Midpeninsula Regional
Open Space District

R-24-156
Meeting 24-32
December 11, 2024

AGENDA ITEM 12

AGENDA ITEM

Approval of Rangeland Management Plans for Multiple Grazing Units: Johnston Ranch Grazing Unit in Miramontes Ridge Open Space Preserve, Cloverdale Ranch and Butano Farms Grazing Units in Cloverdale Ranch Open Space Preserve, and the South Cowell Addendum to the Elkus-Lobitos Grazing Unit in Purisima Creek Redwoods Open Space Preserve.

GENERAL MANAGER'S RECOMMENDATIONS

1. Adopt the Rangeland Management Plans for the Johnston Ranch Grazing Unit, Cloverdale Ranch and Butano Farms Grazing Units, and the South Cowell Addendum to the Elkus-Lobitos Grazing Unit.

2. Amend the Johnston Ranch Uplands Preliminary Use & Management Plan, the Cloverdale Ranch Preliminary Use & Management Plan, and the South Cowell Property Preliminary Use & Management Plan to reflect the adoption of the Rangeland Management Plans.

SUMMARY

In support of the Midpeninsula Regional Open Space District's (District) Coastside mission of protecting and restoring the natural environment, preserving rural character, and encouraging viable agricultural use of land resources, the General Manager recommends adopting Rangeland Management Plans (RMPs) for properties that have come under District ownership in the last two years: the Johnston Ranch Grazing Unit in Miramontes Ridge Open Space Preserve, Cloverdale Ranch and Butano Farms Grazing Units in Cloverdale Ranch Open Space Preserve, and the South Cowell Addendum to the Elkus-Lobitos Grazing Unit in Purisima Creek Redwoods Open Space Preserve. The RMPs set specific grazing parameters and prescriptions to meet the District's conservation grazing program goals for maintaining and enhancing the biodiversity of threatened grassland habitat, managing vegetation fuel for fire protection, and supporting local agricultural uses.

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 and agricultural heritage. When District boundaries expanded in 2004, a commitment to preserve agricultural land and rural character, and encourage viable agricultural use of land resources was made to the Coastside community and embedded in the District's Coastside mission statement:

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 18,000 acres of open space and agricultural land on the San Mateo County Coast, including more than 50 percent of San Mateo County's grazed lands. The District has invested more than $42 million in land preservation, environmental restoration, and ecologically sensitive public access on these preserved coastal properties.

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

Conservation grazing differs from traditional livestock production because its primary goal is to support conservation efforts by enhancing grassland habitat biodiversity, including protecting vital pollinators. The District uses conservation grazing as a critical tool for managing approximately 14,000 acres of coastal rangelands for ecological health, biodiversity, and wildland fire safety (Attachment 1). 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.

To accomplish the District's coastside mission and conservation grazing program goals, an RMP is developed for each grazing site that sets specific management parameters, such as stocking rates, class of livestock, seasonality, and duration of grazing activity. The RMP is customized and specific to the property's rangeland characteristics and provides management guidance for resources unique to the property.

DISCUSSION

The General Manager recommends adopting three RMPs (Attachments 2-4) for grazing properties that closed escrow in the last 2 years, including the Johnston Ranch Grazing Unit in Miramontes Ridge Open Space Preserve, Cloverdale Ranch and Butano Farms Grazing Units in Cloverdale Ranch Open Space Preserve, and the South Cowell Addendum to the Elkus-Lobitos Grazing Unit in Purisima Creek Redwoods Open Space Preserve. These RMPs were prepared for the District while the properties were still under Peninsula Open Space Trust (POST) ownership. While the ownership information is thus out of date in the RMPs (POST is listed as the owner of each property) the remaining information in the RMPs is accurate. These RMPs document existing resources and current uses on each property and include recommendations for access road improvements, additional water infrastructure, fencing, brush encroachment management, and annual monitoring to ensure that conservation goals are met. With an emphasis on protecting the site's unique biological resources and agricultural heritage, each RMP is well-aligned with the District's overall mission, Agricultural Policy, Conservation Grazing Management Policy, and the Coastal Service Plan. In all three cases, the RMPs were authored by Clayton Koopmann of Koopmann Rangeland Consulting. Mr. Koopmann is a California Board of Forestry licensed Certified Rangeland Manager (#M100) and was retained by the District to develop new and updated RMPs while the properties were still under POST ownership. Mr.

Koopmann relied on his expertise as a rangeland manager, his familiarity with the San Mateo County Coast, and input from the existing grazing tenants to develop the plans. After development, all three RMPs were sent to the San Mateo County Farm Bureau for comment. The Farm Bureau did not submit any comments regarding the RMPs under consideration.

Grazing Unit Descriptions

Johnston Ranch
The District purchased the Johnston Uplands Ranch property (Attachment 2) from Peninsula Open Space Trust (POST), closing escrow in 2024, and assumed POST's existing grazing tenant, Tom Pacheco. The approximately 868-acre property is located adjacent to the southeastern city limits of Half Moon Bay in San Mateo County, California. The property lies east of State Highway 1 (Attachment 4). The property includes approximately 650 acres of rangelands of which 311 acres are currently being grazed, 7 acres of dryland hay farming, and a 1-acre barnyard area. The RMP recommends continued year-round grazing with an average stocking rate[1] of 365.6 Animal Unit Months (AUMs, equivalent to 31 cows year-round). In the future, the District may evaluate the restoration of riparian habitat on some of the acreage adjacent to Arroyo Leon that is currently used for hay farming and is currently working on a project with San Mateo Resource Conservation District to improve the existing stock pond and provide a new off stream storage pond for agricultural use.

Cloverdale Ranch
The approximately 6,472-acre property is located adjacent to the southern boundary of the town of Pescadero in San Mateo County, California. In 2023, the District purchased approximately 5,100 acres of Cloverdale Ranch (Attachment 3) from POST in two phases, including the Phase I purchase of 1,800 acres in fee title and the Phase II purchase of 3,300 acres in a combination of fee and partial interest. At the time of acquisition, the District and POST entered into an agreement providing the District exclusive use and management of the upland portions of the Phase II partial interest parcels while POST retained exclusive use of the farmland portions of the parcels. In 2023, the District also entered into an option agreement with POST to purchase the 1,200-acre Phase III portion of Cloverdale Ranch in 2025/26 and to manage the Phase III area under a lease and management agreement until an option decision was made. At the time of the Phase I and II purchases, the District assumed POST's existing grazing tenants, Erik & Doniga Markegard (Goat Ranch, Hidden Valley Ranch, and Holm Ranch) and Reno Dinelli (Butano Farms). Both tenants are currently under a District lease. Approximately 4,058 acres of the property are included as part of Grazing Units. The RMP recommends continued year-round rotational grazing with an average stocking rate[1] of 1,802 AUMs or 150.0 animal units year-round (46 cows year-round on Butano Farms and 104 cows year-round on Goat Ranch/Hidden Valley/Holm Ranch areas).

South Cowell Addendum to Elkus-Lobitos
The District purchased the South Cowell property in two phased transactions from POST in 2020 and 2023 (Attachment 4). The District assumed POST's existing grazing tenant, Vince Fontana, and folded the lease and management of the South Cowell area into the contiguous Elkus-Lobitos Grazing Unit. Approximately 367 acres of the South Cowell upland property east of

[1] The stocking rate will vary and is determined by the Conservation Grazing Program Manager and District Rangeland Ecologist, who perform annual monitoring of residual dry matter (RDM) and periodic monitoring of forage status during the growing season.

Verde Road is suitable for livestock grazing. The RMP recommends continued year-round rotational grazing or seasonal rotational grazing with an average stocking rate[1] of 288 AUMs or 24 animal units year-round.

AMENDMENT TO PRELIMINARY USE AND MANAGEMENT PLAN

The project consists of amending the District's Preliminary Use and Management Plan for Johnston Ranch Uplands at Miramontes Ridge Open Space Preserve, Cloverdale Ranch Open Space Preserve, and the South Cowell Property at Purisima Creek Redwoods Open Space Preserve to allow for the continuation of cattle grazing under specific prescriptions and range management practices set forth in the rangeland management plans for Johnston Ranch Grazing Unit, Cloverdale Ranch and Butano Farms Grazing Units, and the South Cowell Addendum to the Elkus-Lobitos Grazing Unit.

FISCAL IMPACT

The RMPs recommend future infrastructure improvements to roads, fencing, and water systems. While most of these will be considered after District Board of Directors (Board) approval of the RMPs, critical maintenance tasks, such as vegetation management and corral replacement, have been completed under the current fiscal year's Budget and Action Plan. Funding for future infrastructure improvements will be requested in future fiscal years as part of the annual Budget and Action Plan process.

In terms of revenue, annual grazing rent varies depending upon available forage, the number of animal units managed during the season, and the market price of beef cattle. The District can expect annual rent income to remain near the amounts shown below. Over the last fiscal year (July 1, 2023-June 30, 2024), grazing rent was the following:

- Johnson Ranch: $5,669.20
- Cloverdale Ranch: $24,730.53
- South Cowell: $12,658.96 (this figure includes rent collected from the Elkus Uplands and Lobitos Ridge properties)

PRIOR BOARD AND COMMITTEE REVIEW

Johnston Ranch

- **November 10, 2021:** The Board approved the proposed purchase from POST of the Johnston Ranch Uplands Property and adoption of a Preliminary Use & Management Plan (R-21-132, meeting minutes)

Cloverdale Ranch

- **December 10, 2022:** The Board approved the phased purchase from POST of the Cloverdale Ranch Uplands properties and adoption of a Preliminary Use & Management Plan (R-22-140, meeting minutes)

South Cowell Ranch

- **October 28, 2020:** The Board approved a partial purchase from POST of the South Cowell property and adoption of a Preliminary Use & Management Plan (R-20-122, meeting minutes)

- **April 12, 2023:** The Board approved the purchase from POST of the remaining interest in the South Cowell property (R-23-40, meeting minutes)

PUBLIC NOTICE

Public notice was provided as required by the Brown Act. Public Notice was sent to the conservation grazing interested parties, the Lessees, and posted on the District's webpage.

CEQA COMPLIANCE

Pursuant to Section 15162 the California Environmental Quality Act (CEQA) Guidelines, the District has determined that the actions in the proposed RMPs for the Johnston Ranch Grazing Unit and Cloverdale Ranch and Butano Farms Grazing Units, and South Cowell Addendum to the Elkus-Lobitos Grazing Unit are consistent with the Initial Study / Mitigated Negative Declaration (IS/MND) for the Open Space Maintenance and Restoration Program (OSMRP) (SCH #2021080129), adopted by the Board on September 22, 2021 (Resolution No. 21-32); and the Final Environmental Impact Report (FEIR) to the Integrated Pest Management Program (IPMP), and Addenda thereto, adopted by Board Resolution No. 14-37 on December 10, 2014.

The OSMRP covers three general categories of activities: (1) Routine Maintenance Activities; (2) New Facilities and Improvements; and (3) Restoration and Enhancement Activities. Recommended management and improvement actions identified in the Johnston Ranch and Cloverdale RMPs, and South Cowell addendum to the Elkus-Lobitos RMP are covered under the three OSMRP categories as follows:

Recommended Management and Improvement Actions	**OSMRP Category**
Conservation grazing	Restoration and Enhancement
Treatment of invasive species/vegetation management*	
Repair and installation of new fencing and corrals	New Facilities and Improvements
Repair to roads	Routine Maintenance
Repair/improvements to water infrastructure (ranching infrastructure)	New Facilities and Improvements and Routine Maintenance
Stockpond management and improvements/restoration	Restoration and Enhancement and Routine Maintenance

*Vegetation management activities are also covered under the District's IPMP and FEIR to the IPMP.

The District has determined that the actions in the proposed RMPs for the Johnston Ranch Grazing Unit and Cloverdale Ranch and Butano Farms Grazing Units, and South Cowell Addendum to the Elkus-Lobitos Grazing Unit are consistent with the activities and determinations established in the IS/MND for the Open Space Maintenance and Restoration Program and FEIR to the Integrated Pest Management Program (for vegetation management activities) and would not result in new or more severe significant environmental impacts, nor would the Project require additional mitigation measures.

NEXT STEPS

If the Board approves the General Manager's recommendations, staff will implement prescribed measures outlined in each RMP. Staff will work with the grazing tenants to implement components of each RMP and associated environmental mitigation measures.

Additionally, the District Agricultural Policy directs staff to initiate a competitive Request for Proposal (RFP) process that will select grazing tenants for each grazing unit once RMPs are developed and adopted by the Board. Accordingly, District staff will include the four (4) Grazing Units that are contained in these three RMPs in a forthcoming RFP, that will be released Winter 2024-2025. Successful applicants will be awarded new five-year grazing leases with the opportunity for two additional five-year extensions, allowing for a total maximum lease of 15 years.

Attachments
1. Grazing Property Maps
2. Johnston Ranch Uplands Rangeland Management Plan
3. Cloverdale Coastal Ranches Rangeland Management Plan
4. ADDENDUM No. 1: Elkus Ranch Uplands and Lobitos Ridge Rangeland Management Plan

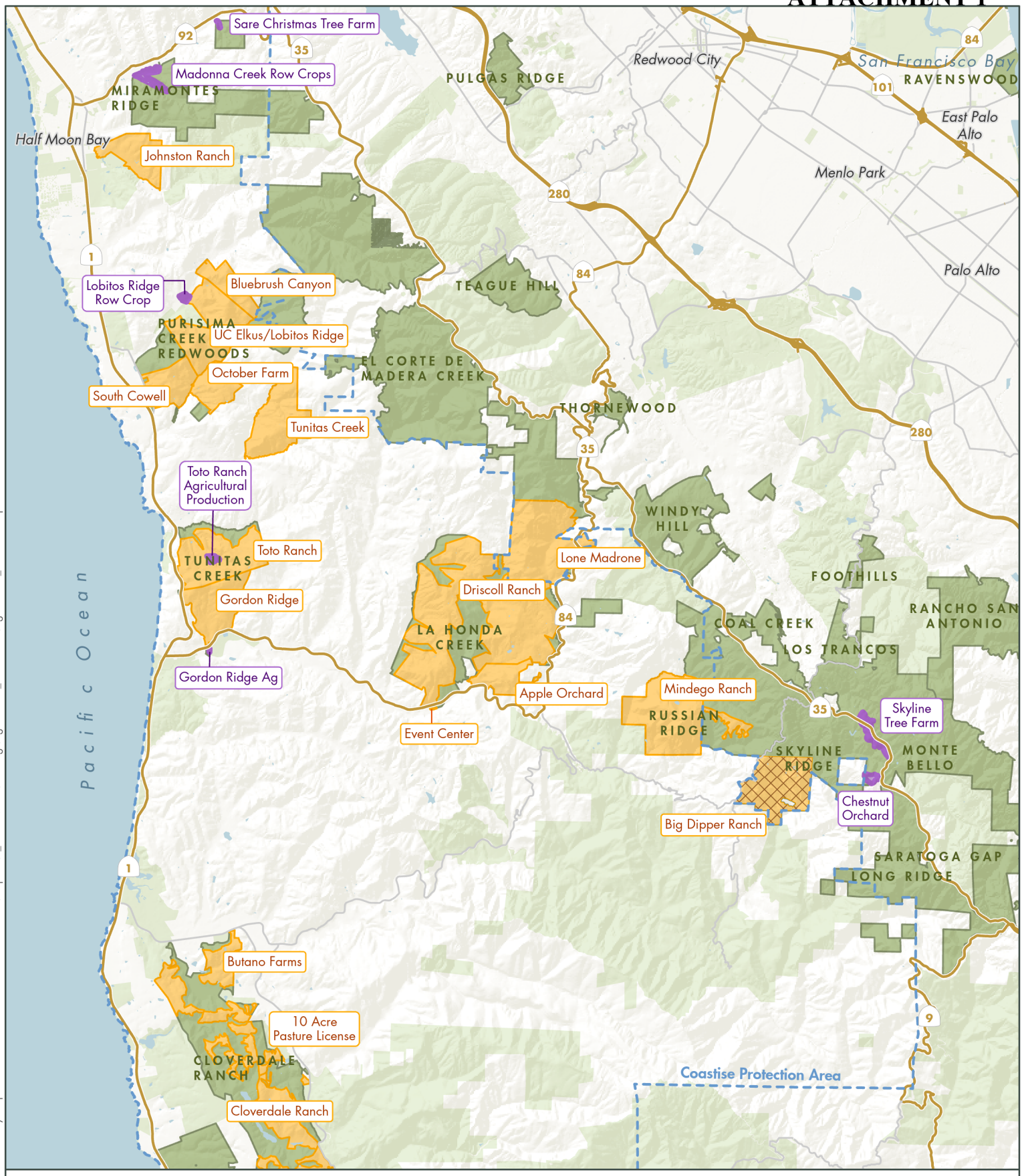
Responsible Department Head:
Brandon Stewart, Land & Facilities Department
Jane Mark, Planning Department

Prepared by:
Matthew Shapero, Conservation Grazing Program Manager
Jared Hart, Senior Planner
Coty Sifuentes-Winter, Senior Resource Management Specialist

Contact person:
Matthew Shapero, Conservation Grazing Program Manager

Graphics prepared by:
Francisco Lopez, GIS Technician

ATTACHMENT 1



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Created By: flopez

Midpen Agricultural Properties

- Midpen preserves
- Other protected lands
- Agricultural crop lease area
- Grazing lease area
- Future grazing lease area

Midpeninsula Regional Open Space District
(Midpen)
2/29/2024

Miles
0 2.5 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.

ATTACHMENT 1

Johnston Ranch Uplands Grazing Unit

Gate

- Other
- Present

Fence and Natural Barrier

- Fence - Existing

Lease Area

- Agricultural
- Grazing

Preserve Boundary (fill)

Midpeninsula Regional Open Space District *(MROSD)*

11/21/2024

ft

0 1,125 2,250

MIDPENINSULA REGIONAL OPEN SPACE

Data Source(s): Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Web AppBuilder for ArcGIS

ATTACHMENT 1

Cloverdale Ranch (Holm, HV, and Goat Ranches) and Butano Farms Grazing Units

Lease Area

Grazing

Preserve Boundary (fill)

Midpeninsula Regional
Open Space District
(MROSD)
11/21/2024

ft
0 4,550 9,100

MIDPENINSULA REGIONAL OPEN SPACE

Data Source(s): Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Web AppBuilder for ArcGIS

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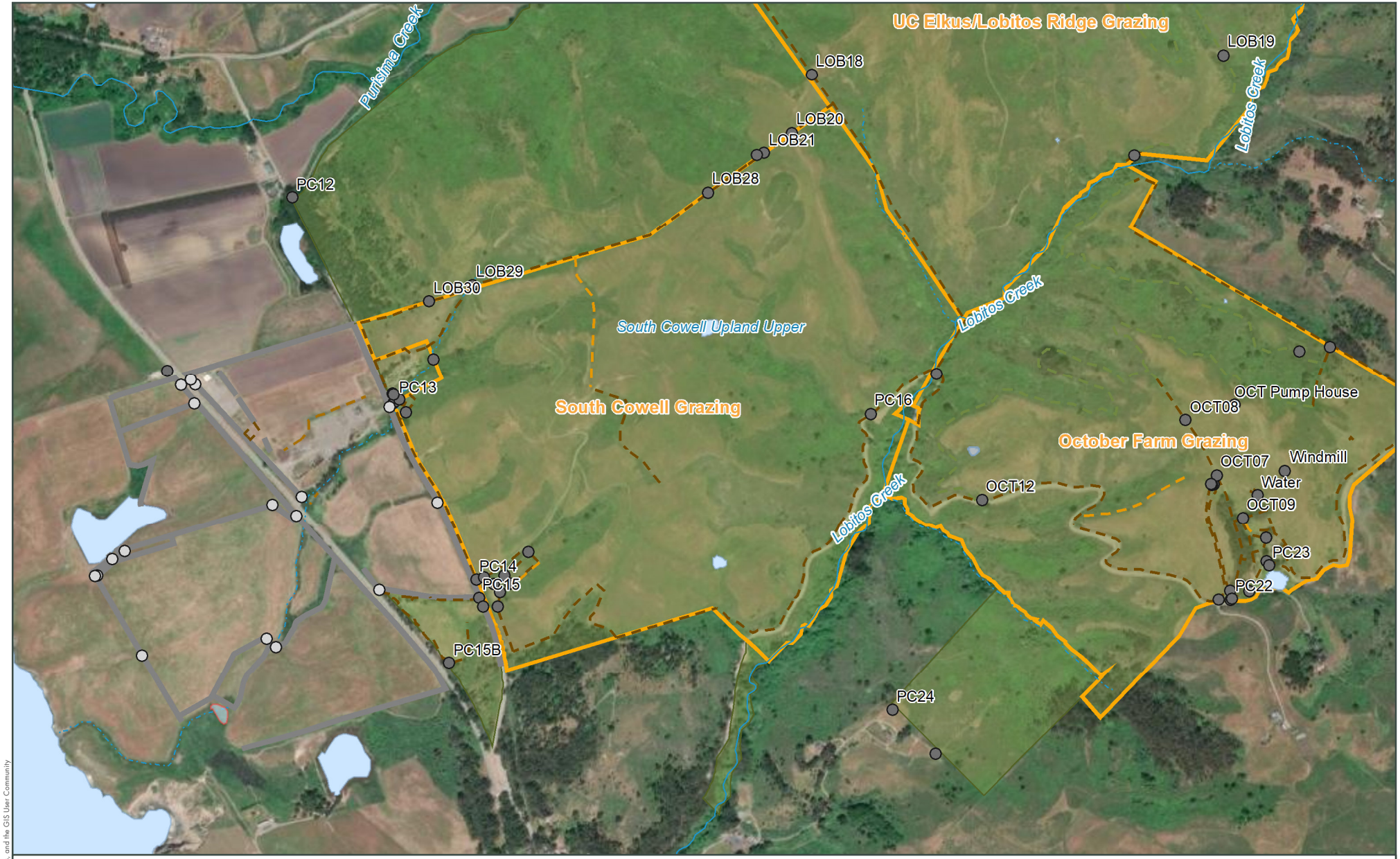


South Cowell Addendum to Elkus-Lobitos Grazing Unit

Gate
- Other
- Present

Fence and Natural Barrier
- Fence - Other
- Fence - Existing
- Temporary
- Abandoned
- Natural Barrier

Lease Area
- Grazing
- Preserve Boundary (fill)

Midpeninsula Regional Open Space District
(MROSD)
11/21/2024

ft
0 1,125 2,250

Data Source(s): Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Web AppBuilder for ArcGIS

ATTACHMENT 2

Johnston Ranch Uplands

Rangeland Management Plan

Prepared for:

Midpeninsula Regional Open Space District

5050 El Camino Real

Los Altos, CA 94022

Prepared by:

Koopmann Rangeland Consulting September 2019

under Peninsula Open Space Trust property ownership

Adopted by the Midpeninsula Regional Open Space District December 11, 2024

CONTENTS

VII. Management Recommendations & BMPs

VIII. Improvements & Maintenance Recommendations

IX. Recommended Monitoring Protocols

References

Certification

Attachments:

I. PROPERTY SUMMARY INFORMATION:

Owner(s): Midpeninsula Regional Open Space District

Contact Person: Michael Williams, Real Property Manager

Phone Number: (650) 691-1200

Property Address: 1749 Higgins Canyon Road
Half Moon Bay, CA 94019

Mailing Address: 330 Distel Circle
Los Altos, CA 94022

Date of Property Acquisition: Estimated November 2020

Conservation Easement: None

Easement Holder: N/A

Major watershed: Arroyo Leon

Type of land use: Livestock Grazing / Agriculture

Zoning: PAD, CZ – Planned Agricultural District, Coastal Zone
RM-CZ, CD – Resource Management-Coastal Zone, Coastal District

Location Description: Johnston Ranch Uplands is located adjacent to the southeastern city limits of Half Moon Bay in San Mateo County, California. The property lies directly east of State Highway 1. Johnston Ranch Uplands is bordered by cultivated farmland to the south and southwest, urban development to the northwest, and by undeveloped private property to the east and north. The property is bisected by Arroyo Leon which provides over a mile of perennial stream frontage. Access to the Johnston Ranch Uplands is from Higgins Canyon Road which also bisects the property.

