions. The area is currently grazed and the lake is used extensively for livestock water. Trailing of the spring flow area in the left of the photo and in the woodlands in the right of the photo is extensive. The Extreme or Not Normal categories are therefore checked for bare ground occurrence, litter movement, litter amount; the Moderate to Extreme or Becoming Not Normal categories are also checked for water flow patterns, and soil compaction layers for the trailed areas. For the invasive plant areas the Extreme

or Not Normal categories are checked for invasive plants, and for changing plant community types due to the invasive thistles. Gullying was observed to the left of the photo and is checked as well.

The two NA – not applicable Indicators are checked since perennial grasses were not observed.

X Residual Dry Matter – this item is checked because the photo point includes residual dry matter in the annual grassland area. Average height is about three inches on slopes from 0 to 30 percent at least 100 yards north of the lake water source. Observation for RDM needs to be done in the fall for more accurate results. RDM will diminish about five percent per month in the summer after annual grassland growth has ceased.

X Plant Communities Observed – this item is checked and the plant communities would include annual grassland, woodland, riparian and pond aquatic. Plant community health and function was evaluated in Checklist #2. A walking transect in the foreground, and midground south of the lake was conducted. Perennial grasses were absent and the relative abundance was recorded.

X Wildlife Observed – coast range newts, dead catfish, and bull frogs were observed in the lake that rated a 2 for relative abundance of wildlife.

Grazing Infrastructure Maintenance – no fences were in the photo so this item would not be checked. However, an exclusionary fence is proposed for the back (south/southwest) side of the lake that would be included in the next photo.

Access Road Maintenance Observations – no secondary roads were in the photo.

X Yearly Rainfall in Inches from the closest rainfall station would be included at the end of the rainfall year on June 30th. Rainfall seasonal distribution would also be included. Thus far rainfall was below the 25-inch normal and distribution was poor with little or no rain in March and April.

X Invasive Species would also be noted along with their relative abundance 4– for purple star thistle and 3- including bull or milk thistle and Italian thistle in the photo. Thistles may be less abundant this year due to the lack of late season rains.

6.3 Adaptation

In summary, the choosing of the representative photo point and the checking of the monitoring items is part of the monitoring protocol. It is expected that a walking transect of the foreground and midground areas of the photo point be completed as a part of filling in the appropriate checklist items. Some photo points may be only representative of landscapes so no detailed checklist evaluations would be made other than to note landscape changes over time and the possible causes of such changes. The time spent at each photo point will necessarily be variable depending on the checklist requirements. Time may vary from a few minutes to about one half hour in most cases.

The results of the yearly monitoring will determine if any anticipated or unanticipated adaptive management changes are necessary. This plan attempts to foresee anticipated changes and proposes conservation management practices that are responsive to such changes. However, unforeseen changes may occur that may require plan updates, quantitative monitoring, or research, as determined by the MROSD.

7.0 REFERENCES

7.1 Plan Preparers

Orrin Sage, Ph.D Geological Sciences (emphasis sedimentology); Principal Sage Associates; California Board of Forestry Registered Certified Rangeland Manager #64. Certified Professional Erosion/Sediment Control #692. Agricultural Resources sections.

Cindy Sage, B.A. Zoology, M.A. Geological Sciences - environmental multidisciplinary degree in geology and biological resources; Owner Sage Associates. Natural Resources sections.

7.2 Persons/Organizations Consulted

Midpeninsula Regional Open Space District Representatives
Stella Cousins – Open Space Planner
Kirk Lenington – Resource Planner

Natural Resources Conservation Service
Jim Howard – Soils Survey information

True Family
Veronica True

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APPENDICES

A: Completed and Sample Monitoring Forms

B: California Rangeland Health Evaluation Matrix, NRCS 2007

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT
MINDEGO HILL RANCH GRAZING MANAGEMENT PLAN
PHOTO POINT MONITORING CHECKLIST #1 – PAGE #1 PHOTO #1

Monitors: Orrin Sage Cindy Sage **Date:** 5/1/08 **Location:** North side of Mindego Lake