II. EXECUTIVE SUMMARY: Rangeland Management Plan (RMP)

PROPERTY DESCRIPTION & HISTORY:

The Johnston Ranch property (Ranch) is located within the San Mateo County Coastside Protection Area in unincorporated San Mateo County along the southeastern boundary of the City of Half Moon Bay, California (Exhibit-A). The Ranch encompasses 868± acres, acquired by Peninsula Open Space Trust (POST) during the 1990s in two acquisitions: the Cassinelli Ranch and the Yoshikowa property. The Ranch lies east of and adjacent to State Highway 1, divided into seven (7) individual parcels, bisected by Higgins Canyon Road. There is a 20-acre in-holding on the Johnston Ranch, owned by the City of Half Moon Bay, where the historic Johnston House is located, and one 5-acre private in-holding located directly across from the Johnston House parcel, used as a processing center for locally grown Brussel sprouts (Exhibit-B). The Ranch is primarily west-southwest facing and topography ranges from flat prime agricultural land to upland coastal scrub. The level to gently rolling areas of the Ranch, outside of the farm fields, support annual grasslands and coastal scrub habitat with moderate coyote brush encroachment. The steeper canyon areas and riparian corridors are comprised of dense brush, woody vegetation and several established willow stands. Elevation ranges from 100 feet near Arroyo Leon in the northwest corner to 710 feet on the ridge top along the northeast corner.

Arroyo Leon cuts diagonally across the Ranch providing approximately 6,300 feet of perennial stream frontage. Dense willow stands and abundant riparian vegetation line the entirety of the stream channel throughout the property. The Arroyo Leon is a steelhead-bearing stream and an important tributary within the Pilarcitos Creek watershed. Two dams in Arroyo Leon were historically used to back up water in the channel which was then diverted into farm fields for irrigation. The dams are believed to have impacted fisheries habitat in the Arroyo Leon by restricting fish passage to upstream spawning grounds and are no longer in use.

Historically the Ranch uplands were used for production agriculture, with active row crop farming on the swales and ridge tops up until the 1970s but has since reverted back to rangeland. Presently much of the Ranch uplands are used for cattle grazing while the low-lying flats along Highway 1 and Higgins Canyon Road are still actively farmed. The Ranch uplands north of Higgins Canyon Road and the hayfield on the south side of Higgins Canyon Road have been leased to Tom Pacheco since the 1990s and the farmland has been leased to the Giusti Family since 1949. Livestock infrastructure includes recently repaired/replaced perimeter fence, a functional corral/processing facility, hay barn, two water troughs, and interior fences in disrepair. Water troughs are filled via water from a low production natural spring. A stockpond located north of the barn provides water for livestock and valuable habitat for wildlife.

A 227± acre portion of the Ranch is located on the south side of Higgins Canyon Road. It is comprised of grasslands and coastal scrub with heavy coyote brush encroachment. Currently, there is no vehicle access and there is no infrastructure in place to support grazing operations. This portion of the Ranch uplands was last grazed in the 1990's and only on a sporadic basis.

OWNERSHIP AND MANAGEMENT GOALS:

The Midpeninsula Regional Open Space District (Midpen) has identified approximately 650± acres of the Ranch uplands which they plan to purchase from POST in late 2020. The remainder of the Johnston Ranch, including the prime farmland and existing farm fields, will be acquired by the Giusti family.

Midpen's conservation grazing goals are to manage the Ranch uplands utilizing livestock grazing that is protective of natural resources and compatible with public access; to maintain and enhance the diversity of native plant and animal communities; manage vegetation fuel for fire protection; help sustain the local agricultural economy, and preserve and foster appreciation for the region's rural agricultural heritage. To achieve the goals of the conservation grazing program, this Rangeland Management Plan (RMP) will provide a framework around which resource managers, land managers, and grazing tenants can make rangeland management decisions on the Ranch with adaptive management changes. This RMP will focus on the 650± acres of the Johnston Ranch Uplands which Midpen intends to acquire from POST.

As stipulated in this RMP, conservation management practices are to be implemented by Midpen and the grazing lessee for all grazing areas of the Ranch and applied specifically to livestock grazing operations and rangeland management. Conservation management practices include but are not limited to; maintenance and construction of livestock water developments (including wildlife friendly spring development and onsite ponds), livestock fencing and corrals, ranch roads, and vegetation management to protect and enhance habitat for wildlife and native flora, water quality, and fire protection. Shrubland and forest areas that are not suitable for livestock grazing provide valuable wildlife habitat and should be managed to protect and enhance habitat value and connectivity for wildlife migration.

MANAGEMENT RECOMENDATIONS & RESPONSIBILITIES:

The Ranch should be operated by one lessee with a multi-year grazing lease. Conservation grazing using cattle should continue on rangeland portions of the Ranch. Cattle loading/off-loading and processing should continue to occur in the corral located within the farmyard area. Up to two (2) ranch horses used for cattle grazing operations maybe kept on the property.

The Ranch should be grazed year-round, dependent upon available forage and livestock water. If interior pasture fencing is repaired, cattle should be rotationally grazed to benefit native flora and wildlife habitat. If available forage and/or stock water is not adequate to support grazing livestock, cattle should temporarily be removed from the Ranch and/or grazing temporarily restricted to seasonal use.

The estimated stocking rate for an average forage production year is 365.6 Animal Unit Months (AUMs) or 30.0 animal units year-round but could be significantly increase with a reduction in coyote brush in the grasslands. Stocking rates for the Ranch will vary annually based on available forage and water and should be adjusted accordingly to accommodate available resources.

The monitoring program for grazed Midpen land must ensure that specified rangeland uses are in compliance with the applicable land use regulations and the land stewardship goals, objectives, and implementing guidelines. Midpen staff will use rangeland/habitat health checklists and photo point monitoring forms to monitor grasslands annually in the fall prior to rainfall.

The portion of the Ranch uplands south of Higgins Canyon Road is not suitable for livestock grazing due to the lack of access, infrastructure, or livestock watering sources. It is best suited for ecologically sensitive recreation and viewshed and should be managed to protect and enhance habitat value.

III. Purpose of Rangeland Management Plan

The purpose of this RMP is to provide a framework for resource managers, land managers, and grazing tenants to make rangeland management decisions on the Ranch resulting in adaptive management changes to grazing practices, as needed (e.g. stocking rate reduction due to drought). The RMP addresses appropriate rangeland management practices for soil and water conservation, erosion control, pest management, nutrient management, water quality, and habitat protection on the Ranch.

This RMP should be reviewed at least every 10 years, or sooner, and updated in the event of significant changes in land use or management practices, or a change in ownership. An updated RMP may expand the specific plan for the conduct of commercial agricultural uses to include activities that are not currently being conducted on the Johnston Ranch Uplands, but that are consistent with the resource management policies and land management objectives of Midpen.

IV. Goals and Objectives of RMP

The goals and objectives of the Rangeland Management Plan are to:

A. Describe appropriate historic, current, and potential future uses.

B. Inventory existing agricultural resources, including soils, water sources, grassland vegetation, forage quality and production, croplands, and infrastructure.

C. Determine capacity for conducting viable agricultural uses.

D. Establish provisions for minimizing erosion and transport of potential pollutants into creeks.

E. Provide a list of Best Management Practices (BMPs) for climate related impacts, grazing standards, invasive species management, water resources and conservation.

F. Provide specific guidance for the conduct of agricultural uses to be considered in any conservation grazing lease agreement with tenant. The RMP will include, as appropriate, Animal Unit Equivalents (AUE), ranch forage production estimates, available forage, crop production estimates, and capacity for any other agricultural uses described in the RMP.

G. Incorporate as part of this RMP, the Coastal Mission, Goals, and Grazing Management Policies as outlined below.

The Coastal Annexation Area Mission Statement of Midpen is [1]:

"*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. The District will accomplish this mission as a cooperative endeavor with public agencies, non-profit organizations, and individuals with similar goals.*"

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

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.

GRAZING MANAGEMENT POLICIES:

Policy GM-1: Ensure that grazing is compatible with and supports wildlife and wildlife habitats.

Policy GM-2: Provide necessary infrastructure to support and improve grazing management where appropriate.

Policy GM-3: Monitor environmental response to grazing on District lands.

Policy GM-4: Utilize different livestock species to accomplish vegetation management objectives.

Policy GM-5: Preserve and foster existing and potential grazing operations to help sustain the local agricultural economy.

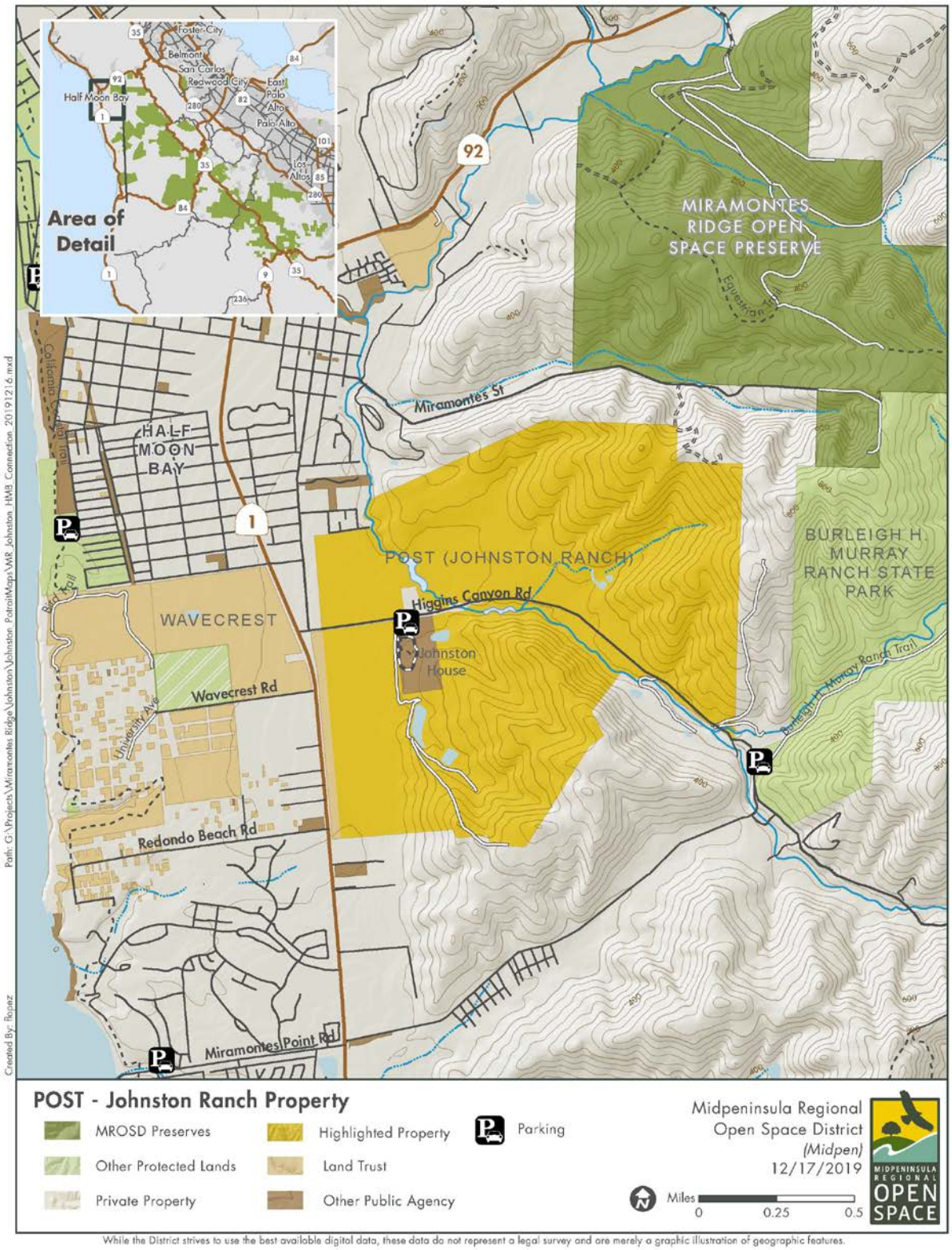
Policy GM-6: Provide information to the public about the region's rural agricultural heritage.

Policy GM-7: Provide public access in a manner that minimizes impacts on the grazing operation.

Policy GM-8: Grazing operations on District lands in the Coastside Protection Area will be managed in accordance with the policies established in the Service Plan for the San Mateo County Coastal Annexation Area.

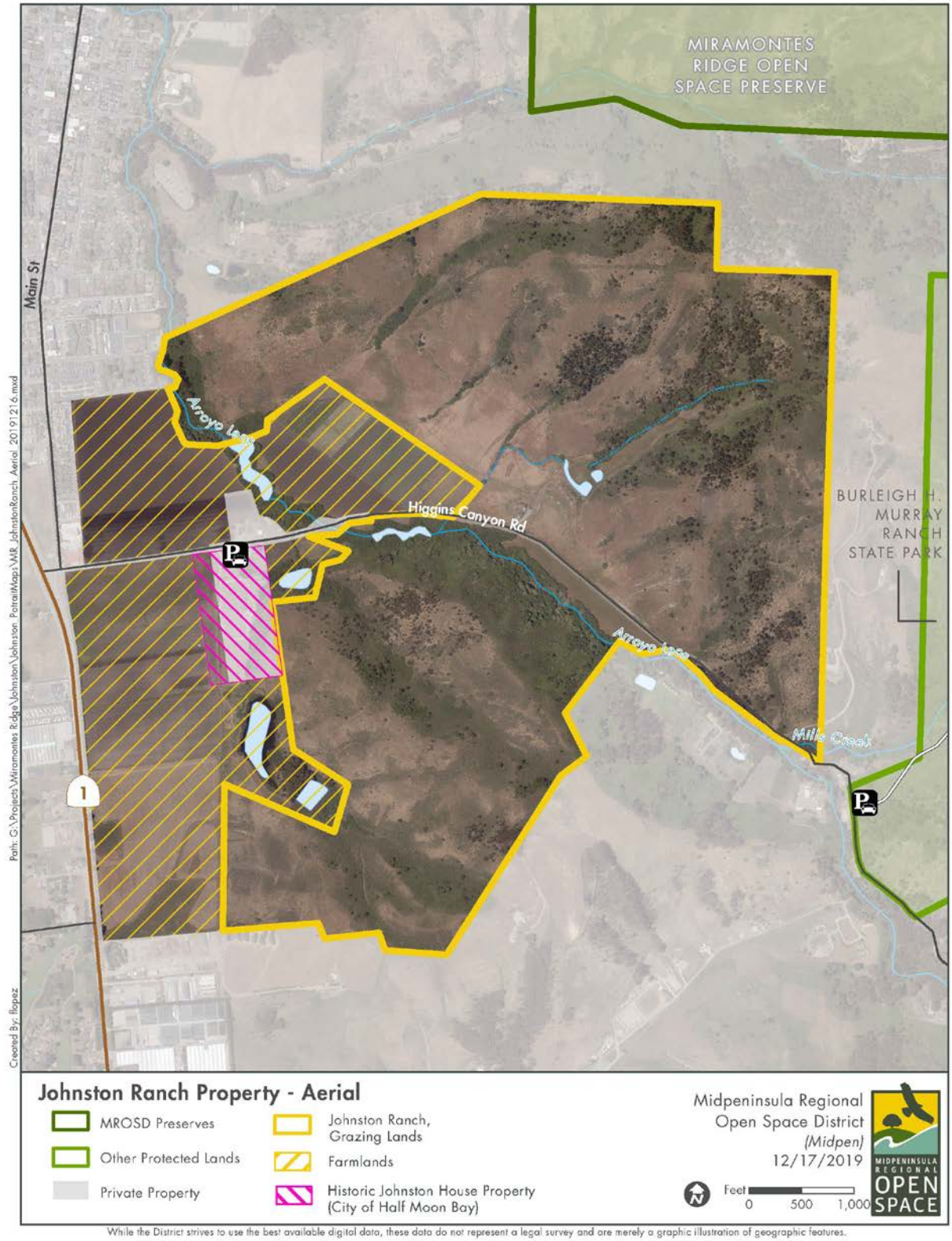
ATTACHMENT 2

EXHIBIT – A



ATTACHMENT 2

EXHIBIT – B



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.

V. Existing Resources and Infrastructure:

Agricultural resources include elements necessary to continue agricultural uses on the Johnston Ranch Uplands. These include appropriate soils, sufficient water, adequate forage, and supporting infrastructure. These agricultural resources are described below to establish the fact that the Ranch is capable, at a minimum, of sustaining the current agricultural uses and that it has the potential to sustain additional agricultural uses supported by the agricultural resources.

LAND USE INFORMATION

HISTORIC LAND USE:

James Johnston, a gold miner and saloon owner, moved to California during the gold rush era and eventually settled in the San Francisco region. On May 9, 1853, Johnston purchased 1,162 acres of the Miramontes Rancho de San Benito, which encompassed the southern part of Half Moon Bay [2], where he later built the historic Johnston House. The property was historically grazed with Holstein dairy cows and many of the hillsides and ridgetops were dryland farmed with hay and oats in addition to the flats near Arroyo Leon [3]. The property was divided and sold during the 1900s, but the property remained in active agricultural production with cultivated farming and livestock production. The farmland was leased to the Giusti family in 1949 and they continue to farm the flats to date. During the 1970's farming on the slopes and ridgetops ceased and the land reverted back to rangeland. Tom Pacheco began leasing the uplands for cattle grazing during the 1990s and still leases the property to date [3]. During the early 1990's developers planned to build a golf course on the property, but that plan was defeated by San Mateo County voters. The historic Johnston Ranch was acquired by POST in two acquisitions, the 647-acre Cassinelli Ranch in 1999 and the 215-acre Yoshikawa property in 2001, in an effort to protect the property from development, protect fisheries habitat in Arroyo Leon, and preserve the scenic viewshed by forming a greenbelt along the southeastern edge of Half Moon Bay. The historic Johnston House was acquired by the City of Half Moon Bay and is listed on the National Register of Historic Places.

CURRENT LAND USE:

POST currently owns and manages the Johnston Ranch Uplands. Approximately 276-acres of Ranch uplands is currently leased to Tom Pacheco for cattle grazing, with an additional 140-acres of the Ranch uplands adjacent to the leased grazing unit area also grazed by Pacheco periodically, per verbal agreement with POST. Approximately 227-acres of rangeland on the south side of Higgins Canyon Road is fallow and has not been grazed for decades. The 227-acre parcel is void of grazing infrastructure and access to the parcel is extremely limited with no vehicle access. Per a verbal agreement with POST, Pacheco dry-land farms approximately 7-acres between Higgins Canyon Road and Arroyo Leon where he produces oat hay for his grazing operation. In addition to cattle, Pacheco also keeps two (2) ranch horses on the property, used for day to day livestock management and husbandry. Midpen has identified approximately 650± acres of the Ranch uplands which they plan to purchase from POST in late 2020 [4] The remainder of the Johnston Ranch, including the existing farm fields, will be acquired by the Giusti family,

subject to an affirmative agricultural easement. Consistent with Midpen's Coastal Service Plan, lands in viable agricultural use when acquired will remain in that use while enhancing natural resource protection and planning for limited public access.

Current Land Uses	**Approximate Acres**
Livestock grazing (Beef Cattle with Limited Horse use)	415.1
Farmyard with Corral and Hay Barn	0.9
Dryland Hay Farming	7.0
Ungrazed grassland (south of Higgins Road)	227.0
Ranch Subtotal (to be acquired by Midpen)	**650.0**
Fields leased to John Giusti for row crop farming (to be retained by POST)	218.0
Ranch Total	**868.0**

SURROUNDING LAND USE:

The surrounding rural landscape is dominated by established farms and ranches used primarily for beef cattle production and row crop production. The highly productive flats in the region, where farmable, are ideal for certain vegetable crops, hay, and cut flower production. Publicly owned lands in the area, including Burleigh H. Murray State Park located one mile east, on Higgins Canyon Road, are used for low-impact public recreation such as hiking, , and equestrian use. The City of Half Moon Bay constructed a small parking lot and picnic area on the portion of the historic Johnston Ranch house parcel closest to Higgins Canyon Road. A volunteer organization opens the house to visitors once a month. The parking lot and picnic area are open to the public year-round.

The adjacent properties to the east, north, and south of the Johnston Ranch Uplands are mostly large, privately owned parcels comprised primarily of open space with a single residential unit on each. The land that borders the Ranch to the west includes cultivated farm lands with rangelands to the south. The west-northwest portion of the Ranch is bordered by urban development within the City of Half Moon Bay.

In a regional context, for San Mateo County, agricultural production continues to provide significant total gross revenue value of $142,700,000 annually, of which, livestock production accounted for $3,190,000 [5] in 2017. According to the San Mateo County Crop Report, livestock production has increased steadily since 2015, with a 14 percent increase from 2015 to 2016 and an 18 percent increase from 2016 to 2017.

Figure-1: Looking southwest from Johnston Ranch Uplands. Note the cultivated farm fields to the south and urban development in the town of Half Moon Bay to the west.

SOIL DESCRIPTION

The Johnston Ranch Uplands is comprised of over thirty soil series types [5] identified on the soils map produced by Midpen (Exhibit-C) and listed and quantified in Table-1 below. Soil composition on the property varies delineated by slope, aspect, and elevation. The dominant soil types mapped by the Soil Conservation Service (SCS) include: Tierra loam, Watsonville loam, Colma sandy loam, Gazos loam, and Soquel loam. Other less prevalent soil types mapped by the SCS include: Tierra clay loam, Gazos Lobitos silt loams, Colma loam, Botella clay loam, and gullied land. Of the mapped soil types, Botella clay loam and Soquel loam are classified as prime farmland by the U.S. Department of Agriculture's Land Inventory and Monitoring Project for the San Mateo Area [6]. Prime farmland soils encompass 25.9 acres on the Johnston Ranch Uplands, found on either side of Higgins Canyon Road east of the farmstead, including the 7-acre field that the tenant currently farms for hay.

The **Colma and Colma loam** (CmF3, ClE2, ClF2, ClD2) soils series consists of deep, well drained soils that formed in material weathering from softly consolidated or weakly consolidated marine sediments. Colma soils are on the foothills and have slopes of 9 to 75 percent. The mean annual precipitation is about 27 inches [6]. Used mainly for range and watershed lands, small areas have been cleared and planted to hay/silage. Where not farmed, typical vegetation composition consists of coyote brush, Lupine, and poison oak, with an understory of annual grasses and forbs with a few perennial grasses [6]. Colma soils are well drained with medium to rapid runoff, suitable for year-round use by grazing livestock without impacting soil stability or creating soil compaction provided prescribed levels of forage are left on the ground.

The **Gazos loam** (GbF2, GlC2, GlD2, GlE2, GlF, GoF3) soil series consists of moderately deep to bedrock, well drained soils that formed in material weathered from sandstone and shale. Gazos soils are on hills and have slopes of 9 to 75 percent. The mean annual precipitation is about 22 inches [6]. Used mostly for livestock grazing, a few areas have been cultivated for growing small grains and hay. Where not cultivated, vegetation primarily consists of annual grasses and forbs with brush and some oak trees [6]. Gazos loam soils are well drained with high to very high runoff and moderately slow permeability making them suitable for year-round grazing by livestock. It is important to leave adequate levels of forage on the soil surface to protect soil integrity and minimize the risk of erosion.

The **Tierra** (TcC2, TcD2, TeD3, TeE3, TeC2, TeD2, TeE2) soil series consists of deep, moderately well drained soils that formed in alluvial materials from sedimentary rocks. Tierra soils are on dissected terraces and low hills and have slopes of 2 to 50 percent. The mean annual precipitation is about 18 inches [6]. Used for grazing, growing grains, and growing small grains, and small areas for growing a large number of crops, though many cultivated areas have been reverted to grass. Where not cultivated, vegetation composition is primarily annual grasses and forbs [6]. Tierra soils are moderately well drained with slow to rapid runoff and very slow permeability. Tierra soils are suited to year-round livestock grazing, though areas with notably slow permeability are susceptible to soil compaction and grazing should be delayed until soil is firm enough to withstand grazing pressure, typically summer and fall months.

The **Soquel loam** (SkA, SkB) soil series consists of deep, poorly drained soils that occur along flood plains with slope ranges from 0 to 2 percent, thought the average slope is generally less than 1 percent [6]. This soil is easy to work/till, has a high-water holding capacity and is moderately permeable. Drainage is good and runoff is slow with little to no erosion hazard, although damage from streambank cutting can occur in stream channels. This soil is very important agriculturally as it is generally high in fertility and root penetration is very deep, producing high crop yields. Where not cultivated, vegetation typically consists of annual grasses, forbs, and a few coastal chaparral plants [6]. The Soquel loams comprise the prime agricultural soils on the Johnston Ranch. Soquel loam soils are suitable for year-round use by grazing livestock without impacting soil stability or creating soil compaction provided prescribed levels of forage remain.

The **Watsonville** (WmC2, WmB) soil series consists of deep, somewhat poorly drained soils that formed in alluvium. Watsonville soils are on old coastal terraces and valleys and have slopes of 0 to 50 percent. The mean annual precipitation is about 28 inches [6]. Watsonville soils are commonly used as irrigated pasture and to grow field crops, row crops, and specialty crops such as strawberries and Brussels sprouts. Where not cultivated, vegetation typically consists of annual grasses, forbs, and a few coastal chaparral plants [6]. These soils are somewhat poorly drained because perched water tables occur during periods of heavy water applications. Slow to rapid runoff and very slow permeability make Watsonville soils very susceptible to soil compaction. Livestock grazing should be delayed until dry summer months when soils are firm enough to withstand grazing pressure.

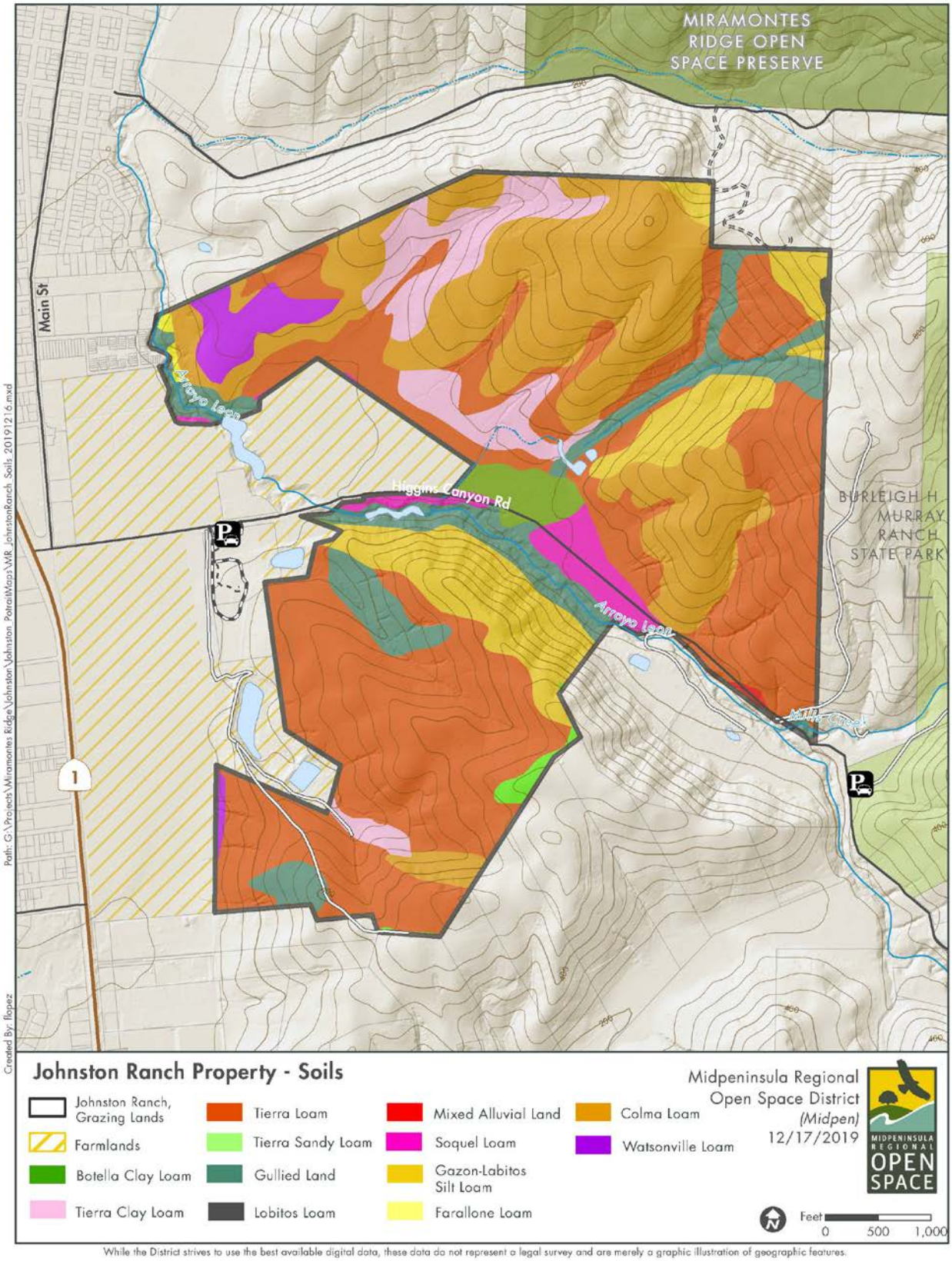
According to soil descriptions provided by the Soil Conservation Service, 567.1 acres of the Johnston Ranch Uplands are considered to have soils that are “eroded” or “severely eroded” which means they have a high probability to become eroded if soils and vegetation are not properly managed. On steeper, more erosion-prone slopes and riparian corridors susceptible to soil compaction or trailing, grazing should be delayed until soil is firm enough to withstand grazing pressure without impacting soil stability. Livestock grazing should be managed to protect the soil from erosion as loss of the surface layer can severely decrease forage productivity. The risk of erosion can be reduced by maintaining adequate plant cover and allowing sufficient residual dry matter (RDM) to remain on the soil surface at the conclusion of the grazing season.

Table-1: Delineation of soil types per acre and percent on the Johnston Ranch Uplands.

SOIL SURVEY DATA – JOHNSTON RANCH UPLANDS, SAN MATEO COUNTY, CA			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BcA	Botella clay loam, 0 to 2 percent slopes	10.5	1.6%
ClD2	Colma loam, moderately steep, eroded	25.5	3.9%
ClE2	Colma loam, steep, eroded	19.8	3.0%
ClF2	Colma loam, very steep, eroded	5.0	0.8%
CmF3	Colma sandy loam, steep and very steep, severely eroded	111.5	17.0%
FaA	Farallone loam, nearly level	1.2	0.2%
GbF2	Gazos loam, very steep, eroded	26.0	4.0%
GlC2	Gazos-Lobitos silt loams, sloping, eroded	0.7	0.1%
GlD2	Gazos-Lobitos silt loams, moderately steep, eroded	13.6	2.1%
GlE2	Gazos-Lobitos silt loams, steep, eroded	16.7	2.5%
GlF	Gazos-Lobitos silt loams, very steep	0.9	0.1%
GoF3	Gazos and Lobitos soils, steep and very steep, severely eroded	4.9	0.8%
Gu	Gullied Land (alluvial soil material)	20.5	3.1%
Gw	Gullied land (Tierra and Watsonville soil materials)	33.5	5.1%
LlD2	Lobitos loam, moderately steep, eroded	0.6	0.1%
Ma	Mixed alluvial land	5.0	0.8%
SkA	Soquel loam, nearly level	15.2	2.3%
SkB	Soquel loam, gently sloping	0.2	0.0%
TcC2	Tierra clay loam, sloping, eroded	18.6	2.8%
TcD2	Tierra clay loam, moderately steep, eroded	26.1	4.0%
TeC2	Tierra loam, sloping, eroded	19.6	3.0%
TeD2	Tierra loam, moderately steep, eroded	44.1	6.7%
TeD3	Tierra loam, moderately steep, severely eroded	14.4	2.2%
TeE2	Tierra loam, steep, eroded	142.7	21.8%
TeE3	Tierra loam, steep, severely eroded	53.1	8.1%
TmD2	Tierra sandy loam, moderately steep, eroded	5.0	0.8%
TuD2	Tunitas clay loam, moderately steep, eroded	1.4	0.2%
TwB	Tunitas clay loam, gently sloping, imperfectly drained	0.1	0.0%
WmB	Watsonville loam, gently sloping	0.4	0.1%
WmC2	Watsonville loam, sloping, eroded	17.8	2.7%
Totals for Area of Interest (AOI)		**654.5**	**100.0%**

ATTACHMENT 2

EXHIBIT-C



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.

VEGETATION DESCRIPTION

Overall existing pasture condition on the Johnson Ranch Uplands ranges from poor to excellent, depending on the forage type, presence of invasive vegetation, and percent cover of dense woody vegetation. Coyote brush encroachment has historically reduced the quality of range conditions by outcompeting desirable vegetation and acting as a barrier to shade out seedlings of grasses and forbs on much of the Ranch. The lower portion of the Ranch and ridge tops are comprised of rolling open grasslands/coastal scrub, heavily influenced by coyote brush encroachment as you gain elevation. The steep slopes and canyons are comprised of dense brush/woody vegetation and trees. Arroyo Leon and tributary drainages are comprised of a mosaic of riparian vegetation, dominated in many areas by willows. Overall, the vegetative diversity and level of desirable vegetation on the Ranch is excellent and supports an abundant, diverse wildlife population while maintaining a highly productive agricultural value. Notable observations during a May 2019 site visit include substantial stands of native perennial grasses including California oatgrass (*Danthonia californica*), purple needle grass (*Stipa pulchra*), and meadow barley (*Hordeum brachyantherum*). Observations of native forbs include dot-seed plantain (*Plantago erecta*) and yellow beak owl's clover (*Triphysaria versicolor*) [8].

RANGELAND PASTURES:

A combination of annual grassland and coastal scrub habitat covers approximately 75 percent of the Ranch, comprised of a diverse vegetative composition, ranging from 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. Grassland and scrubland habitats are present on the flats, ridge tops and gentle slopes throughout the Ranch. Flats and gentle slopes on the Ranch were historically dryland farmed but were returned to grazed pastureland during the 1970s. These areas are highly productive and relatively free of invasive thistles, except for sparse isolated patches. Dense woody vegetation dominates many of the small drainages and steeper canyon lands within the grazed pasture. While these areas provide little palatable forage for livestock, they provide shaded locations for loafing, particularly along fringe areas adjacent to the grasslands. Forage production has historically been limited on the Ranch, dominated in many areas by the presence and dispersal of invasive vegetation, particularly coyote brush [3].

Figure-2: Mid-elevation grasslands along the western portion of the Johnston Ranch Uplands. Note the abundant coyote brush growth in the grasslands. Coyote brush encroachment can outcompete and shade out grasses and forbs desired for livestock grazing as well as native perennial grasses and forbs.

Figure-3: Rangeland pasture on the Johnston Ranch Uplands. Grasslands in the flats transition to mixed grassland and brush at mid-elevation with forestland in the steep canyons. Note the willow stand in the riparian drainage.

RIPARIAN AND AQUATIC HABITAT:

Four large canyons and several smaller ephemeral drainages originate on the section of Johnston Ranch Uplands north of Higgins Canyon Road, flowing north to south into Arroyo Leon. The large middle canyon above the farmstead area flows into two (2) stockponds that are discussed further in the Water Sources section of the RMP. Arroyo Leon runs along the southern border of the eastern half of Johnston Ranch Uplands and along the southwest border. Vegetation types within the tributary drainages are very similar across the Ranch, comprised of dense woody vegetation including brush and pines at higher elevation transitioning into dense willow thickets with poison oak, ferns, the occasional coffeeberry, and a variety of other non-native annuals. Arroyo Leon is comprised of dense riparian woodland including willows, box elder and white alder with ferns, poison oak, Himalayan blackberry and a variety of other herbaceous plants found in the understory. Large woody debris (LWD) was noted throughout the Arroyo Leon stream channel [8] which can be beneficial to salmonids and other wildlife.

The two stockponds located north of the farmstead area were originally one large pond. Over time the pond became inundated with silt and excavation of the silt material became difficult, resulting in a relatively shallow pond near the dam. A large amount of material was dug out of the northern end of the pond creating a smaller but much deeper second pond. Aquatic vegetation adjacent to and within the stockponds consists of sedges, rushes, and willows. Himalayan blackberry and Italian thistle were noted around the upper pond [8].

Figure-4: Two seasonal drainages full of willows cross through the annual grasslands on the lower portion of the Ranch before reaching Arroyo Leon. These drainages are typical of most riparian corridors found on the Johnston Ranch Uplands.

Figure-5: A view of the stockponds on the Johnston Ranch Uplands. Note the emergent vegetation in the ponds and a variety of sedges and rushes within and around the water.

INVASIVE VEGETATION:

Invasive vegetation has historically impacted the growth of desirable vegetation, including forage for grazing livestock. During a May 2018 site visit, a few scattered individual purple starthistle (*Centaurea calcitrapa*) plants were identified in the flats near the farmstead. Milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*) and bull thistle (*Cirsium vulgare*) are found in scattered locations across the Ranch in low densities, though these thistles tend to vary in abundance annually based on precipitation patterns but typically don't dominate grasslands under moderate grazing conditions in San Mateo County. Small patches of Jubata grass (*Cortaderia jubata*) were observed in various locations throughout the property, including within the seasonal drainages [8].

Invasive plants found in the riparian corridor are primarily limited to fennel (*Foeniculum vulgare*), Himalayan blackberries (*Rubus armeniacus*), and poison hemlock (*Conium maculatum*). A list of invasive vegetation observed during a May 2019 site is shown in Table-2. See Invasive Weed Control in Section VII for management recommendations.

Table 2 – Cal-IPC Rated Invasive plant species list.

INVASIVE VEGETATION (OBSERVED) – May 2019

Latin Name	Common Name	Cal-IPC Rating
Carduus *pycnocephalus*	Italian Thistle	Moderate
Centaurea *calcitrapa*	Purple starthistle	Moderate
Cirsium *vulgare*	Bull Thistle	Moderate
Conium *maculatum*	Poison hemlock	Moderate
Cortaderia *jubata*	Purple pampas grass	High
Delairea *odorata*	Cape Ivy	High
Eucalyptus *globulus*	Blue Gum	Limited
Festuca *arundinacea*	Tall Fescue	Moderate
Foeniculum *vulgare*	Fennel	High
Helminthotheca *ecioides*	Bristly Ox-tongue	Limited
Oxalis *pes-caprae*	Oxalis	Moderate
Phalaris *aquatica*	Harding grass	Moderate
Rubus *armeniacus*	Himalayan blackberry	High
Silybum *marianum*	Milk Thistle	Limited

A comprehensive list of vascular plants observed within the Miramontes Ridge Open Space Preserve, including Johnston Ranch Uplands, was prepared by Vollmar Natural Lands Consulting in 2019. The plant list, including Cal-IPC ranked invasive plants, is included as Attachment-D to this plan. Cal-IPC ranked invasive plants have been highlighted in the attachment.

SPECIAL STATUS PLANT SPECIES:

There are three special status plant species with recorded occurrences in the Pilarcitos Creek Watershed; western leatherwood (*Dirca occidentalis*), fragrant fritillary (*Fritillaria liliacea*), and Hickman's cinquefoil (*Potentilla hickmanii*) [9]. Western leatherwood and fragrant fritillary are CNPS list 1B plants and considered rare throughout their range. Hickman's cinquefoil is a federal and state listed endangered species associated with coastal scrub. Two additional special status plant species have the potential to occur on the Johnston Ranch Uplands; Coastal marsh milk vetch (*Astragulus pycnostachyus*) and Choris's popcorn-flower (*Plagiobothrys chorisianus*). Choris's popcorn-flower has been identified on other Midpen coastal properties in the area including Toto Ranch, part of the Tunitas Creek Open Space Preserve [10]. None of the above-mentioned special status plant species were observed during a comprehensive vascular plant species composition survey on the property, conducted by Vollmar Natural Lands Consulting in 2019 [11].

WATER SOURCES

Water supply on the Johnston Ranch Uplands is limited and has historically struggled to support year-round livestock grazing and residential use, particularly under drought conditions. Primary water supply for grazing livestock comes from two stockponds located just north of the farmstead area. A marginally producing natural spring located up the canyon north of the ponds historically provided domestic and livestock water but has not been maintained since the 1970s. Arroyo Leon bisects the property and water rights permit use of in-stream water for irrigation of crops. Livestock do not have access to Arroyo Leon and it is not considered a viable water source.

STOCKPONDS:

Two stockponds (Upper and Lower) are located in the drainage just north of the farmstead area (Figure-6). Originally one large pond, water was collected and used for livestock water and to irrigate nearby crop fields. During the winter of 1976-1977 the stockpond was inundated with silt, the result of a large landslide, and the dam was breached. The dam was repaired and the pond de-silted in 1977 [3]. In 2002 the pond was desilted by Mr. Pacheco, however there was too much silt in the pond to completely remove. Silt along the dam was removed from the pond and a second, deeper pond was dug just north of the original pond. Water within the original pond is shallow as a result of additional sediment deposits and often dries up by the fall. The upper pond has a small surface area but typically holds water year-round [3]. Overflow water from the upper pond drains into the lower pond. Overflow from the lower pond flows through the spillway into a small drainage and crosses under Higgins-Purisima Road before reaching Arroyo Leon. Water release from the lower pond is controlled seasonally through use of a flashboard dam at the mouth of the spillway. A syphon system through the dam was destroyed in 1977.