DESCRIPTION OF MONITORING ITEMS: Limited to within Photo foreground

X **Rangeland-Habitat Health (if checked complete Checklist #2)**

X **Residual Dry Matter (RDM) Average Inches per Slope %:** 3" 0-30% >30%
To be measured 100 yards from lake

X **Plant Communities Observed:** Annual grassland, riparian, woodland **Perennial Grasses:*** 1

X **Wildlife Observed*:** 2 - coast range newts, dead catfish, and bullfrogs in lake

___ **Grazing Infrastructure Maintenance:** NA – fencing is proposed on south side of lake check once fencing is complete

___ **Access Road Maintenance Observations:** NA

X **Yearly Rainfall in Inches:** slightly below normal **Distribution Normal** – no, little to no rain in March or April

X **Invasive Species:*** 4 – purple star thistle 3 - bull or milk and Italian thistle

*Relative abundances: 1 –none seen; 2 – 1 to 10; 3 – 10 to 100; 4 - >100 plants or wildlife

See monitoring photo point location map for photo locations and direction of photos.

MIDPENINSULA REGIONAL OPEN SPACE DIST.

MINDEGO HILL RANCH GRAZING MANAGEMENT PLAN

RANGELAND-HABITAT HEALTH CHECKLIST #2 –

RANGE SITE: Fine Loamy DATE: 5/1/08 PAGE #1 PHOTO #1

Rangeland-Habitat Health Indicators	Extreme or Not Normal	Moderate to Extreme or Becoming Not Normal	Moderate or Changing From Normal	Slight to Moderate or Near Normal	None to Slight or Normal
Rilling					X
Water Flow Patterns		X			
Soil Pedestalling					X
Bare Ground Occurrence	X				
Gullying	X				
Wind Erosion or Deposition					X
Litter Movement	X				
Soil Surface Erosion Resistance					X
Soil Surface Loss					X
Surface Runoff/Plant Types					X
Soil Compaction Layers		X			
Plant Community Types	X				
Plant Mortality					NA
Litter Amount	X				
Yearly Plant Production					X
Invasive Plants	X				
Perennial Plant Reproduction					NA
Vicinity Yearly Rainfall: 19″ Average Year Vicinity Rainfall: slightly less than normal			Normal Year Distribution	___ Yes	X No poor in Mar. April
OBSERVATIONS: Invasive plants are common. Woodland trailing with bare ground.					
DISCUSSION ITEMS: Follow up monitoring this fall.					

NRCS 2007 Revisions

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT
Grazing Management Monitoring

Checklist 1: Photo Point Worksheet

PAGE # _____
PHOTO #_____

Date	Monitors	Location

Area monitored on this worksheet (circle one)

Photo subject only	All directions visible from site	1-5 acres around site	Other_____ _____

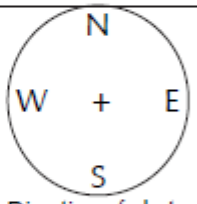
☐ Rangeland Habitat Health Monitoring (→ complete Checklist 2)
☐ Residual Dry Matter (RDM) Slopes 0-30%: _____inches or _____lbs/acre average
>30%: _____inches or _____lbs/acre average

☐ Plant communities observed (Circle all that apply. *Specify relative abundance and species if possible)

Annual grassland	Perennial grassland* _____	Pond/aquatic	Riparian/stream corridor	Brush/Chaparral
Oak/hardwood woodland	Evergreen and/or Redwood forest	Coastal scrub	*Invasive plants or weeds _____	Other:

Relative abundance: 1=none seen 2= 1-10 plants 3= 10-100 plants 4= >100 plants

☐ Wildlife observed: _____
☐ Infrastructure observations_____
☐ Roads/access observations_____
☐ Photo Notes_____



Direction of photo

Coordinates (GPS)
N
_____
E
_____

END OF SEASON SECTION:
Yearly rainfall: _____inches Distribution comments_____
Other follow-up_____
_____

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT
Grazing Management Monitoring