Total maximum storage capacity for the upper pond is estimated at 0.56 acre-feet (AF) (182,477 gallons) and 1.51 AF (492,035 gallons) for the lower pond [12]. Pond volume estimates were conducted by Midpen staff in August 2018 using depth probes and survey tapes. Estimated volume of the upper pond was 0.23 AF (73,000 gallons) and 0.42 AF (121,000 gallons) in the lower pond respectively [12]. Midpen staff measured sediment level in the ponds and estimated an average sediment depth of 0.59 feet in the upper pond and 0.83 feet in the lower pond, though many areas in the lower pond were beyond the measuring capacity of the probe suggesting the possibility of sediment depths of 5-6 feet.

Figure-6: Upper stockpond (bottom left) and the lower stockpond (center) with farmstead in the background. Note the odd shape of the lower pond, a result of sediment removal where accessible along the dam in 2002. Storage capacity in the lower pond is drastically limited by silt accumulation.

NATURAL SPRING:

A marginally producing natural spring located up the canyon north of the ponds historically provided domestic water for a residence on the property until the 1970s when the small farmhouse was demolished. The spring received limited maintenance from the 1970s until 2018 when Tom Pacheco made substantial repairs to the system. The original dilapidated springbox was replaced with a perforated pipe surrounded by drain rock. The perforated pipe, used to collect the spring water, is approximately 8-10 feet deep which is roughly the depth below the surface at which the water comes out of the spring. The spring produces approximately 0.5 gallons per minute (gpm) [3]. Mr. Pacheco plans to install a new waterline from the spring to the farmstead area to use as a water source for livestock. No other natural springs were identified during a May 2019 site visit.

ARROYO LEON:

Arroyo Leon bisects the Johnston Ranch Uplands providing approximately 6,300 feet of perennial stream frontage. Livestock do not have access to the stream channel for water and as such, Arroyo Leon is not considered a viable source for stockwater. Furthermore, a collaborative effort amongst a number of agencies and conservation groups is working to improve salmonid habitat in Arroyo Leon. Efforts include working to remove in-stream dams to allow fish passage, maintaining water levels in the stream by reducing or eliminating water diversion from the stream, and conserving riparian vegetation and habitat within the drainage. Diverting water from Arroyo Leon to supply stockwater is counterintuitive to the ongoing fisheries enhancement efforts in the area and is not considered a viable option for livestock water.

WILDLIFE

Wildlife is abundant throughout the Johnston Ranch Uplands. The grasslands and riparian corridors, particularly around the stockponds, provide habitat for various aquatic and amphibian species, and could potentially support the federally listed California red-legged frog (CRLF). Black tailed deer, coyote, badgers, bobcats, and many other animals are present on the Ranch.

Special Status Species[1]

The California Natural Diversity Database lists a number of special status wildlife species found within the Pilarcitos Creek watershed, most of which are found in the lower reaches and tidal areas. Special status wildlife species potentially found in the upper portions of the watershed, including the Johnston Ranch Uplands include:

A. Animals

AMPHIBIANS/REPTILES:

Actinemys marmorata, Western pond turtle – CA species of special concern
Rana draytonii, California red-legged frog - Federal threatened, CA species of special concern
Thamnophis sirtalis tetratania**,** San Francisco garter snake – and State Federal endangered

BIRDS:

Athene cunicularia, Burrowing owl – CA species of special concern
Circus cyaneus, Northern Harrier – CA species of special concern
Geothlypis trichas sinuosa, San Francisco common yellowthroat – USFW bird of conservation concern & CA species of special concern
Selasphorus sasin, Allen's Hummingbird - USFW bird of conservation concern
Charadrius nivosus, Snowy Plover – Near threatened (population decreasing)

FISH:

Eucyclogobius newberryi, Northern tidewater goby – Federal endangered & State endangered
Oncorhynchus kisutch, Coho Salmon - Federal endangered & State endangered
Oncorhynchus mykiss irideus, Steelhead Trout – Federal threatened

MAMMALS:

Neotoma fuscipes annectens, San Francisco dusky-footed woodrat – CA species of special concern
Taxidea taxus, American badger – CA species of special concern

INSECTS:

Bombuc occidentalis, *Western bumble bee – Active petition to list as State endangered*

[1] This information is used for planning purposes only

EXISTING AGRICULTURAL INFRASTRUCTURE

AGRICULTURAL BUILDINGS:

The only agricultural structure located on the uplands portion of the Ranch is a wood-frame enclosed barn with a corrugated tin roof (Figure-7). The barn was originally built in the early 1900s and measures approximately 60 feet by 60 feet (3600 ft^2). POST hired a contractor in May 2019 to repair the barn which included replacing rotted support beams and reframing some of the walls and doors. The barn is in good condition and used for storage of hay and other ranch equipment by the grazing tenant. A small farmhouse was located within the farmstead area but was demolished during the 1970s.

CORRALS & LIVESTOCK HANDLING FACILITIES:

A set of livestock corrals are located within the farmstead area adjacent to the barn (Figure-7) located near the center of the property (Exhibit-D). The corral is used for processing and shipping/receiving livestock. The corrals are comprised of portable steel panels with a Powder River lead-up and squeeze chute. The corral is accessible year-round by truck/trailer via an all-weather gravel driveway. The corrals adequately serve the grazing operation on the Johnston Ranch Uplands.

Figure-7: The wood frame barn (left) while under repair in May 2019 and post construction (right) in December 2019. The barn is located in the farmyard area near the main entrance to the Ranch off Higgins Canyon Road.

STOCK WATER:

The primary source of stockwater for the Ranch is the two stockponds just north of the farmstead area shown on the map in Exhibit-D. A 5,000-gallon polyurethane water tank is located near the toe of the dam, used to store water that is supplied to a livestock water trough located in a small pasture adjacent to the corral. The grazing tenant fills the tank by pumping water from the lower pond using a small gas-powered pump. Water then flows via gravity from the tank to the trough. A dilapidated galvanized water trough was observed near the upper pond. Tenant recently repaired a natural spring north of the ponds but has not plumbed to cattle water system.

FENCING:

The Johnston Ranch Uplands is secured on all borders by a combination of barbed wire fence and hog-wire/barbed wire fencing. Much of the perimeter fence along the western border was recently replaced using steel pipe braces, t-posts and zinc-coated barbed wire (Figure-8). Fence along the eastern border was recently repaired by a fence contractor. Fence along Higgins Canyon Road east of the farmstead was recently replaced and is comprised of steel pipe braces, t-posts, and a combination of hog-wire and barbed wire. A combination of old barbed wire fence and natural barriers (steep terrain and dense vegetation) act to contain livestock along the northern property boundary. Remnants of several interior pasture fences are found throughout the Ranch but are in a state of disrepair and may present an entanglement hazard to wildlife and livestock (Figure-9). Historic barbed wire fencing around the stockponds is in poor condition and holes have been cut in the fence to allow cattle access to the ponds for drinking. A short section of interior fencing west of the barn functions to create a small holding field adjacent to and west of the corral.

Natural slope, rock, and brush barriers have been used historically to contain cattle in some places on the Ranch; however, the natural barriers may become ineffective if wildfire should burn boundaries in these areas.

Figure-8: Recently installed barbed wire fence along the western border of the Ranch. The perimeter of the Ranch is considered "cow tight" with a combination of new barbed fencing and older barbed wire fence in fair condition.

Figure-9: An example of non-functional interior fencing found throughout the Ranch. These old fences include loose broken wire that could become an entanglement hazard for livestock and wildlife. Old non-functional fencing should be removed

RANCH ACCESS ROADS:

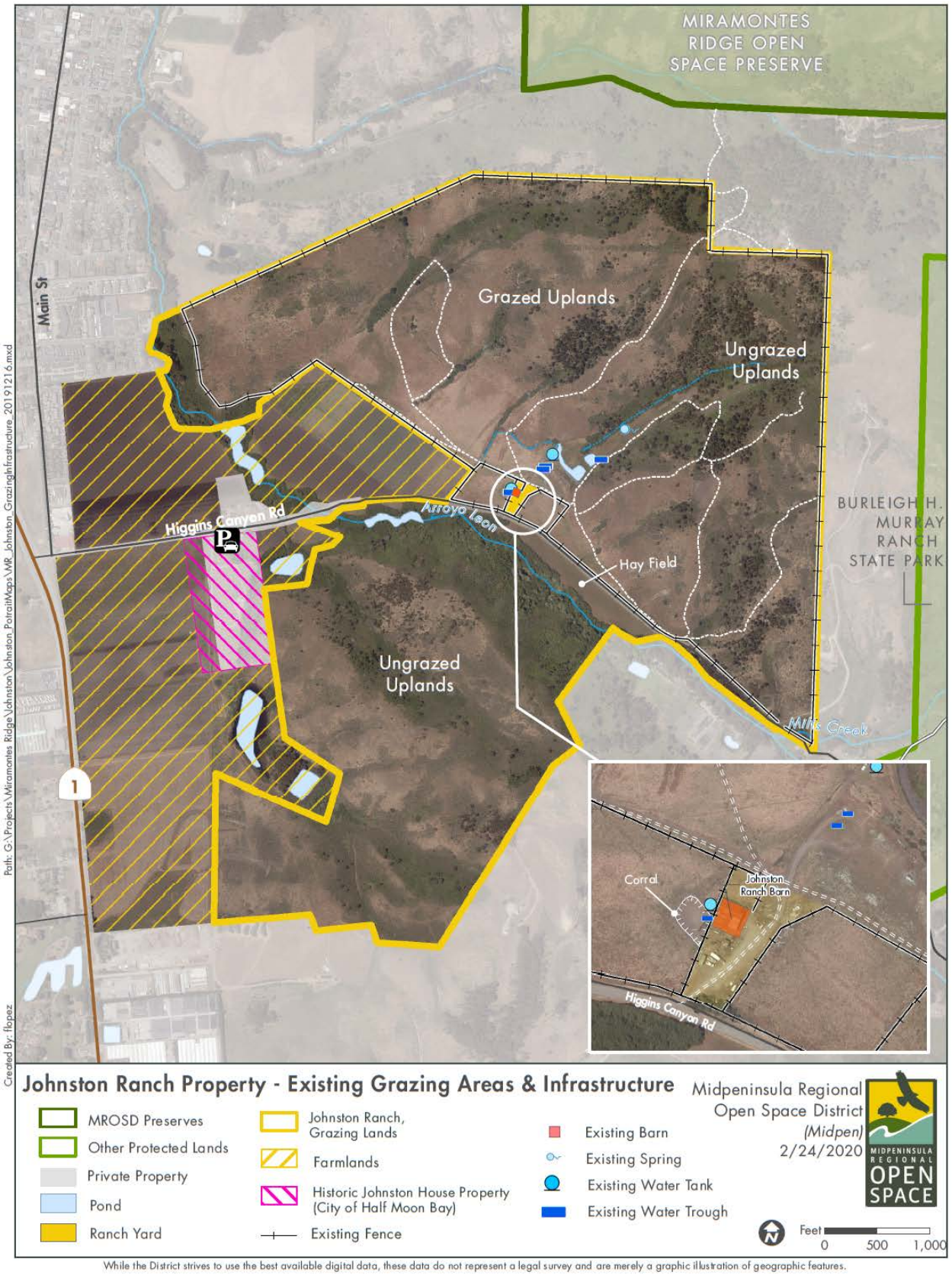
Established access roads on the Johnston Ranch Uplands are very limited, identified in Exhibit-D. A seasonal use dirt road runs north from the farmstead along the east side of the stockponds and continues up the canyon then traverses a steep wooded slope to access the ridgetop. A second seasonal use dirt road runs from the farmstead north along the crest of a ridge due west of the stockponds providing access to the northern property boundary (Figure-10). Designated ranch roads are minimally graded with native vegetation ground cover present. Most vehicle access routes on the Ranch are delineated by vehicle tracks in the vegetation from continued use by the tenant and are not designated maintained roads.

While much of the ranch roads are stable and in good condition, some areas are impacted by active gullying/rutting from surface water flow. No water diversion features such as rolling dips or water bars were present on the road surfaces. Winter rains may continue to cause damage to the road surface and potentially transport sediment into local streams and ponds.

Figure-10: Ridgetop road that runs from the farmstead area north to the northern property boundary. The roadbed receives limited vehicle traffic and maintains a natural vegetative cover to help stabilize soil in most places. Roads with steeper slopes should be assessed for erosion hazard and Best Management Practices (BMPs) should be implemented to protect road structure and prevent erosion which can lead to sediment deposits in local waterways.

ATTACHMENT 2

EXHIBIT-D



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.

RANGELAND CONDITION

The Johnston Ranch Uplands is comprised of approximately 75 percent annual grasslands and/or grassland-coastal scrub, which have historically been farmed, and more recently grazed with cattle. Grazed rangeland pastures on the ranch total approximately 415 acres, excluding the 0.9-acre farmyard area. Of the 415 acres of pastureland, approximately 311 acres are comprised of annual grassland or a coastal scrub/grassland mix that provide palatable forage for livestock. The current grazing tenant, Tom Pacheco, has leased the grazing rights on Johnston Ranch Uplands for over twenty years and uses the pastures to run beef cattle.

Current forage conditions on the Ranch appear good with abundant palatable forage available for livestock, with an even mix of dry standing forage and emerging green vegetation. Forage conditions and residual dry matter (RDM) on the property indicate an appropriate stocking rate in relation to current forage production [8]. Livestock distribution and overall forage utilization vary based on available stockwater. Natural water sources and water distribution are limited, and cattle tend to graze the lower elevations near the farmstead where water is available. As a result, livestock distribution and overall forage utilization have been lower than expected, especially on the northern ridgetops. The Ranch is grazed as a single pasture as a rotational grazing regime is not feasible due to inadequate fencing and water distribution.

FORAGE QUALITY:

Forage quality in addition to forage quantity (annual production) play a key role in determining carrying capacity for a pasture and for the entire ranch. Forage quality as well as forage production vary somewhat across the Ranch based on soil type, topography, aspect, invasive vegetation, and water. In general, forage quality is good with a high abundance of palatable, nutritious grasses and forbs. Forage quality in some areas is negatively impacted by the presence of invasive vegetation. Several of the steeper, forested/brushy slopes provide little to no palatable forage for livestock.

Mineral and nutrient supplements are currently provided to livestock on the ranch to maximize productivity and maintain livestock health, though it is not known if mineral and/or nutrient supplements are necessary to account for potential nutrient deficiencies in native forage. A thorough nutrient analysis may be performed on forage samples from the Ranch, if desired by the livestock operator, to more accurately determine forage nutrient quality and livestock supplement requirements.

FORAGE PRODUCTION:

Palatable forage production ranges from fair to excellent across the Ranch excluding the steeper, wooded slopes, and dense brushy canyons. Forage production may be slightly lower around rocky outcroppings or eroded slopes, as the soil tends to be shallow, which can limit rooting and nutrient/water uptake by plants. Palatable forage production can be impacted by the presence of invasive vegetation, such as purple starthistle and coyote brush, which outcompete desirable

vegetation, and is evident on many sites throughout the Ranch. Highly palatable annual grasses and low growing forbs comprise the majority of vegetation available for grazing livestock. Based on available standing forage observed during a May 2019 site visit, the current stocking rate is adequate when compared to annual forage production on the Ranch [8].

Estimated annual forage production for the grazed pastures on the Johnston Ranch Uplands is determined through estimates based on soil class provided in the San Mateo County Soil Survey (USDA, 1985). Non-forage producing areas of the Ranch, including the developed farmstead, stockponds, forested slopes, dense brushy canyons, and ungrazed rangeland (south of Higgins Canyon Road) have been deducted from the total grassland acres utilized to calculate available dry weight forage production shown in Table-5. Total dry weight forage production estimates per soil class are shown in Table-3:

Table-3: Total forage production estimates per soil class provided by NRCS.

Soil Map Unit		Approx. Acres	Total Dry Weight Forage Production (lbs./acre)		
			Unfavorable Year	Normal	Favorable Year
BcA	Bortella clay loam	10.5	1,500	2,500	3,000
ClD2, ClE2, ClF2, CmF3	Colma loam & Colma sandy loam	161.8	1,500	2,500	3,000
GbF2, GlC2, GlD2, GlE2, GlF, GoF3	Gazos loam & Gazos Lobitos silt loams	62.8	1,980	2,880	3,240
Gu, Gw	Gullied Land	54.0	500	1,500	2,000
Ska, SkB	Soquel loam	15.4	1,980	2,880	3,150
TcC2, TcD2	Tierra clay loam	44.7	1,500	2,500	3,200
TeC2, TeD2, TeD3, TeE2, TeE2, TeE3	Tierra loam & Tierra sandy loam	278.9	1,500	2,500	3,000
WmB, WmC2	Watsonville loam	18.2	1,980	2,700	2,880
	Total Acres	**646.3**			

VI. Capacity for Conducting Agricultural Uses

A capacity assessment of agricultural uses on the Johnston Ranch Uplands has been approximated by reviewing both current and historic agricultural uses and other factors. Information provided in the following section establishes a basis for determining potential levels of agricultural uses on the property by quantifying the carrying capacity based on existing infrastructure, forage production, soil quality, water availability, and space while protecting ecological resources.

GRAZING CAPACITY ESTIMATE

Rangeland livestock production is the primary agricultural use on the Johnston Ranch Uplands in terms of acres in production. Forage production estimates are utilized to determine livestock carrying capacity and an estimated range of stocking rates. Proposed carrying capacity estimates for the Ranch are established using forage production estimates based on soil class units derived from the San Mateo County Soil Survey [7].

Table-4: Animal Unit Equivalents.

Animal Unit Equivalents	
Animal Kind & Class	**Animal Unit Equivalent**
Cow, dry	1.00
Cow, with calf	1.00
Bull, mature	1.50
Horse	1.25
Replacement Heifer	0.50
Replacement Heifer	0.75
Sheep, mature	0.25
Lamb, 1 year old	0.15

[1] An animal unit month (AUM) is the amount of dry forage consumed by one animal unit in one month (assuming consumption of dry weight forage equal to 3.3% of body weight), roughly equivalent to 1,020 pounds.

Table-5 depicts available forage, per the Soil Survey description, for 'favorable', 'normal', and 'unfavorable' production years. 'Available forage' is calculated by deducting the RDM desired at the end of the grazing season (average of 1,000 lbs. per acre) from the total forage production. Based on available forage on the currently grazed pasture area of the Ranch, leaving an average of 1,000 pounds of RDM, the estimated carrying capacity ranges from 486.5 AUMs in a favorable year to 240.7 AUMs in an unfavorable year with an average carrying capacity of 365.6 AUMs in normal production years (Table-6).

- Favorable Production Year:
  486.5 AUMs = Approximately 40 cows year-round or 80 cows for 6 months.
- Average Production Year:
  365.6 AUMs = Approximately 30 cows year-round or 60 cows for 6 months.
- Unfavorable Production Year:
  240.7 AUMs = Approximately 20 cows year-round or 40 cows for 6 months.

Table-5: Available dry-weight forage for grazing livestock (currently grazed pastures) derived from NRCS Soil Survey data. Calculations assume leaving an average of 1,000 pounds per acre of RDM and 10% forage loss due to natural conditions such as wind, trampling, etc. Acreage has been deducted for the farmstead area, farmland, ungrazed rangeland (south of Higgins Canyon Road), and dense brush/wooded areas that provide little to no palatable forage (Deducted acreage = 335.1 ac.).

Soil Map Unit		Approx. Acres	Available Dry Weight Forage Production (lbs./acre)		
			Unfavorable Year	Normal	Favorable Year
BcA	Bortella clay loam	5.0	500	1,500	2,000
ClD2, ClE2, ClF2, CmF3	Colma loam & Colma sandy loam	77.7	500	1,500	2,000
GbF2, GlC2, GlD2, GlE2, GlF, GoF3	Gazos loam & Gazos Lobitos silt loams	30.5	980	1,880	2,240
Gu, Gw	Gullied Land	25.9	0	500	1,000
Ska, SkB	Soquel loam	7.4	980	1,880	2,150
TcC2, TcD2	Tierra clay loam	21.5	500	1,500	2,200
TeC2, TeD2, TeD3, TeE2, TeE2, TeE3	Tierra loam & Tierra sandy loam	134.5	500	1,500	2,000
WmB, WmC2	Watsonville loam	8.7	980	1,700	1,880
	Total Grazed Acres	**311.2**			

Table-6: Estimated carrying capacity for currently grazed pasture lands on the Johnston Ranch Uplands based on calculated available forage production on grazeable acres.

Soil Map Unit	Approximate Grassland Acres	Estimated Carrying Capacity (Animal Unit Months)		
		Unfavorable Year	Normal	Favorable Year
BcA	5.0	3.7	6.0	8.0
ClD2, ClE2, ClF2, CmF3	77.7	56.7	93.2	124.3
GbF2, GlC2, GlD2, GlE2, GlF, GoF3	30.5	43.6	45.9	54.7
Gu, Gw	25.9	0.0	10.4	20.7
Ska, SkB	7.4	10.6	11.1	12.7
TcC2, TcD2	21.5	15.7	25.8	37.8
TeC2, TeD2, TeD3, TeE2, TeE2, TeE3	134.5	98.0	161.4	215.2
WmB, WmC2	8.7	12.4	11.8	13.1
TOTAL	**311.2**	**240.7**	**365.6**	**486.5**
Year-round Stocking Rate in Animal Units (AUs) (AUMs ÷ 12 months)		**20.1**	**30.5**	**40.5**

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. Table-6 details the estimated carrying capacity for the Ranch, in AUMs and AUs, as derived from forage production data provided in the NRCS Soil Survey. The estimated carrying capacity for the Ranch is approximately comparable to historic stocking levels.