Checklist 2: Rangeland-Habitat Health

PAGE # _____
PHOTO #_____
DATE _____

Rangeland-Habitat Health Attributes	Extreme or Not Normal	Moderate to Extreme/ Not Normal	Moderate or Changing from Normal	Slight to Moderate or Near Normal	None to Slight or Normal
Rilling					
Water Flow Patterns					
Soil Pedestalling					
Bare Ground					
Gullying					
Wind Erosion or Deposition					
Litter Movement					
Soil Surface Erosion Resistance					
Soil Surface Loss					
Plant Community & Infiltration					
Soil Compaction					
Plant Community Types					
Plant Mortality					
Litter Amount					
Yearly Plant Production					
Invasive Plants					
Perennial Plant Reproduction					

Vicinity Rainfall:_____ Normal Year? ☐Yes ☐No
Avg. Year Vicinity Rainfall_____

Conclusions:

Comments:

CALIFORNIA RANGELAND HEALTH EVALUATION MATRIX

Office: _____ Site name/ID: _____

Authors: _____ Revision Date: _____

Indicator	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
	---------- *Departure from Reference Sheet* ----------				
1. Rills					
Generic Descriptor: (rills on this site are very unusual due to annual disruption of flow patterns and turnover of herbaceous cover)	Rill formation is severe and well defined throughout most of the site.	Rill formation is moderately active and well defined throughout most of the site.	Active rill formation is slight and infrequent intervals; mostly in exposed areas.	No recent formation of rills; old rills have blunted or muted features.	No rills present.
2. Water Flow Patterns					
Generic Descriptor: (this indicator is usually obliterated by annual growth and rate of breakdown of herbaceous material, resulting in obscured features)	Water flow patterns evident in association with obvious soil detachment and soil deposition.	Water flow patterns more numerous and extensive than expected; deposition and cut areas common; occasionally connected.	Number and length of water flow patterns nearly match what is expected for the site; erosion is minor with some instability and deposition.	Number and length of water flow patterns match what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short.	No water flow patterns present.
3. Pedestals and/or Terracettes					
Generic Descriptor: (this indicator is usually obliterated by annual growth and rate of breakdown of herbaceous material, resulting in obscured features)	Any evidence of pedastalling and/or Terracettes common and frequently interconnected.	Pedestals none; Terracettes occasionally continuous.	Pedestals none; Terracettes small and rarely continuous.	Discontinuous and small terracettes, pedestals none.	No pedestals and/or Terracettes present.
4. Bare Ground					
Generic Descriptor: (will fluctuate in response to climatic conditions - also see 14. Litter Amount)	Bare ground in winter and spring is greater than 35%; summer and fall is greater than 80%	Bare ground in winter and spring is 15 to 35%; summer and fall is 60 to 80%	Bare ground in winter and spring is 10 to 15%; summer and fall is 50 to 60%	Bare ground in winter and spring is 5 to 10%; summer and fall is 40 to 50%	Less than 40% in summer and fall; less than 5% winter and spring.

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	Departure from Reference Sheet				
Indicator	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
5. Gullies					
Generic Descriptor	Evidence of active gullies with multiple nick points or head cuts; vegetation only occurring above nick points or head cuts.	Active gullies with limited active erosion; stabilizing vegetation present throughout half or more of the eroding features.	Stabilized gullies present and potential for remobilization during extreme storm events likely.	Historic gullies completely stabilized; remobilization during extreme storm events unlikely.	No gullies present.
6. Wind Scoured, Blowout, and/or Depositional Areas					
Generic Descriptor	Extensive.	Common.	Occasionally present.	Infrequent and few.	None present.
7. Litter Movement (wind or water)					
Generic Descriptor: (this indicator is usually obliterated by annual growth and rate of breakdown of herbaceous material, resulting in obscured features)	Extreme: concentrated around obstructions. Most size classes have been displaced	Moderate to extreme: loosely concentrated near obstructions. Moderate to small size classes of litter have been replaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly to Moderately more than expected for the site with only small size classes of litter being displaced	Matches what is expected for the site with a fairly uniform distribution of litter.
8. Soil Surface Resistance to Erosion					
Generic Descriptor: (biological crusts may be present but are usually undetectable)	Soil surface aggregates uncommon. Soil stability less than 2.75 (1-6 scale). Soil surface appearing powdery with little shear strength	Soil surface aggregates uncommon and/or patchy across the site. Soil stability ranges from 2.75 to 4.0 (1-6 scale).	Soil surface aggregates moderately reduced throughout the site. Soil stability ranges from 4.0 to 4.25 (1-6 scale)	Soil surface aggregates common throughout the site with the exception of recently disturbed areas. Soil stability ranges from 4.25 to 4.5 (1-6 scale)	Matches what is expected for the site. Surface soil is stabilized by organic matter decomposition products. Soil stability rating 4.5 to 5 (1-6 scale). Surface soil aggregates present and common.
9. Soil Surface Loss or Degradation					
Generic Descriptor	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded, than that in subsurface horizons. No distinguishable difference in subsurface organic matter content	Soil loss or degradation severe throughout the site. Minimal differences in soil organic matter content and structure of surface and subsurface layers	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter is significantly reduced	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Soil surface horizon intact. Soil structure and organic matter content match that expected for the site