Coyote brush is well established in many of the steeper canyons and has expanded into the ridgetops and open grassland areas over time. Coyote brush encroachment in the grasslands has reduced forage production by 30-40 percent in many areas. The landowner has attempted mechanical control of the coyote brush by mowing and is permitted, per his grazing lease, to treat/remove up to 15-acres of coyote brush annually. Mowing tends to reduce the size of the individual plants but does little to reduce the quantity and percent cover of the coyote brush. A coyote brush encroachment management plan should be developed for the Ranch. Future brush control efforts, including chemical control, should be considered following the recommendations in the coyote brush management plan to maintain the estimated carrying capacity.

ADDITIONAL LIVESTOCK, EQUINE, AND POULTRY:

The Ranch is currently used primarily for beef cattle production on the productive and accessible grasslands and livestock grazing is the primary use contemplated in this RMP. In addition to cattle, two (2) working ranch horses, used as part of the grazing operation, may be kept on the property. Breeding, training, raising and selling horses (Horse Operations) are not considered agricultural uses and are not recommended on the Johnston Ranch Uplands. Boarding outside horses should be prohibited. Small livestock production is not recommended for this location.

FIELD CROP PRODUCTION

Portions of the Johnston Ranch Uplands, primarily the flats and mid-elevation ridge tops, were historically farmed up until the 1970s but have not been farmed since that time, with the exception of the 7± acre flat between Higgins Canyon Road and Arroyo Leon. The tenant dryland farms grain hay seasonally as part of his livestock operation. The landowner does not plan to implement a large-scale cultivated farming operation on the Ranch, or expand the current farming operation, and plans to continue use of the pastures for livestock grazing to foster and enhance habitat for wildlife. While much of the Ranch has suitable land for farming, sediment from the highly erodible soils on the Ranch would negatively impact downstream water quality and disrupt/destroy valuable wildlife habitat. Cultivated farming is not recommended in any capacity on the Johnston Ranch Uplands with the exception of the 7± acres that are currently farmed.

VII. Management Recommendations & Best Management Practices (BMPs)

The Johnston Ranch Uplands has a long history of diversified agricultural production. The following management recommendations and Best Management Practices (BMPs) will help ensure the sustainability of agricultural production on the Ranch while protecting rangeland health, soil stability, water quality and the control of invasive vegetation to cooperatively conserve and enhance habitat for wildlife.

RANGELAND LIVESTOCK OPERATION MANAGEMENT RECOMMENDATIONS:

- Vegetation Prescriptions:

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, all grazed pastures on the ranch should meet 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.
- 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.

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.

A core element to maintain or enhance habitat for CRLF includes managing grazing to maintain desired amount of emergent vegetation in ponds, riparian habitat, springs, and other moist refuges, and keep annual grassland vegetation generally short. 10-40 percent cover of emergent vegetation is a good target, however, too little or too much emergent vegetation can negatively impact habitat for CRLF [14]. Adhere to above prescriptions for annual grassland management around stockponds.

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 and infrastructure constraints. 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.

- Grazing Season:

A light to moderate year-round rotational grazing regime is best suited for the Johnston Ranch Uplands. Rotating livestock between pastures, particularly when grazing for a short duration, will require a greater commitment by the livestock manager in terms of time and monitoring, but will ultimately enhance biodiversity, aesthetics and overall forage production. Lack of adequate cross-fencing and available stockwater has historically limited grazing capacity during the late summer and fall months, particularly under drought conditions. If limited water availability during summer and fall months persists, Midpen may elect to implement a seasonal grazing regime and/or a partially seasonal grazing regime with higher stocking rates during winter and spring and reduced stocking during the summer and fall.

In a rotational grazing regime, standing forage will determine pasture rotation, at the livestock operator's discretion, provided they remain within the recommended forage standards. On steeper, more erosion prone slopes, and riparian pastures with softer soils, grazing should be delayed until soil is firm enough to withstand grazing pressure without impacting soil stability. Livestock grazing should be managed to protect the soil from erosion as loss of the surface layer can severely decrease long-term forage productivity. Installation of new interior pasture fencing should be considered to allow grazing operator to implement a rotational grazing regime on the property. See fencing recommendations in Section VIII, "Improvements and Maintenance Recommendations" below.

Seasonal grazing around stockponds should occur during the summer and fall months. Manage grazing to acquire target level of emergent vegetation for breeding habitat as well as reduction of thatch and biomass in annual grasslands. Grazing should not occur during late winter and spring months when CRLF egg masses are present in ponds.

- Water Supply:

Livestock generally prefer the cleaner, cooler water in troughs. Developing alternative water sources will reduce dependence by livestock on seasonal stream channels/stockponds, minimizing potential impacts to aquatic vegetation and stream bank stability. Spreading stockwater throughout the Ranch will increase livestock distribution and promote more even forage utilization by livestock. In addition to the two stockponds, a water trough is located in the holding field adjacent to the corral. The trough is filled manually via water pumped from the lower pond.

A marginal spring was recently repaired by the grazing tenant but is not plumbed to any infrastructure. A new pipe should be installed to transport water from the spring source to a

water storage tank near the farmstead area. Two 5,000-gallon storage tanks are recommended as the increased storage will provide a more reliable water source for livestock and reduce cattle pressure on the stockponds. Recent springbox repairs and new proposed water troughs should be constructed/installed to Midpen's "wildlife friendly" specifications.

Grazing tenant and Midpen staff should work to develop alternative water sources and stock water distribution throughout the Ranch. Drilling a well on the property may be a viable option to develop a reliable water source for livestock, however, wells close to the coast are often impacted by saltwater intrusion from nearby coastal waters. If a well is successfully installed, water may be pumped to storage tanks in the uplands, used to supply water troughs at mid-elevation and on the flats via gravity. See Proposed Infrastructure & Improvements Map for location of proposed water infrastructure.

A hydrology report should be developed similar to the one developed for pond DR07 at La Honda Creek Redwoods Open Space Preserve that dictates the amount of allowable pumping. The report is to be completed by a hydrologist and should describe allowable pumping amounts by water year (drought vs wet), allowable pumping amounts by the water right associated with the features to ensure adequate water for CRLF and SFGS in accordance with Midpen's Recovery permits to manage the site (mesh on pump intake, allowable pumping months etc.).

- Stockponds:

Landowner should perform routine maintenance of stock ponds, including de-silting and vegetation management to maintain water storage capacity, habitat value, and protect downstream water bodies from sedimentation, as necessary. Maintaining the spillway and berm on the stockponds will preserve storage capacity, extend lifespan of stockponds, and enhance habitat for aquatic species.

A 2019 hydrology report prepared by Stillwater Sciences determined that the stockponds were in stable condition but suggested several improvements to ensure long term stability, enhance habitat for CRLF, and maintain water availability for livestock. Detailed pond habitat enhancement, site improvements, and pond maintenance recommendations can be referenced in Section 10 of the report. These improvement and maintenance recommendations include:

- POND HABITAT ENHANCEMENT:
  - A. Embankment Improvements: Repair cattle trailing/erosion on earthen berm/dam and install exclusion fencing as needed. Raise roadbed on east side of pond to a minimum of 1-foot above the top of the earthen berm. Revegetate restored slopes for soil stability.
  - B. Spillway Construction: Build a spillway between the upper pond and lower pond.
  - C. Pond Expansion: Dredge and remove sediment from both the upper and lower pond. Expand northward or recontour the lower pond to enhance habitat for CRLF.

D. Bench Habitat: Create varying depths of water within the pond and plant emergent vegetation to enhance breeding habitat for CRLF.

E. Livestock Water Source: Provide alternate livestock water sources to reduce livestock reliance on stockponds for a water source.

F. Emergency Spillway: The existing spillway is not able to handle large flows (greater than 2-year discharge). Install an emergency spillway to allow flows to be directed through a controlled release to eliminate flow over the top of the dam/earthen berm.

- SITE IMPROVEMENTS:
  - Drainage Channel Improvements: Improve discharge drainage to contain water during high flows. Low points in the berm along the channel are insufficient to contain water.
  - Culvert Upgrade: Install a culvert in the outflow drainage to replace the current low-water ford style crossing. A 54" diameter culvert is recommended.
  - Livestock Management: Install fencing, as needed, to control livestock access to stockponds, earthen berm, and sensitive habitat. Areas around the ponds should be flash-grazed or grazed seasonally during the late summer/fall months to protect CRLF breeding habitat. Additionally, grazing later in the summer will reduce the risk of impacts from cattle as wet winter soils are susceptible to erosion/trailing.
  - Road Improvements: Install water diversions such as rolling dips or water bars on ranch roads to minimize erosion which can lead to sedimentation of the stockponds.
  - Flashboard Dam: Upgrade the existing flashboard dam to more reliable system that is not reliant on clamps holding the boards in place. A simple rail system that allows boards to be slid in and out from the top is recommended.

- POND MANAGEMENT:
  - Pond maintenance should occur during the driest season of the year (September-October) when water levels are at their lowest.
  - Establish a CRLF monitoring program which includes restoration success benchmarks.

Pond management activities require a suite of regulatory agency approvals and should not be undertaken unless approved by the District's Natural Resources Department and appropriate permits are obtained.

➢ Supplemental Feed:

Proper placement of livestock watering facilities and supplemental feed/mineral stations will promote good livestock distribution. Supplemental feed (mineral tubs, salt blocks, etc.) should

be placed on uplands and ridge tops away from water sources and riparian features. It is recommended that supplemental forage provided to livestock be certified as "Weed Free." If certified weed free hay is not available, locally produced supplemental forage (hay) that is fed in pastures should be thoroughly inspected by prior to feeding to ensure it does not contain invasive vegetation that may spread seed into pastures. Supplemental feeding should not be used to extend the grazing season beyond the point at which the prescribed RDM levels are reached in the pastures.

- Fencing and Corrals:

Responsibilities for the maintenance of existing ranch infrastructure in good condition and make repairs or improvements as necessary are defined in the lease. Maintaining quality, functional infrastructure, including fencing and corrals, will increase the ease of livestock handling and effectiveness of rotating livestock between pastures as well controlling livestock access to sensitive riparian corridors. Providing safe facilities will provide a low-stress atmosphere for livestock and minimize risk of injury.

Most perimeter fence around the Johnston Ranch Uplands is in good condition. However, interior pasture fence has failed over the years due to lack of maintenance. Ensure that routine inspections and continued maintenance will be required to maintain integrity of the fencelines. Old dilapidated fencelines should be removed to minimize entanglement risk to livestock and wildlife.

Installation of a new fence line between the farmstead area and the norther property boundary would divide the property into two pastures (east pasture and west pasture). Two pastures would allow the tenant to rotate the cattle throughout the year and reduce grazing pressure on unstable erosive soils in the east pasture during wet winter months. See "Proposed Grazing Infrastructure Improvements" map for approximate location of fencing. A second optional fenceline may be installed just west of the farmstead to establish a small pasture/holding field, should availability and distribution of stock water not limit these future pasture developments. Additional proposed fencing may be installed around the stockponds or portions of the stockponds to reduce livestock access on the dam/earthen berm and to reduce trailing from livestock that has caused slight to moderate erosion in several places, impacting stability of the berm [12]. Use Midpen specifications for livestock fencing including galvanized wire, steel t-posts, and galvanized pipe braces when making repairs or replacing old fence. See Exhibit E "Proposed Grazing Infrastructure Improvements" for approximate location of proposed new fencing and suggested additional optional fencing.

- Herd Health:

Maintaining a healthy, productive livestock herd is fundamental to profitability and sustainability. A herd health program that includes appropriate inoculations is recommended. De-worming livestock and providing additional nutrients will further increase productivity. 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.

- Ranch Roads:

Ranch roads provide access for the grazing operation, infrastructure/ranch maintenance, restoration work, recreation, and emergency response. Landowner and/or grazing tenant should work to maintain ranch roads in good condition. Routine maintenance may include cleaning ditches and culverts, particularly during storm events. Maintaining road grades, water diversions, and water bars during winter months to minimize water flow on road surfaces is important in reducing potential soil erosion and road damage. Mowing vegetation on road surfaces is recommended to provide a safe driving environment. Mowing, as opposed to grading, is recommended to leave a vegetation cover on the road surface that helps hold soil in place during storm events and reduce the risk of erosion and damage to ranch roads. Additionally, mowing roads will not create a soil disturbance that can lead to increased spread of invasive plant species. A biological monitor may be required during mowing if SFGS are documented on ranch roads.

Established ranch roads on the Johnston Ranch Uplands are limited and receive relatively little use. The most substantial road runs from the farmstead north past the stockponds before traversing a steep slope. This road has the potential to contribute substantial amounts of sediment into the stockponds. Ensure that adequate water diversions are in place to control erosion on the road surface and limit use of the road to the dry season. Rocking sections of road may also increase access as well as sediment control. Sections of road that may require additional water diversions and or rocking are identified on the map in Exhibit-E. Proposed road work should first be approved by District natural resources staff to ensure regulatory compliance.

- Drought Preparedness

Agricultural production has historically provided a significant source of income for the Ranch and continues to be an important factor in maintaining its sustainability. Drought conditions can severely hinder the operational capacity and productivity of a ranch and can threaten long-term sustainability. Planning ahead to accommodate for a drought can alleviate some of the potential impacts such as lack of forage, lack of water, herd health, mineral deficiencies, and overall lack of production by livestock when droughts occur. The following management practices can help alleviate the impacts of drought:

- Maintain a clean, reliable water source for livestock and increase water storage capacity. Develop additional water sources such as springs and wells if feasible. If water yield increases, increase water storage by adding additional water storage tanks for livestock drinking water.

- Lower stocking rates to slightly below the recommended carrying capacity for the forage production year to provide a small surplus of forage to carry livestock through the fall until new, green forage is available. If drought conditions persist, lower stocking rates further.
- Implement a grass banking system. Save forage in a designated pasture by minimizing or eliminating grazing pressure during the late spring and summer. If available forage is depleted in grazed pastures, forage will be available in the grass bank pasture.
- Provide livestock with mineral/protein supplements to increase forage utilization, herd health, and overall productivity.

PATHOGEN REDUCTION AND RISK MANAGEMENT

Livestock waste contains many microorganisms such as bacteria, viruses, and protozoa. Some of these microorganisms do not cause sickness in animals or humans, however, some are pathogens, meaning they are capable of causing disease in animals and/or humans. Zoonotic pathogens can be transmitted to humans directly through contact with animals and animal waste or indirectly through contaminated water or food. Common pathogens responsible for health-related ailments in humans include cryptosporidium, E. coli, Leptospira, and salmonella. The following BMPs should be implemented to help reduce the risk of animal waste contaminating water sources within and downstream of the Johnston Ranch Uplands:

- Restrict livestock access to perennial streams to minimize fecal deposits in the waterway.
- Maintain a natural vegetative buffer of no less than thirty (30) feet from the top of bank in perennial streams. The vegetative buffer will act as a natural filter to trap potential pathogens before they reach the water body.
- Control runoff and leaching from any stockpiled manure, confined livestock, and/or corral facilities. Maintain a 100-foot vegetative buffer between corrals/confined livestock pens and perennial streams.
- Fly and vector control in livestock facilities may also reduce the spread and subsequent infection of other animals with pathogenic bacteria. Flies and bird fecal samples from cattle farms in the U.S. have tested positive for *E. coli*. Numerous studies indicate that *Salmonella* can survive for at least several days, and for as long as nine months, on insects and rodents, and for up to five months in rodent feces.
- Provide off-stream livestock water sources such as water troughs to reduce the use of streams by cattle and other livestock for water.
- Implement a comprehensive livestock husbandry program including appropriate and timely inoculations and de-worming to minimize the risk of contracting and/or spreading disease to other livestock, humans, and wildlife.

SPECIAL STATUS SPECIES MANAGEMENT

California red-legged frog

Managing the intensity and timing of livestock grazing is important in managing waterways and upland habitat for the California red-legged frog (CRLF) as it has important consequences in terms of emergent vegetation and water quality important for breeding. Maintaining stockponds and controlling non-native predators are also important factors in protecting and enhancing habitat for CRLF. In general, livestock use of stockponds is beneficial for CRLF [13]. Appropriate timing and grazing intensity around stockponds can produce positive ecological benefits on vegetation cover, nutrient levels, and turbidity conducive to CRLF breeding and subsistence. For more specific management recommendations, please reference Attachment-C to this plan [14].

San Francisco garter snake

Management for California red-legged frog is also beneficial to San Francisco garter snake. Use of vegetation and/or fencing off portions of ponds to provide adequate escape habitat during the frog mating season (Dec to March) and San Francisco garter snake breeding season (March to June and September to October) and young frog emergence period (July to September) can be beneficial for both species.

Managing surrounding upland habitats for a mosaic of microhabitats (some open grassland, some brush, some downed woody debris areas, etc.) can also be beneficial for successful management of San Francisco garter snake.

Choris' Popcorn Flower

Choris' popcorn flower is an annual herb found in coastal prairie and coastal scrub habitats in San Mateo and portions of Santa Cruz County, listed by CNPS as "fairly endangered." The species is at risk from urban development, however, under rangeland conditions, primary threats to the species result from foot traffic/trampling and competition from non-native plants/annual grasses [13]. Choris' popcorn flower typically blooms from March-June [13] and will benefit from the reduction of annual/non-native vegetation through timed livestock grazing prior to bloom (December-February). Once flowers have dropped seed, livestock grazing may commence, typically in July. Continue to monitor for presence of the specie and note any changes in distribution and abundance of known populations. Adjust timing of grazing as necessary to promote reproduction. If trampling or vehicle traffic is noted to impact the Choris' popcorn flower, temporary fencing may be installed to protect populations.

INVASIVE PLANT CONTROL

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. To prevent an increase in the current extent of invasive vegetation and avoid the introduction of new invasive species on the Ranch, the landowner should manage the ranch 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), follow BMPs and Mitigation Measures prescribed in the IPMP, and be approved by the IPM Coordinator prior to treatment.

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, vegetation 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, particularly when treating large infestations that are not easily controlled through manual methods. Follow-up inspection and manual removal of late germinating plants 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 prior to any herbicide application on the property.
- Manually remove purple starthistle by digging or cutting out the plant at least five inches below the soil surface before they begin to flower. After flowering, plants should be bagged and removed from site as seeds will continue to mature and ripen after 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.
- French broom is limited on the property and best controlled early as seeds remain viable in the soil for decades. Once well established, removal is extremely resource intensive. Pulling shrubs with weed wrenches is effective for broom removal in small infestations. The weed wrench removes the entire mature shrub, eliminating re-sprouting.

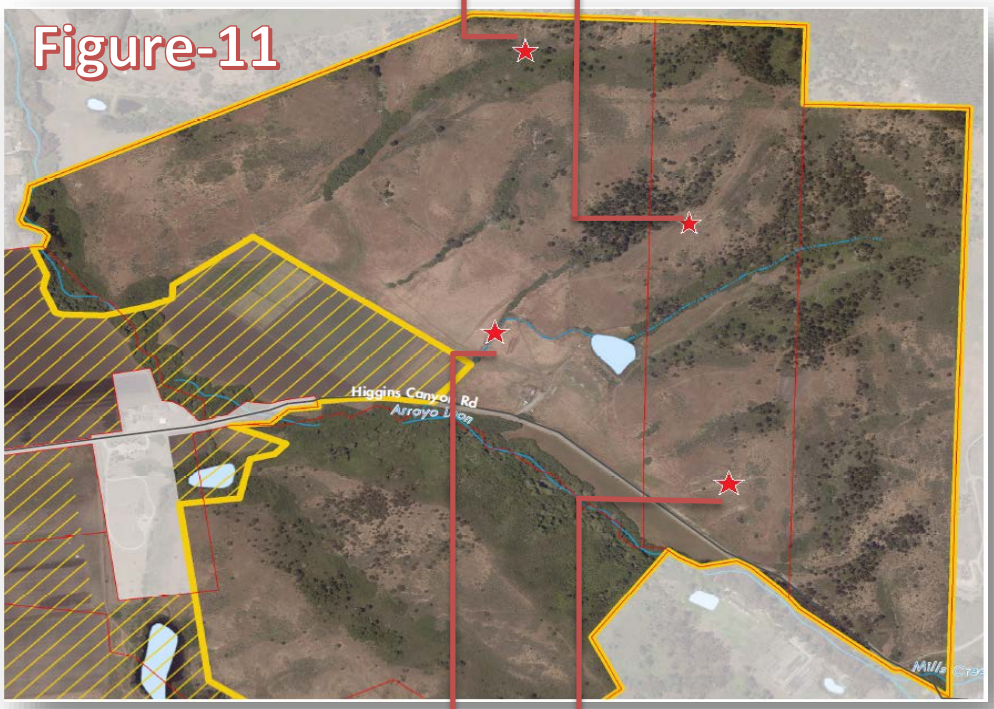
- Carefully monitor areas where outside feed is brought in for new invasive species and remove new weeds before they become established. If feasible, feed Certified Weed Free Hay to minimize the risk of introducing new invasive plant species.
- Do not import outside soil or fill material. It has the potential to be contaminated with invasive species and pathogens.
- 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.
- Contact the local Natural Resource Conservation Service (NRCS) for funding and technical assistance to help with integrated pest management practices.

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

EROSION CONTROL AND PREVENTION

Several locations across the Johnston Ranch Uplands show signs of gullying and erosion. Soil types near the coast are often sandy and highly erosive, particularly on steep slopes and in natural drainages. Four locations on the property were identified with active gullying/erosion (Figure-11 on next page). Erosion on the property is primarily a result of natural causes and conditions. Naturally occurring gully erosion can be extremely expensive and logistically challenging to fully restore and is often unsuccessful due to existing conditions and poor-quality soils. Landowner should, at a minimum, implement BMPs to minimize the risk of future erosion at these sites and prevent new gullying/erosion where possible to protect downstream water quality. Manage sites to maintain prescribed levels of forage/RDM to help stabilize soil during wet winter months. Planting woody vegetation such as willows or deep-rooted perennial shrubs may also help to stabilize soil in these locations. Soil erosion and gullying caused by manmade features such as roads should be repaired/restored to control water flow and minimize the risk of future erosion.