Indicator	Departure from Reference Sheet: Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
10. Plant Community Composition and Distribution Relative to Infiltration and Runoff					
Generic Descriptor	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately decreased due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Infiltration and runoff are not affected by any changes in plant community composition and distribution. Any changes in infiltration and runoff can be attributed to other factors (e.g. compaction).
11. Compaction Layer (below soil surface)					
Generic Descriptor: (weak platy structure is common across site but not indicative of compaction)	Compaction levels similar to trailed areas across most of the site; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately widespread; moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	Compaction restricted to livestock trails which are infrequent across the site. Not restrictive to water movement and root penetration.
12. Functional / Structural Groups (F/S Groups)					
Generic Descriptor: (typically annual grassland with frequent shifts in Mediterranean annual functional groups - also see 16. Invasive Plants)	Number of F/S groups greatly reduced and/or Relative dominance of F/S groups has been dramatically altered and/or Number of species within F/S groups dramatically reduced.	Number of F/S groups reduced and/or One dominant group and/or one or more sub-dominant groups replaced by F/S groups not expected for the site and/or Number of species within F/S groups significantly reduced.	Number of F/S groups moderately reduced and/or One or more sub-dominant groups replaced by F/S groups not expected for the site and/or Number of species within F/S groups moderately reduced.	Number of F/S groups slightly reduced and/or Relative dominance of F/S groups has been modified from the expected for the site and/or Number of species within F/S groups slightly reduced.	F/S groups and number of species in each group closely match that expected for the site.
13. Plant Mortality/Decadence					
Generic Descriptor: (if no perennial plants present in site description, rate as None to Slight)	Dead and/or decadent plants are common.	Dead plants and/or decadent plants are somewhat common.	Some dead plants and/or decadent plants are present.	Slight plant mortality and/or decadence.	Plant mortality and/or decadence match that expected for the site.

Indicator	Departure from Reference Sheet: Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
14. Litter Amount					
Generic Descriptor: (litter amounts will fluctuate; anticipate higher litter amounts following a single drought season and lower litter amounts following seasonal conditions that favor rapid decomposition, persistent species excepted, also see 16. Invasive Plants)	Largely absent of dominant relative to site potential and weather.	Greatly reduced or increased relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Amount is what is expected for the site potential and weather.
15. Annual Production					
Generic Descriptor: (typically annual grassland with frequent shifts in productivity)	Less than 20% of potential production for the site based on recent weather.	20 to 40% of potential production for the site based on recent weather.	40 to 60% of potential production for the site based on recent weather.	60 to 80% of potential production for the site based on recent weather.	Exceeds 80% of potential production for the site based on recent weather.
16. Invasive Plants					
Generic Descriptor: (also see CA state Invasive Species list; typical species include members of the mustard family and Yellow Star Thistle. Naturalized Mediterranean species are not considered invasive.)	Dominate the site.	Common throughout the site.	Scattered throughout the site.	Present primarily in disturbed areas within the site.	If present, composition of invasive species matches that expected for the site.
17. Reproductive Capability of Perennial Plants.					
Generic Descriptor: (if no perennial plants present in site description, rate as None to Slight)	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is moderately reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is slightly reduced relative to recent climatic conditions.	Capability to produce seed or vegetative tillers is not reduced relative to recent climatic conditions.