ATTACHMENT 2



VIII. Improvements and Maintenance Recommendations

Fence Repair and Installation

Perimeter fence around the Johnston Ranch Uplands is in good condition with many sections recently replaced or upgraded. Continue to monitor perimeter fences and maintain in good condition. Remove old dilapidated interior fencing that is no longer functional and creates an entanglement hazard for wildlife and livestock. Install a new interior pasture fence to divide the property into two separate pastures (east pasture and west pasture). A second interior fence may be installed, if desired, to create a holding field in the flat west of the farmyard. Reference the proposed infrastructure map for recommended alignment of new fence. The fence around the stockponds is in poor condition. Remove old fence around ponds and install a new fence around the lower pond to protect the dam and control livestock access seasonally. Fence around the upper pond should leave the northern and eastern portion of the pond open for year-round use by cattle as a water source.

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.

A. Remove all old dilapidated interior fence on the property.

B. Install new interior pasture fence between farmyard and northern property boundary to create two pastures (east and west). Reference “Proposed Infrastructure Map” for approximate location. Final location of fence should be determined by Midpen staff and grazing tenant. Construction of this fence is dependent on available water and associated infrastructure.

C. Install new fence around lower pond to protect earthen berm/dam and control livestock access seasonally. Install a minimum of two gates in the fence to allow cattle access for “flash grazing” or seasonal use during the dry summer months. The northern and eastern portion of the upper pond should be left open for livestock to use as a water source.

D. Optional – A second interior fence may be installed to create a smaller pasture in the flat west of the farmyard area. This pasture can be used as a holding field or to control cattle access to riparian drainages during wet winter months.

E. Partial fencing of ponds may be considered as an adaptive management strategy for CRLF and SFGS.

F. Continue to monitor perimeter fence and maintain in good condition to contain livestock.

Road Repairs and Maintenance

Most roads on the ranch are in good condition and require little annual maintenance. The two (2) sections of road that show signs of rutting/gully activity should be repaired to maintain road integrity and protect downstream water quality. Additional road improvements, as recommended in the hydrology report, include installation of a culvert to replace the low-water crossing in the overflow ditch west of the lower pond and raising the roadbed along the east side of the upper and lower ponds. Recommended road improvements shown in Figure-F.

A. Road Repairs – Ranch road traversing ridge to the northwest of the ponds (Figure-11 B). The road is relatively steep, vertical and lacks water diversions such as rolling dips, proper sloping, or water bars. Install water diversions to minimize the potential risk of future erosion. Limit road use to dry season and maintain a vegetative ground cover on road base to stabilize soil.

B. Road Repairs – Ranch road traversing steep slope to the northeast of the ponds. The road is currently in good condition but lacks appropriate water diversion. Sediment from the road may directly impact ponds downstream. Install appropriate water diversions to minimize potential future erosion. Limit road use to dry season and maintain a vegetative ground cover on road base to stabilize soils.

C. Install culvert in drainage ditch west of the lower pond. The culvert crossing will replace the current low-water ford style crossing. The culvert should be adequately sized to handle large storm event flows and will ultimately enhance the integrity of the channel as well as provide better access.

D. Raise the roadbed of the road along the east side of the ponds by a minimum of one foot as recommended in the hydrology report. Raising the roadbed will reduce sheet flow into the ponds and minimize sediment transport from the roadway.

Water Infrastructure Improvements

Water infrastructure improvements will enhance livestock distribution and overall forage utilization as well as potentially extending the grazing season, which is currently affected by the lack of stockwater during summer/fall months. Reference Exhibit-E Proposed Grazing Infrastructure map for location of proposed water system improvements.

A. Complete restoration of existing spring, including installation of new pipeline from spring to water storage tank. Plumb tank to existing water troughs in and around the corral area.

B. Option-1 for additional livestock water supply includes digging a well on the property and installing a solar pump to transport water to storage tanks. Location of storage tanks is dependent upon location of the well.
    a. Ideally, the well would be drilled on the ridgetop along the north property boundary and water would flow via gravity from storage tanks to new water troughs on the ridgetop and in the mid to lower elevations.

b. If a productive well is not feasible in the uplands, explore the option of drilling a well in the flats east or west of the farmyard area. Water could then be pumped from the well up to a storage tank on a mid-elevation hill. Water from the tank would then flow via gravity to newly installed water troughs.
c. Water storage capacity is important in maintain an adequate supply of stock water while allowing ground water to recharge and maintain a productive well. A minimum of two (2) 5,000-gallon storage tanks is recommended.

C. Option-2 for livestock water supply would be to install a solar pump in the lower pond and pump pond water to storage tanks at mid-elevation. Water would then flow via gravity to newly installed water troughs. While this option provides a fairly reliable source of stockwater, it is important to monitor and manage water levels in the pond to minimize potential impacts to CRLF, particularly during breeding seasons (April-August).

D. Ensure wildlife escape ramps are present in all troughs

E. Any spring developments must adhere to the District's wildlife friendly spring development designs.

Vegetation Management

Implement an integrated approach that is consistent with the District's IPM Program to controlling invasive vegetation with a focus on purple starthistle, French broom, and coyote brush. Manual, mechanical, biological, and chemical control measures may be implemented including but not limited to timed grazing, mowing, hand digging, herbicide application, reseeding, and burning/torching. Estimated annual costs for treatment of invasive vegetation will vary based on presence and distribution of invasive vegetation and treatment methods. Develop a strategic plan for control of coyote brush on the Johnston Ranch Uplands with a focus on ridge tops, around stockponds, special status species habitats, and grasslands with established stands of native grasses and forbs.

Coyote brush is well established in many of the steeper canyons and has expanded into the ridgetops and open grassland areas over time. Coyote brush encroachment in the grasslands has reduced forage production by 30 to 40 percent in many areas. The landowner, under the current lease with POST, has mechanically treated up to 15-acres of coyote brush annually. A coyote brush encroachment management plan should be developed for the property to prioritize treatment areas and methods. Future brush control efforts, including chemical control, should be considered following the recommendations in the coyote brush management plan to maintain the estimated carrying capacity for livestock grazing and to protect ecological values.

Stockpond Management and Improvements

Stockponds provide a valuable water source for livestock as well as habitat for special status wildlife species. Management and long-term maintenance of stockponds is important in maintaining a water source as well as ecological values. Stockpond improvements are intended to ensure the long-term sustainability and integrity of ponds on the property. Below is a list of recommended improvements for the upper and lower stockponds. Reference the 2019 Hydrology Report for a full list of improvements and more detailed specifications for improvements and maintenance.

A. Embankment Improvements - Repair cattle trailing/erosion on earthen berm/dam and install exclusion fencing as needed. Raise roadbed on east side of pond to a minimum of 1-foot above the top of the earthen berm. Revegetate restored to slopes for soil stability.

B. Consider adding rock to the top of the berm to reduce impacts to the berm surface from cattle access during winter months. Rocking the top of the berm can prolong berm integrity.

C. Spillway Construction - Build a spillway between the upper pond and lower pond.

D. Pond Expansion - Dredge and remove sediment from both the upper and lower pond. Expand northward or recontour the lower pond to enhance habitat for CRLF.

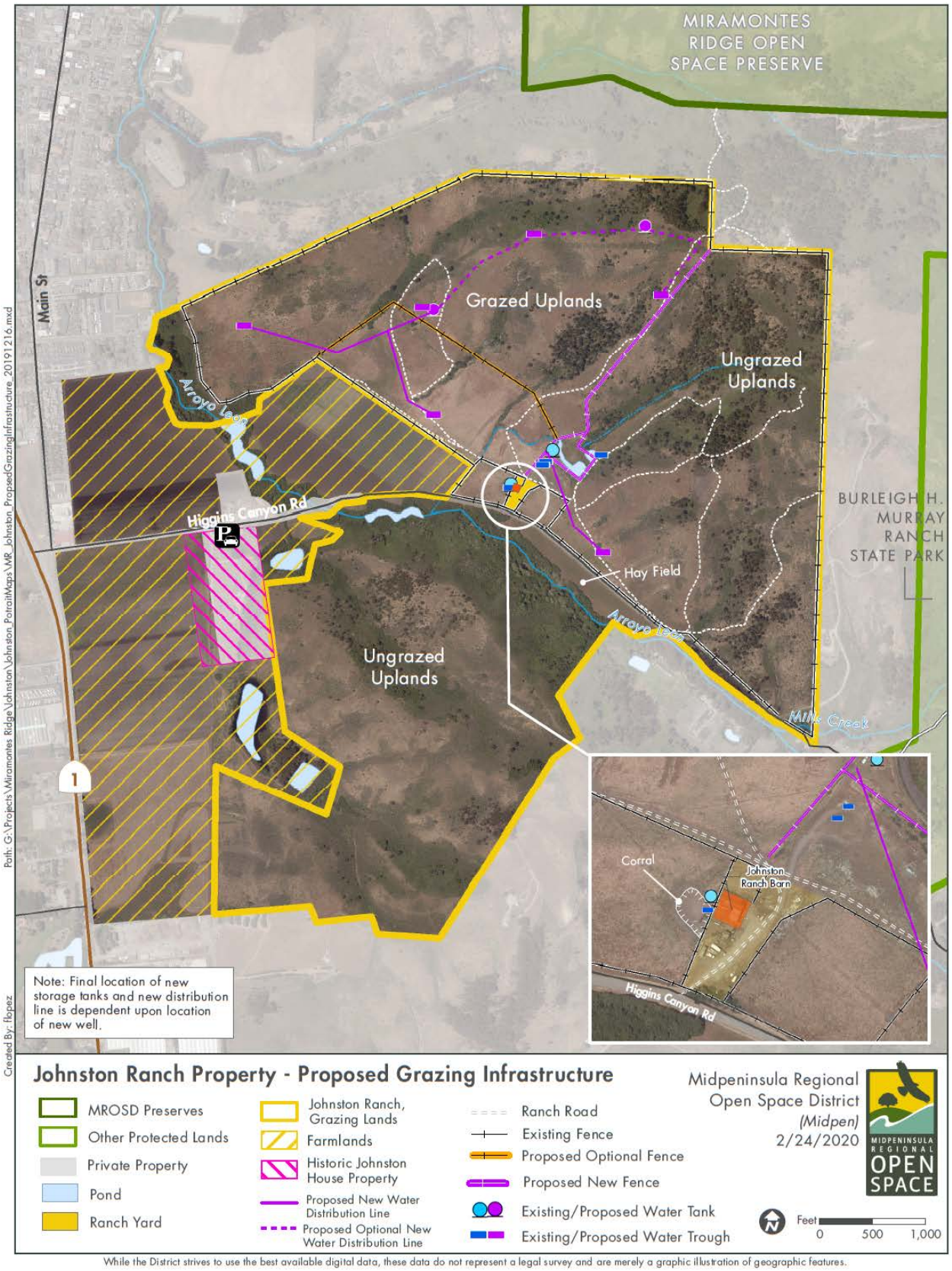
E. Bench Habitat - Create varying depths of water within the pond and plant emergent vegetation to enhance breeding habitat for CRLF.

F. Livestock Water Source - Provide livestock water sources to reduce livestock reliance on stockponds for a water source.

G. Emergency Spillway - The existing spillway is not able to handle large flows (greater than 2-year discharge). Install an emergency spillway to allow flows to be directed through a controlled release to eliminate flow over the top of the dam/earthen berm.

ATTACHMENT 2

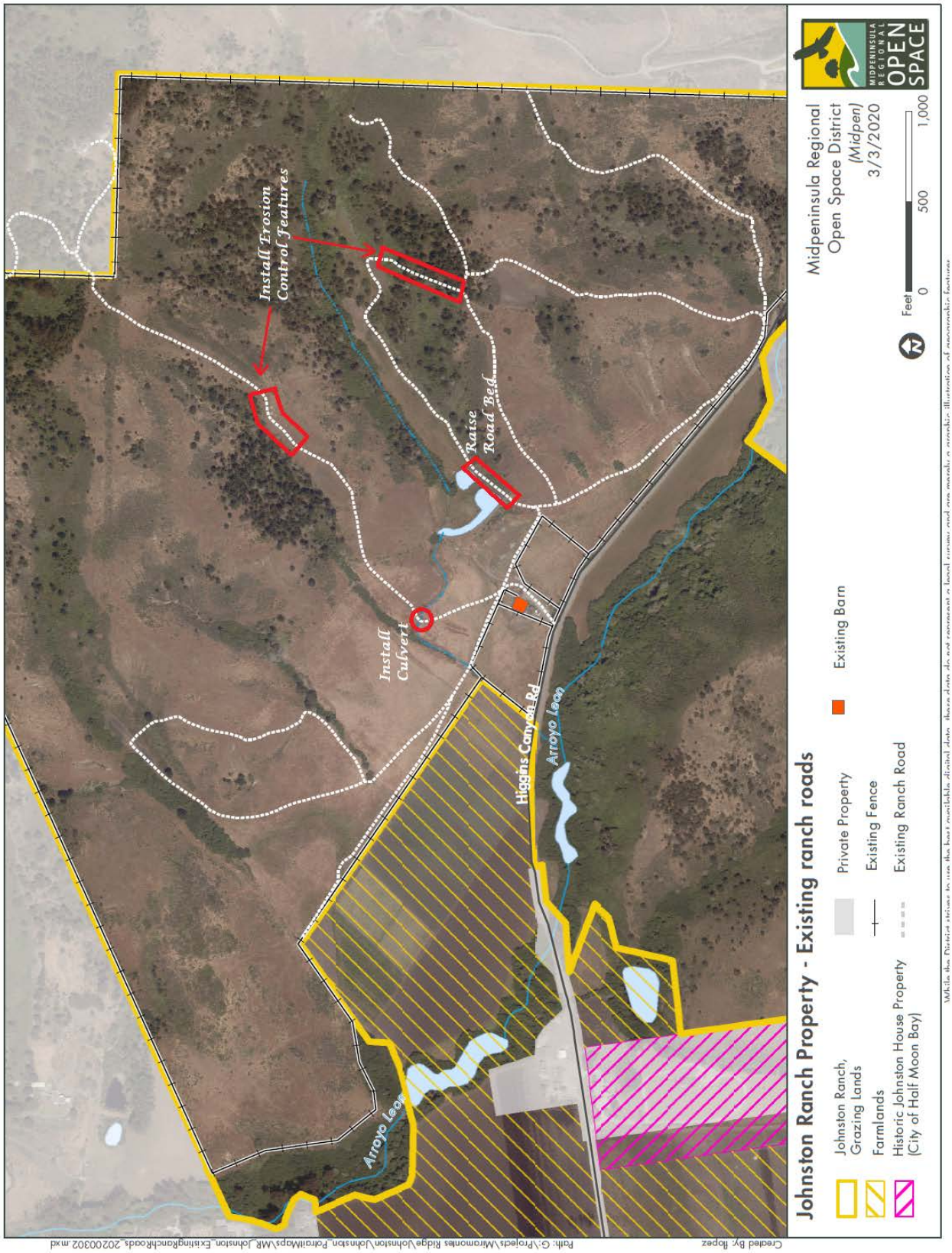
EXHIBIT-E



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.

ATTACHMENT 2

EXHIBIT-F



IX. Recommended Monitoring Protocols

The monitoring program for the grazed rangeland pastures on the Johnston Ranch Uplands is designed to ensure that the specific rangeland uses are in compliance with this Rangeland Management Plan and the land stewardship goals and objectives.

It is recommended that the landowner/operator establish a routine monitoring protocol for the Johnston Ranch Uplands. The following guidelines outline suggested monitoring criteria:

- Monitor forage utilization and livestock distribution trends to ensure appropriate RDM remains on the ground to achieve desired resource management objectives, including soil stability and water quality.
- Monitor the condition of livestock infrastructure, including water systems, gates and fencing for rangeland and grazing management practices.
- Monitor non-native invasive vegetation with an emphasis on location, distribution and abundance of plant species. Describe methods for treatment or control of invasive species (grazing, herbicide application, mowing, etc.) and vegetation response to treatment methods.
- Monitor ponds to ensure habitat for special status wildlife species free of invasive predators such as fish and/or bullfrogs.
- Monitor desirable vegetation including native grasses, wildflowers, and trees with an emphasis on location, distribution, and abundance. Describe any impacts, positive or negative, observed as a result of agricultural practices (farming and/or grazing).
- Monitor vegetation that was planted as part of restoration or remediation work (where applicable) with an emphasis on location, distribution, abundance, and survival rate.
- Natural climatic changes (drought, floods, fire, etc.), geologic process, and biologic cycles beyond the landowner's control should be noted and described as applicable.
- Stocking rates, herd type, and duration of grazing should be noted where applicable.

Monitoring observations can be used as a guideline for adaptive management changes, as needed, based on the results of annual monitoring. To evaluate the above listed monitoring criteria, several baseline photo-monitoring points can be retaken and a monitoring form completed for each site on an annual basis. Monitoring should occur in the fall prior to the first fall/winter rainfall of the year. Photos in Attachment-A to this plan can be utilized as photo monitoring points for the landowner/operator and be used as a reference on which to base future monitoring comparisons. A sample photo monitoring form can be found under Exhibit-G below. Annual monitoring visits conducted by Midpen staff will document and photograph any concerns, trends, and general overall resource conditions observed throughout the property.

Recommended Monitoring Items:

✓ Residual Dry Matter (RDM): RDM levels can be recorded using pounds per acre and measurements can be calculated or ocular estimates dependent on the skill set and experience of the monitor. RDM average standards are based on the University of California Cooperative Extension (UCCE) and Natural Resources Conservation Service (NRCS) prescribed grazing performance standards. The prescribed RDM standard for moderate grazing is an average minimum of 800-1,000 pounds per acre of dry matter (two to three inches of standing RDM) on slopes of 0 to 30 percent, and 1,000-1,200 pounds per acre of dry matter (three to four inches of standing RDM) on slopes greater than thirty percent. Leaving prescribed levels of RDM on the ground surface will provide a grassland seed crop for the following season, minimize the risk for soil erosion and sedimentation, and protect water quality. Please reference Attachment-B, 'Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California', for more detailed information on RDM standards and data collection.

RDM measurements should be taken in the fall of each year at sites that are exemplary of the average RDM level in a pasture. Areas that are heavily frequented by livestock or do not adequately represent the average RDM level in a given pasture should be exempt from data collection. The following is a list of areas that should be avoided when collecting RDM samples or measurements:

a. Areas that have burned
b. Roads
c. Corrals, and associated lanes and holding fields/traps
d. Sites with low soil fertility (rock outcrops, sandy soils) or high tree cover
e. Areas within 150 feet of water sources, stockponds, supplemental feeding sites
f. Areas subject to damage by wildlife such as feral pigs
g. Areas that are or have been recently cultivated

✓ Plant Communities Observed: Include a list of the plant communities observed within view of the photo point for example annual grassland, woodlands, wetlands, etc. Note any measurable trends or transition between plant community types from the prior year.

✓ Invasive Species Observed: Include a list of observed invasive plant species noting relative abundance, location, and density. Note any differences from the prior year.

✓ Infrastructure: Identify infrastructure relevant to the grazing and/or agricultural operation (water troughs, tanks, fencing, irrigation lines) noting location, current condition and need for adjustments or repairs.

✓ Soil Erosion: Identify areas that are at risk for erosion or where soil loss has occurred as a result of surface water flow, wind, fire, or human activity. These sites may include gullies,

bare ground exposure, landslides, ruts, or notable surface runoff. Note historic activity and any current activity. Recommend soil protection measures.

✓ Access Road Observations: Note condition of road including surface condition, vegetation cover, culverts, recent maintenance or grading, and water diversion measures that are in place. Identify any signs of erosion, rutting, or gullying on the road surface or below road, particularly downstream of channel crossings.

✓ Wildlife Observed: Identify wildlife species observed at location of the photo point including specie information and relative abundance. Observations of special status species shall be reported to the District Natural Resources Department to be included in annual reporting to regulatory agencies.

✓ Annual Precipitation: Note the rainfall, in total inches, for the season. Keeping annual precipitation records is important in determining whether rainfall amount and distribution were average, below average, or above average. In average and above average rainfall years the RDM performance standards should be met. In below average rainfall years, RDM performance standards may be exceeded, but not for more than a period of two consecutive years. Annual stocking rates and grazing duration should be adjusted annually to accommodate forage production and annual precipitation.

EXHIBIT – G

GRAZING MONITORING CHECKLIST (SAMPLE)

SITE NAME_____ DATE_____ PHOTO POINT_____

MONITOR(S): _____

MEASURED RAINFALL (_____INCHES): [ ] < AVERAGE [ ] AVERAGE [ ] >AVERAGE

MONITORING ITEMS:

___RESIDUAL DRY MATTER (RDM) Lbs. PER ACRE: _____0-30% slope _____>30% slope

Estimated [ ] Actual Measurement [ ]

___PLANT COMMUNITIES OBSERVED:

[ ] Annual Grassland [ ] Mixed Forest [ ] Coyote Brush/Scrub

[ ] Oak Woodland [ ] Aquatic Habitat [ ] Riparian Habitat

[ ] Other Communities: _____

[ ] Native Grasses: _____

___WILDLIFE OBSERVED:

PLACE PHOTO HERE

ATTACHMENT 2

INFRASTRUCTURE / ROADS (Improvements, Condition, New Items, Future Concerns, etc.):

PONDS /STREAMS /AQUATIC FEATURES (Access, Vegetation, Water Clarity, Culverts, Spillways, etc.):

VEGETATION (Invasives, Natives, Thatch Amount, Encroachment, Plant Mortality, etc.):

*Relative Abundances: 1 = 1-10 / 2 = 10-100 / 3 = 100+ / 4 = Dominant Vegetation Type

EROSION CONCERNS (Gullying, Rilling, Slides, Surface Runoff, Bare Soil, etc.):

GENERAL NOTES (Cattle info, Landscape Changes, etc.):

DISCUSSION ITEMS/CONCERNS:

REFEERENCES

1. Resource Management Policies, Midpeninsula Regional Open Space District (PDF). https://www.openspace.org/sites/default/files/Resource_Management_Policies.pdf. Pages 53-57. Accessed 06/23/2019.
2. www.JohnstonHouse.org/James-Johnston-Biography. Accessed 07/16/2019.
3. PERSONAL COMMUNICATION: Pacheco, Tom (grazing tenant). May 2019. Personal communication with Clayton Koopmann.
4. PERSONAL COMMUNICATION: Williams, Mike (Real Property Manager, Midpeninsula Regional Open Space District). May 2019. Personal communication with Clayton Koopmann.
5. Annual Crop Report, San Mateo County. 2017. San Mateo County Agricultural Commissioner's Office.
6. National Cooperative Soil Survey. Soilseries.sc.egov.usda.gov. 2014.
7. Natural Resources Conservation Service (NRCS). 2007. San Mateo County, California (CA041) Soil Data, (Version 5, Dec 10, 2007).
8. PERSONAL OBSERVATION: Koopmann, Clayton. May 2019 site visit.
9. California Native Plant Society. *Online database*. www.rareplants.cnps.org. Accessed July 14, 2019.
10. Toto Ranch Rangeland Management Plan. Koopmann Rangeland Consulting. 2018.
11. Johnston Ranch Uplands Vascular Plant List. Vollmar Natural Lands Consulting. 2019.
12. Johnston Ranch Hydrology Project. *Stillwater Sciences*. June 2019.
13. 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.
14. 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.
15. Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California. University of California Cooperative Extensions (UCCE). Publication 8092. 2002.
16. California Natural Diversity database last accessed online July 2019.
17. California Invasive Plant Council, *Invasive Plant Inventory Database*. http://www.cal-ipc.org/paf. August 2014.

PLAN PREPARED BY:

Having prepared this Rangeland Management Plan (RMP), 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 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 — March 17, 2020

Clayton W. Koopmann — Date

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

Koopmann Rangeland Consulting

Rangeland Resource Management Services

ATTACHMENT – A

2017 Baseline Photos: Johnston Ranch Uplands
Photo Point Location Map

(Baseline photos can be used as reference for establishing photo-monitoring points annually by the landowner. Long term trends can be noted when comparing the baseline photo updates against the original baseline photos.)

ATTACHMENT – B

Guidelines for Residual Dry Matter Monitoring
University of California

ATTACHMENT – C

Recommended management approach and best management practices for California red-legged frogs on the Johnston Ranch Uplands

Managing Rangelands to Benefit California Red-Legged Frogs & California Tiger Salamanders – Chapters 4, 5 & 8

ATTACHMENT 3

Cloverdale Coastal Ranches Rangeland Management Plan

Prepared for:

Midpeninsula Regional Open Space District

5050 El Camino Real

Los Altos, CA 94022

Prepared by:

Koopmann Rangeland Consulting October 2022

under Peninsula Open Space Trust property ownership

Adopted by the Midpeninsula Regional Open Space District December 11, 2024

CONTENTS

VII. Management Recommendations & BMPs

VIII. Improvements & Maintenance Recommendations

IX. Recommended Monitoring Protocols

References

Certification

Attachments:

I. PROPERTY SUMMARY INFORMATION:

Owner(s): Peninsula Open Space Trust (POST)

Contact Person: Aaron Peth, Real Property Planner III (Midpen)

Phone Number: Aaron Peth (650) 691-1200

Property Address: Multiple access points via Cloverdale Road, Pescadero Creek Road, Bean Hollow Road, and Pigeon Point Road

Mailing Address: 5050 El Camino Real
Los Altos, CA 94022

Date of Property Acquisition: POST acquired the property in 1997. Midpeninsula Regional Open Space District is working towards purchasing a large majority of the property from POST in the future, excluding the established row crop farm ground.

Major watershed: Gazos Creek, Butano Creek, Pescadero Creek, and Arroyo de los Frijoles

Type of land use: Livestock Grazing / Farming

Property Acreage: 6,472± acres

Zoning: PAD, CD – Planned Agricultural District, Coastal District

Location Description: The Cloverdale Ranch is an expansive property located adjacent to the southern boundary of the town of Pescadero in unincorporated San Mateo County, California. The property lies directly east of State Highway 1 and is bordered by Cloverdale Road on the eastern boundary and Gazos Creek Road to the south. Regionally, Cloverdale Ranch is bordered by cultivated farmland to the north, private property and State Park to the east, and the Pacific Ocean to the west. The 6,472± acre property includes several access points along Cloverdale Road, Pescadero Creek Road, Bean Hollow Road, and Pigeon Point Road.

II. EXECUTIVE SUMMARY: Rangeland Management Plan (RMP)

PROPERTY DESCRIPTION & HISTORY:

The Cloverdale Ranch property (Cloverdale) is located within the San Mateo County Coastside Protection Area in unincorporated San Mateo County along the southern boundary of the town of Pescadero, California (Exhibit-A). Cloverdale, owned by Peninsula Open Space Trust (POST), currently encompasses 6,472± acres, bordered by State Highway-1 to the west, Cloverdale Road to the east and Gazos Creek Road to the south. Topography ranges from gently rolling hills to extremely steep slopes and canyonlands. The level to gently rolling hills and ridgetops support annual grasslands and coastal scrub habitat with moderate coyote brush encroachment. The steeper canyon areas and riparian corridors are comprised of dense brush, woody vegetation, and several established willow stands. Elevation ranges from 41 feet above sea-level along Pescadero Creek Road on the northern boundary to over 623 feet on the ridge top near the southern boundary above Gazos Creek Road. The expansive property drains into four separate watersheds including Pescadero Creek and Butano Creek to the north, Gazos Creek to the south, and Arroyo de los Frijoles bisects the center of the Ranch and includes two water storage reservoirs (Bean Hollow Reservoir North and Bean Hollow Reservoir South) before flowing into Lake Lucerne along State Highway-1.

Historically, Cloverdale has been used for agricultural production, including farming and livestock production, since the mid-1800s and continues to be grazed with some smaller-scale farming to date. Cloverdale remains relatively free of development except for grazing infrastructure and an old wooden hay barn between the Hidden Valley and Goat Ranch grazing units. New barbed wire livestock fencing was recently installed around the Hidden Valley unit and much of the Goat Ranch and Butano Farms units while fencing in the Holm Ranch unit is relatively old and in fair to poor condition. Three small corrals comprised of temporary panels service the Butano Farms area while one large permanent corral located in the Goat Ranch grazing unit services the Holm Ranch, Hidden Valley, and Goat Ranch grazing units. Multiple stockponds and water troughs throughout the property provide livestock water. The water troughs are fed via developed natural springs, wells, and solar-powered pumps placed in numerous stockponds. Grassland areas of the Ranch that are not currently included in the active grazing pastures should be evaluated later to determine the potential ecological benefits of conservation grazing and to enhance feasibility of the existing grazing operation.

POST began acquiring the Cloverdale Coastal Ranch property in 1997 to protect the land from planned low-density development for luxury homes. In total, POST conserved over 8,200 acres of land. Over time, POST placed conservation easements on portions of the land and sold them back to local farmers while additional portions of Cloverdale were incorporated into Pigeon Point

Light Station, Butano State Park, and Año Nuevo State Park [1]. The remaining 6,472± acres of Cloverdale are primarily rangelands divided into four grazing units (Exhibit-B and Table 1): Goat Ranch, Holm Ranch, and Hidden Valley (grazed by the Markegard Family), and Butano Farms (grazed by Reno Denelli). The Markegard Family has grazed the property for several years while Reno Denelli has been grazing Butano Farms for over 65 years [2]. Small portions of farmland located along Cloverdale Road also remain, leased to local farmers. POST plans to sell the Cloverdale Ranch uplands (including existing grazing properties) to Midpen in late 2022 excluding the existing farm ground.

Cloverdale is rich in habitat for special status wildlife species boasting immense vegetative diversity and numerous habitat types. Some of the key special status wildlife species found within or adjacent to Cloverdale include the California red-legged frog, San Francisco garter snake, burrowing owls, badgers, Coho salmon, steelhead trout, western pond turtles, mountain lions, and a variety of avian species.

OWNERSHIP AND MANAGEMENT GOALS:

Post acquired the Cloverdale Ranch property in 1997. The Midpeninsula Regional Open Space District (Midpen) intends to purchase the uplands property, excluding the existing farm ground, from POST at some time in the future; therefore, this Rangeland Management Plan (RMP) is intended to comply with resource management policies adopted by Midpen and implement Midpen's Coastside mission to acquire and preserve 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..

Midpen's conservation grazing goals for the Ranch are to manage the land utilizing livestock grazing that is protective of natural resources and compatible with future public access; to maintain and enhance the diversity of native plant and animal communities; manage vegetation fuel for fire protection; help sustain the local agricultural economy and preserve and foster appreciation for the region's rural agricultural heritage. To achieve the goals of conservation grazing, this RMP will provide a framework around which resource managers, land managers, and grazing tenants can make rangeland management decisions with adaptive management changes.

As stipulated in this RMP, the landowner and the grazing lessee(s) shall implement conservation management practices for all grazing areas of Cloverdale and applied specifically to livestock grazing operations and rangeland management. Conservation management practices include but are not limited to; maintenance and construction of livestock water developments (including

onsite ponds), livestock fencing and corrals, ranch roads, and vegetation management to protect and enhance habitat for wildlife and native flora, water quality, and fire protection. Mature, dense shrubland and forest areas that are not suitable for livestock grazing provide valuable wildlife habitat and should be managed according to the Resource Management Policies of Midpen to protect and enhance habitat value and connectivity for wildlife migration in the greater region.

MANAGEMENT RECOMMENDATIONS & RESPONSIBILITIES:

Cloverdale should continue to be grazed with cattle and operated by two lessees while considering the option to condense grazing operations to a single grazing tenant over the long term. A Request for Qualifications and Proposals (RFQP) process should be used to select grazing tenant(s) with experience and grazing management practices that are supportive of Midpen's grazing management objectives. A long-term grazing lease agreement is recommended (10-year minimum) for the property. Cloverdale should be grazed year-round, dependent upon available forage and livestock water. Cattle should be rotationally grazed to benefit native flora and wildlife habitats. If available forage and/or stockwater is not adequate to support grazing livestock, stocking rates should be reduced or grazing temporarily shifted to seasonal use.

The estimated stocking rate for an average forage production year is 1,802.1 Animal Unit Months (AUMs) or 150.0 animal units year-round (46 cows year-round on Butano Farms and 104 cows year-round on Holm Ranch/Hidden Valley/Goat Ranch grazing units). Stocking rates for the Ranch will vary annually based on available forage and water and should be adjusted accordingly to accommodate available resources.

The monitoring protocol for grazed portions of Cloverdale must ensure that specified rangeland uses comply with the applicable land use regulations and the land stewardship goals, objectives, and implementing guidelines. The landowner will use rangeland/habitat health checklists and photo monitoring forms to monitor grasslands annually each fall prior to rainfall.

III. Purpose of Rangeland Management Plan

The purpose of this RMP is to provide a framework for resource managers, land managers, and grazing tenants to make rangeland management decisions on Cloverdale resulting in adaptive management changes to grazing practices, as needed (e.g., stocking rate reduction due to drought). This RMP addresses appropriate rangeland management practices for soil and water conservation, erosion control, pest management, nutrient management, water quality, and habitat protection on the Cloverdale property.

This RMP should be reviewed at least every 10 years, or sooner, and updated if significant changes in land use or management practices, or a change in ownership occurs. An updated RMP may expand the specific plan for the conduct of commercial agricultural uses to include activities that are not currently being conducted on the Cloverdale property, but are consistent with resource management policies and land management objectives. This RMP will focus on the management of the established grazing units on the Cloverdale Ranch uplands.

IV. Goals and Objectives of RMP

The goals and objectives of the Rangeland Management Plan are to:

A. Describe appropriate historic, current, and potential future agricultural uses.

B. Inventory existing agricultural resources, including soils, water sources, grassland vegetation, forage quality and production, croplands, and infrastructure.

C. Determine capacity for conducting viable agricultural uses.

D. Establish provisions for minimizing erosion and transport of potential pollutants into creeks.

E. Provide a list of Best Management Practices (BMPs) for climate-related impacts, grazing standards, invasive species management, water resources, and conservation.

F. Provide specific guidance for the conduct of agricultural uses that complies with the RMP's land management objectives. The plan will include, as appropriate, Animal Unit Equivalents (AUE), ranch forage production estimates, available forage, crop production estimates, and capacity for any other agricultural uses described in the RMP.

G. Identify special status flora and fauna and include grazing management prescriptions to enhance ecological values and/or, at minimum, include best management practices to protect special status species that may not directly benefit from conservation grazing.

EXHIBIT – A: CLOVERDALE RANCH REGIONAL LOCATION MAP

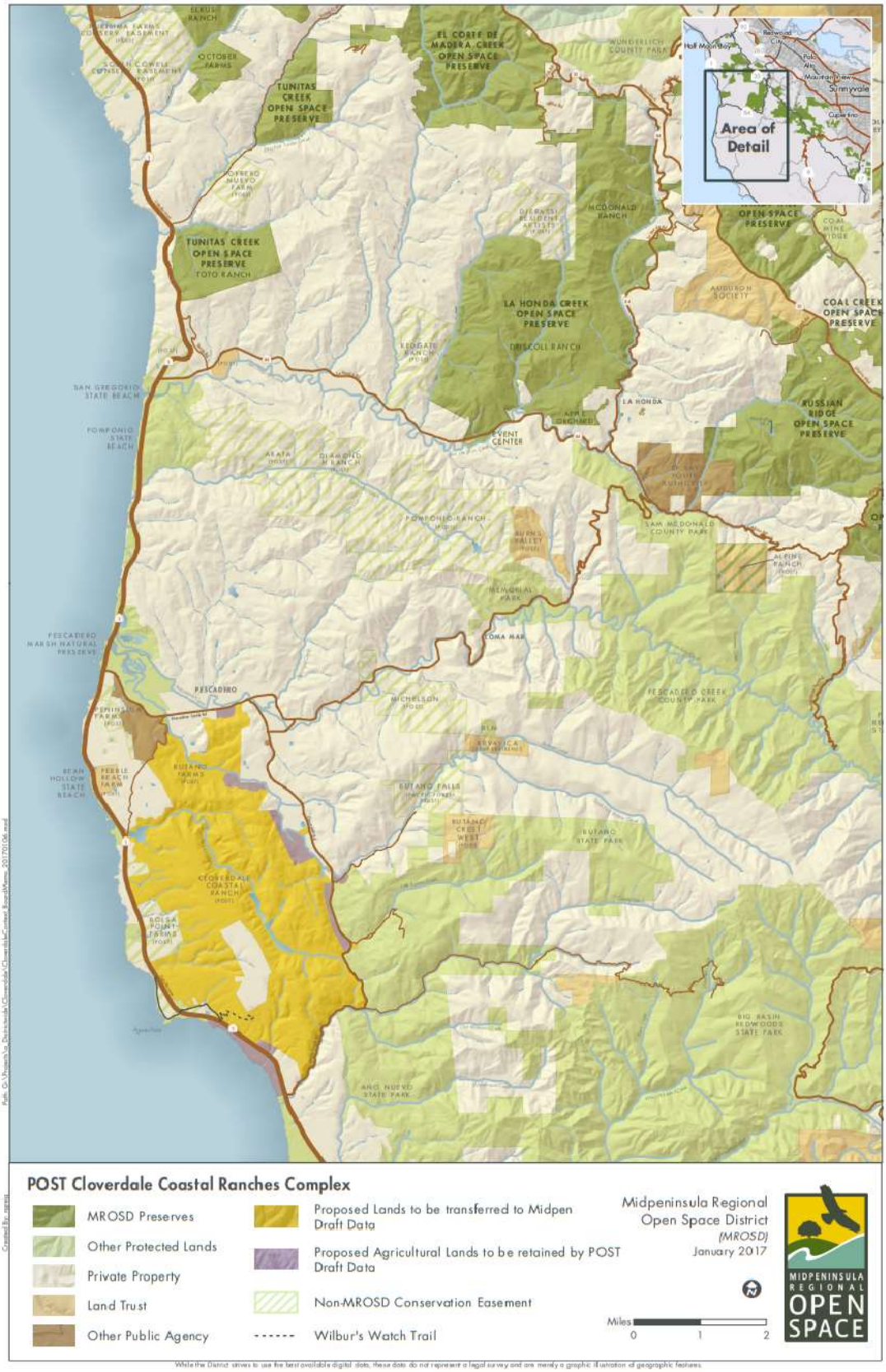
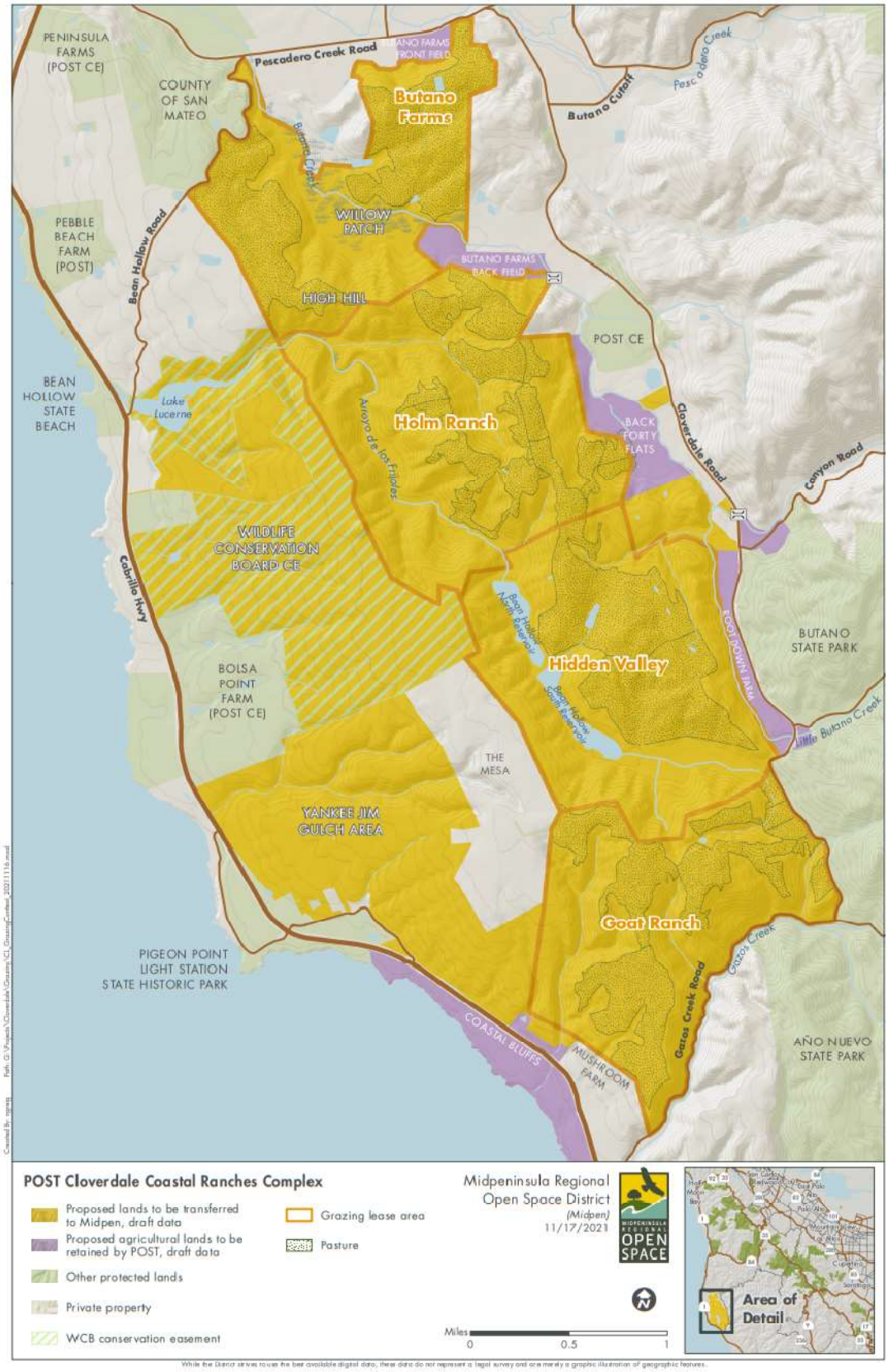


EXHIBIT – B: CLOVERDALE RANCH GRAZING UNITS MAP



V. Existing Resources and Infrastructure:

Agricultural resources include elements necessary to continue agricultural uses on the Cloverdale Ranch property. These include appropriate soils, sufficient water, adequate forage, and supporting infrastructure. These agricultural resources are described below to establish the fact that Cloverdale is capable, at a minimum, of sustaining the current agricultural uses and that it has the potential to sustain additional agricultural uses.

LAND USE INFORMATION

HISTORIC LAND USE:

The majority of the Cloverdale Ranch property was originally part of the 17,753-acre Rancho Punta de Año Nuevo, a Mexican land grant deeded to Simeon Castro in 1842 by then Governor Juan Alvarado [3]. During the late 1800s and early 1900s portions of the original Rancho were divided and sold to various private parties throughout what is now southern San Mateo County. The Cloverdale property, recognized for its fertile soils and abundance of water, was used for livestock grazing, cultivated farming, and dairy production during the early and mid-1900s. The dairy operation and farming activity ceased during the 1950s and the property has since reverted primarily to natural rangelands. From the 1950s to present day the property was primarily used by local tenants for livestock grazing and small-scale farming. POST acquired the property in 1997 and has sold several small parcels to local farmers while other parts of the property were acquired by State Parks.

CURRENT LAND USE:

Cloverdale uplands are currently utilized for livestock grazing and are divided into four grazing units totaling 6,472± acres of which, approximately 1,503-acres are actively grazed as pasture. Much of the steep canyon lands and riparian drainages are not suitable for livestock grazing and primarily serve as watershed and wildlife habitat. Bean Hollow Reservoir North and Bean Hollow Reservoir South, managed by the Lake Lucerne Mutual Water Company, encompass approximately 56± surface acres. The reservoirs are used for water storage which ultimately flows downstream into Lake Lucerne for irrigation of local crops. Much of the land around the reservoirs is fenced to exclude livestock to protect water quality from potential impacts.

Current land uses on Cloverdale include:

- Grazed Pasturelands: 1,503 acres
- Reservoir surface area: 56± acres
- Watershed lands and wildlife habitat: 4,296± acres

Table-1: Breakdown of grazing units by size, grazed acres and grazing tenant [4].

GRAZING UNIT	TOTAL ACRES IN UNIT	ACRES GRAZED	GRAZING TENANT
Butano Farms	822 acres	443 acres	Reno Denelli
Holm Ranch	1,166 acres	307 acres	Markegard Family
Hidden Valley	1,126 acres	390 acres	Markegard Family
Goat Ranch	944 acres	363 acres	Markegard Family

SURROUNDING LAND USE:

The surrounding rural landscape is dominated by established ranches used primarily for beef cattle production and row crop production. The region has undergone a recent increase in poultry, grass-fed meat, and egg production as well as creamery products. The highly productive farmable flats in the region, are ideal for certain vegetable crops, hay, and cut flower production. Publicly owned lands in the area are used for low-impact public recreation such as hiking, mountain biking, and equestrian use.

The adjacent property to the north of Cloverdale is primarily cultivated farmland and the town of Pescadero. To the east Cloverdale is bordered by private farmland and grazed rangelands as well as Butano State Park. To the west, Cloverdale is bordered by private lands, Highway-1 as well as conservation lands held under an easement. The Pacific Ocean lies beyond Highway-1 to the west and the local beaches provide recreational opportunities.

In a regional context, for San Mateo County, agricultural production in 2020 [5] provided a significant total gross revenue value of $93,156,500, of which, livestock production accounted for $5,585,000. According to the San Mateo County Crop Report, livestock production has increased steadily since 2015, with a 54.5 percent increase from 2019 to 2020.

Figure-1: Looking southeast from Butano Farms toward Cloverdale Road, there is abundant row crop farming as well as greenhouse production with associated irrigation ponds. Butano State Park is in the background and provides for low-intensity public recreation.

SOIL DESCRIPTION

The vast expanse of Cloverdale is comprised of over eighty-four soil series types [6] identified on the soils map (Exhibit-C). A comprehensive soils report can be found in Attachment-D of this RMP. Soil composition on the property varies delineated by slope, aspect, and elevation and varies significantly from north to south and east to west across the large property. To maintain a focus on the grazing management component of this RMP, the following section will identify and describe soil types located within the existing grazing units and more specifically the actively grazed pastures within the property.

BUTANO FARMS:

The Butano Farms grazing unit is comprised of nine (9) soil classes that can be further broken down by slope and erodibility, as identified in Table-2a. The primary soil types that make up nearly 93 percent of the Butano Farms grazing unit include Gazos loam (25.5 percent), Tierra loam and sandy loam (22.2 percent), Elkhorn sandy loam (19.1 percent), Colma sandy loam (16.3 percent), and Lobitos loam (9.7 percent). The remaining soil classes are found sporadically in low abundance throughout the grazing unit. The soil classes identified in the soil survey are often highly productive in terms forage production but tend to be highly vulnerable to erosion from surface water flows. Of the mapped soil types, Botella loam is classified as prime farmland by the U.S. Department of Agriculture's Land Inventory and Monitoring Project for the San Mateo Area [7]. Prime farmland soils encompass 12.4 acres on the Butano Farms grazing unit.

Table-2a: Delineation of soil types per acre and percent on the Butano Farms grazing unit.

SOIL SURVEY DATA – CLOVERDALE (BUTANO FARMS), SAN MATEO COUNTY, CA			
Map Unit Symbol(s)	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BdA, BeC2, BoC	Botella loam, sloping, eroded	12.4	2.9%
CmD2, CmE2, CmF2, CmF3	Colma sandy loam, steep and very steep, severely eroded	70.2	16.3%
EhB, EhC2, EhE3	Elkhorn sandy loam, moderately steep and steep, eroding and severely eroded	82.2	19.1%
GbC2, GbD2, GbE2, GbF2, GoF3, GsF2	Gazos loam, sloping to very steep and eroded to severely eroded	109.6	25.5%
LfD2, LlD2, LlE2, LlF2	Lobitos loam, moderately steep to very steep, eroded	41.7	9.7%
Ma	Mixed alluvial land	8.4	1.9%
PpE2	Pomponio loam, steep, eroded	6.1	1.4%
TeB, TeC2, TeD2, TeE2, TsB, TsD2, TsE3	Tierra loam and sandy loam, gently sloping to moderately steep and eroded to severely eroded	94.1	22.2%
TwB	Tunitas clay loam, gently sloping, imperfectly drained	5.3	1.0%
Totals for Area of Interest (AOI)		**430.0**	**100.0%**

HOLM RANCH:

The Holm Ranch grazing unit is comprised of nine (9) soil classes that can be further broken down by slope and erodibility, identified in Table-2b. The primary soil types that make up over 97 percent of the Holm Ranch grazing unit include Tierra loam and sandy loam (33.9 percent), Colma sandy loam (30.6 percent), Gazos loam (12.7 percent), Lobitos loams (11.7 percent), and Pomponio loam (8.3 percent). The remaining soil classes are found sporadically in low abundance throughout the grazing unit. The soil classes identified in the soil survey are often highly productive in terms forage production but tend to be highly vulnerable to erosion from surface water flows. Of the mapped soil types, Botella loam is classified as prime farmland by the U.S. Department of Agriculture's Land Inventory and Monitoring Project for the San Mateo Area [7]. Prime farmland soils encompass 0.7 acres on the Holm Ranch grazing unit.

Table-2b: Delineation of soil types per acre and percent on the Holm Ranch grazing unit.

SOIL SURVEY DATA – CLOVERDALE (HOLM RANCH), SAN MATEO COUNTY, CA			
Map Unit Symbol(s)	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BdB, BfB	Botella loam, sloping, eroded	0.7	0.2%
ClC2, ClD2, ClE2, ClF2, CmF3,	Colma sandy loam, steep and very steep, severely eroded	92.5	30.6%
GaE2, GbF2, GoF3, GsF2	Gazos loam, sloping to very steep and eroded to severely eroded	38.3	12.7%
LdC2, LfD2, LlD2, LlE2, LlF2	Lobitos loams, moderately steep to very steep, eroded to severely eroded	35.4	11.7%
PpC2, PpD2, PpE2	Pomponio loam, sloping to moderately steep, eroded	25.1	8.3%
Rb	Rough broken land	6.2	2.0%
TeC2, TeD2, TeD3, TeE2, TeE3, TmD2	Tierra loam and sandy loam, gently sloping to moderately steep and eroded to severely eroded	102.5	33.9%
TuC2	Tunitas clay loam, sloping, eroded	1.0	0.3%
WmE3	Watsonville loam, moderately steep to steep, severely eroded	1.0	0.3%
Totals for Area of Interest (AOI)		**302.7**	**100.0%**

HIDDEN VALLEY:

The Hidden Valley grazing unit is comprised of five (5) soil classes that can be further broken down by slope and erodibility, identified in Table-2c. The primary soil types that make up over 98 percent of the Hidden Valley grazing unit include Lobitos loam (39.6 percent), Pomponio loam (34.2 percent), and Gazos loam (24.7 percent). The remaining soil classes are found sporadically in low abundance throughout the grazing unit. The soil classes identified in the soil survey are often highly productive in terms forage production but tend to be highly vulnerable to erosion from surface water flows.

Table-2c: Delineation of soil types per acre and percent on the Hidden Valley grazing unit.

SOIL SURVEY DATA – CLOVERDALE (HIDDEN VALLEY), SAN MATEO COUNTY, CA			
Map Unit Symbol(s)	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
DwB	Dublin clay, gently sloping, imperfectly drained	0.3	0.1%
GbD3, GbE2, GbF2, GoF3	Gazos loam, moderately steep to very steep, and eroded to severely eroded	78.3	24.7%
LlC2, LlD2, LlE2, LlF2	Lobitos loams, sloping to very steep, eroded	125.4	39.6%
PpC2, PpD2, PpE2	Pomponio loam, sloping to moderately steep, eroded	108.3	34.2%
TwB	Tunitas clay loam, sloping, eroded	4.7	1.4%
Totals for Area of Interest (AOI)		**317.0**	**100.0%**

GOAT RANCH:

The Goat Ranch grazing unit is comprised of nine (9) soil classes that can be further broken down by slope and erodibility, identified in Table-2d. The primary soil types that make up over 89 percent of the Goat Ranch grazing unit include Pomponio loam (40.8 percent), Tierra loam (32.8 percent), Lobitos loam (8.0 percent), and Gazos loam (7.4 percent). The remaining soil classes are found sporadically in low abundance throughout the grazing unit. The soil classes identified in the soil survey are often highly productive in terms of forage production but tend to be highly vulnerable to erosion from surface water flows. Of the mapped soil types, only Botella loam is classified as prime farmland by the U.S. Department of Agriculture's Land Inventory and Monitoring Project for the San Mateo Area [7]. Prime farmland soils encompass 0.5 acres on the Goat Ranch grazing unit.

Table-2d: Delineation of soil types per acre and percent on the Goat Ranch grazing unit.

SOIL SURVEY DATA – CLOVERDALE (GOAT RANCH), SAN MATEO COUNTY, CA			
Map Unit Symbol(s)	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BeC2	Botella loam, sloping, eroded	0.5	0.1%
CmD2, CmE2	Colma sandy loam, moderately steep to steep, eroded	8.8	2.3%
DuD2	Dublin clay, moderately steep, eroded	3.8	1.0%
GbD3, GbF2, GsF2	Gazos loam, moderately steep to very steep, eroded	28.0	7.4%
LfE2, LlE2, LlF2	Lobitos loam, steep to very steep, eroded	30.0	8.0%
PpC2, PpD2, PpE2	Pomponio loam, sloping to steep, eroded	154.1	40.8%
Rb	Rough broken land	7.3	1.9%
TmC2, TmD2, TsB, TsC2	Tierra loam and sandy loam, gently sloping to moderately steep, acid variant, eroded	123.2	32.8%
TuC2, TwB	Tunitas clay loam, gently sloping to sloping, eroded, imperfectly drained	21.6	5.7%
Totals for Area of Interest (AOI)		**377.3**	**100.0%**

Five (5) soil classes comprise the vast majority of soils present in the grazed pastures on the Cloverdale Ranch including Tierra loam, Colma loam, Gazos loam, Lobitos loam, and Pomponio loam. A detailed description of these primary soil classes is included below. For additional information on the remaining soil classes present on the Cloverdale Ranch please reference the comprehensive soil survey included as Attachment-B of this RMP.

The **Colma and Colma loam** (ClC2, ClD2, ClE2, ClF2, CmD2, CmF2, CmF3) soils series consists of deep, well drained soils that formed in material weathering from softly consolidated or weakly consolidated marine sediments. Colma soils are on the foothills and have slopes of 9 to 75 percent. The mean annual precipitation is about 27 inches [7]. Used mainly for range and watershed lands, small areas have been cleared and planted to hay/silage. Where not farmed, typical vegetation composition consists of coyote brush, Lupine, and poison oak, with an understory of annual grasses and forbs with a few perennial grasses [7]. Colma soils are well drained with medium to rapid runoff, suitable for year-round use by grazing livestock without impacting soil stability or creating soil compaction provided prescribed levels of forage are left on the ground.

The **Gazos loam** (GaE2, GbC2, GbD2, GbD3, GbE2, GbF2, GoF3, GsF2) soil series consists of moderately deep to bedrock, well drained soils that formed in material weathered from sandstone and shale. Gazos soils are on hills and have slopes of 9 to 75 percent. The mean annual precipitation is about 22 inches [7]. Used mostly for livestock grazing, a few areas have been cultivated for growing small grains and hay. Where not cultivated, vegetation primarily consists of annual grasses and forbs with brush and some oak trees [7]. Gazos loam soils are well drained with high to very high runoff and moderately slow permeability making them suitable for year-round grazing by livestock. It is important to leave adequate levels of forage on the soil surface to protect soil integrity and minimize risk of erosion.

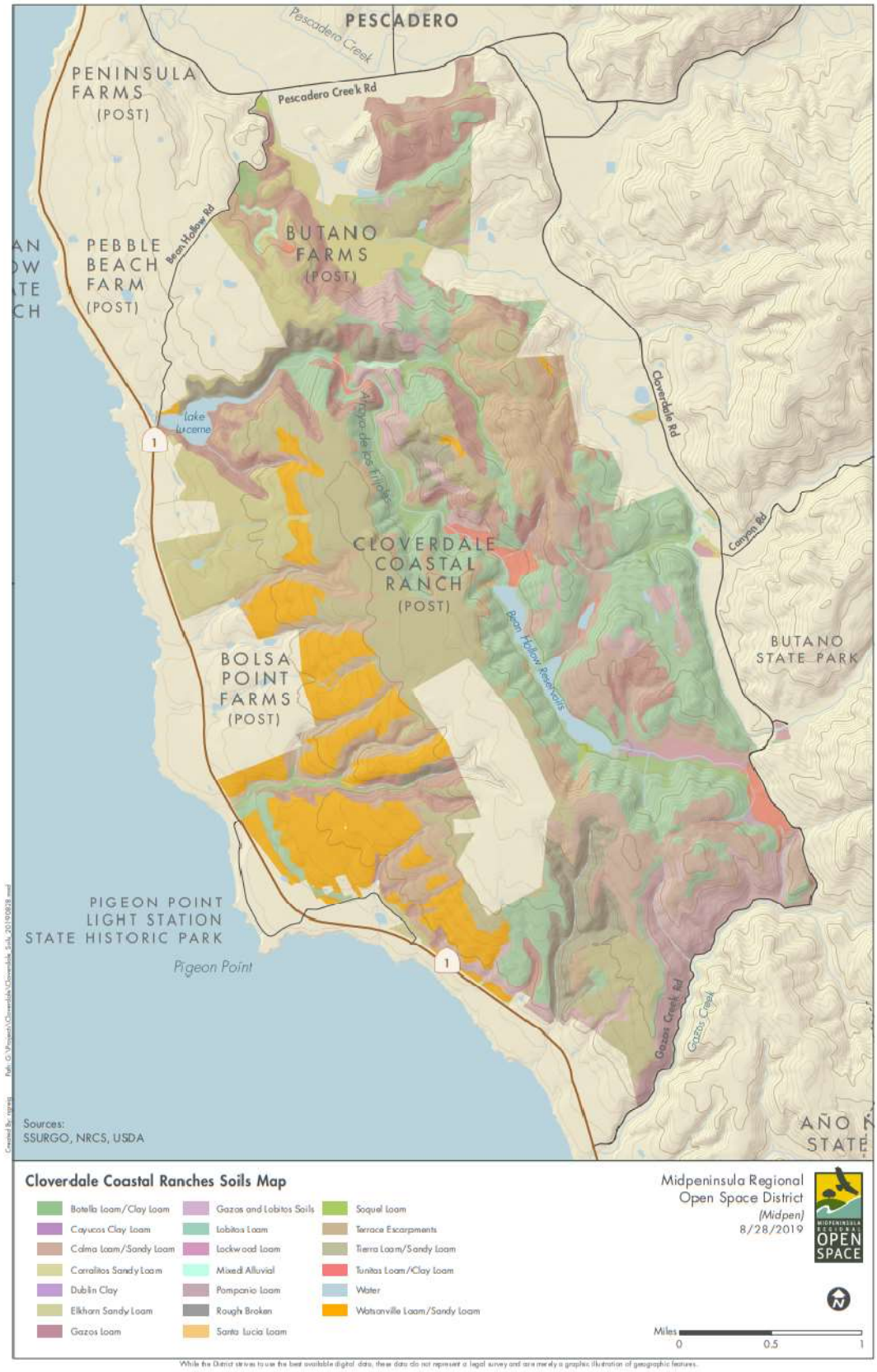
The **Tierra loam** (TeC2, TeD2, TeD3, TeE2, TeE3, TeB, TmC2, TmD2, TsB, TsC2, TsD2, TsE3) soil series consists of deep, moderately well drained soils that formed in alluvial materials from sedimentary rocks. Tierra soils are on dissected terraces and low hills and have slopes of 2 to 50 percent. The mean annual precipitation is about 18 inches [7]. Used for grazing, growing grains, and growing small grains, and small areas for growing a large number of crops, though many cultivated areas have been reverted to grass. Where not cultivated, vegetation composition is primarily annual grasses and forbs [7]. Tierra soils are moderately well drained with slow to rapid runoff and very slow permeability. Tierra soils are suited to year-round livestock grazing, though areas with notably slow permeability are susceptible to soil compaction and grazing should be delayed until soil is firm enough to withstand grazing pressure, typically summer and fall months.

The **Lobitos loam** (LfD2, LfE2, LlC2, LlD2, LlE2, LlF2) soil series consists of moderately deep, well drained soils that formed of moderately hard sandstone and shale. Lobitos soils are on slopes of 5 to 50 percent with a mean annual precipitation of about 30 inches [7]. Used primarily for grazing lands, some areas have been cultivated to grow grain, hay, barley, and flax. Where not cultivated, vegetation composition is primarily annual grasses and forbs with some brush including coyote brush and poison oak [7]. Lobitos soils are well drained with slow to rapid runoff and moderately slow permeability. Lobitos soils are suited to year-round livestock grazing, though areas with notably slow permeability are susceptible to soil compaction and grazing should be delayed until soil is firm enough to withstand grazing pressure, typically summer and fall months.

The **Pomponio loam** (TeC2, TeD2, TeD3, TeE2, TeE3, TeB, TmC2, TmD2, TsB, TsC2, TsD2, TsE3) soil series consists of moderately deep, well drained soils that formed in material derived from shale. Pomponio soils are on uplands with slopes of 2 to 75 percent with a mean annual precipitation of about 25 inches [7]. Used primarily for grazing and growing small grains. Where not cultivated, vegetation composition is coastal type sage with some annual grasslands [7]. Pomponio soils are well drained with very low to high runoff and moderate permeability. Pomponio soils are suited to year-round livestock grazing with minimal risk of soil erosion or soil compaction.

According to soil descriptions provided by the Soil Conservation Service, 81.6 percent of the soils on the Cloverdale Ranch are considered to be “eroded” or “severely eroded” which means they have a high probability to become eroded if soils and vegetation are not properly managed. On steeper, more erosion-prone slopes, and riparian corridors susceptible to soil compaction or trailing, grazing should be delayed until soil is firm enough to withstand grazing pressure without impacting soil stability. Livestock grazing should be managed to protect the soil from erosion as loss of the surface layer can severely decrease forage productivity and sedimentation from soil erosion can impair downstream fisheries. The risk of erosion can be reduced by maintaining adequate plant cover and allowing sufficient residual dry matter (RDM) to remain on the soil surface at the conclusion of the grazing season to protect and stabilize soils.

EXHIBIT-C – CLOVERDALE RANCH SOILS MAP



VEGETATION DESCRIPTION

Vegetative composition throughout Cloverdale is extremely diverse, ranging from annual grasslands and coastal scrub to deep riparian drainages and redwood forest. Most of the upland ridgetops throughout the property are comprised of coastal scrub and annual grasslands which transition to extremely steep canyons dominated by dense brush and forestland. Ridgetops throughout the Hidden Springs and Goat Ranch grazing units include stands of evergreen forest with redwoods. Many of the deep riparian drainages throughout the property include riparian habitat with well-established stands of willows. Most of the drainages are difficult to access due to steep terrain and dense woody vegetation. Numerous stockponds are located throughout Cloverdale which boasts an abundance of aquatic habitat critical to the existence of special status wildlife species. Areas surrounding the Bean Hollow Reservoirs provide a variety of aquatic habitat, most notably a seasonal marsh located near the south end of South Bean Hollow Reservoir. Overall, the vegetative diversity and level of desirable vegetation on the Ranch is excellent and supports abundant, diverse wildlife populations while maintaining productive agricultural value. Vollmar Natural Lands Consulting (VNLC) conducted a comprehensive botanical survey of Cloverdale in late 2021 and 2022 with a focus on rare, special status plant species, and sensitive natural communities. For a complete list of botanical resources on Cloverdale reference the VNLC Cloverdale Ranch Botanical Surveys [9].

RANGELAND PASTURES:

The designated grazing pastures primarily include ridgetops comprised of annual grassland and coastal scrub. Riparian drainages and steep wooded slopes are excluded from much of the grazed pastures, particularly on the Goat Ranch, Hidden Valley, and portions of Holm Ranch. The grazing pastures range from 100 percent annual grassland to areas heavily influenced by coyote brush with minimal forage available for livestock. Most of the grassland forage species are introduced non-native palatable grasses and low forbs that are desirable for livestock grazing. Many locations also have significant stands of native perennial grasses. Grassland and scrubland habitats are present on the flats, ridge tops and gentle slopes throughout. Flats and gentle slopes on Cloverdale were historically dryland farmed but were allowed to revert to grazed pastureland dating back to the mid-1900s [2]. These areas are highly productive and relatively free of invasive thistles, except for sparse isolated patches. Dense woody vegetation dominates many of the small drainages and steeper canyon lands within the grazed pastures. While these areas provide little palatable forage for livestock, they provide shaded locations for loafing, particularly along fringe areas adjacent to the grasslands. Forage production has historically been limited on Cloverdale, diminished in many areas by the presence and dispersal of invasive vegetation, most notably coyote brush [2].

Figure-2: Grasslands in the Butano Farms grazing unit. While the open grasslands provide abundant palatable forage for livestock, coyote brush encroachment into the grasslands is severely impacting forage production and grassland habitat which is critical for species such as the American badger and burrowing owls. Note the dense woody vegetation in the riparian drainage (right side of photo).

Figure-3: Ridgetop pasture in the Holm Ranch grazing unit. The heavy coyote brush encroachment into the grasslands is exemplary of most grazed pastures on Cloverdale.

Figure-4: Ridgetop grasslands in the Goat Ranch grazing unit. Note the heavy brush encroachment in the grasslands, evergreen forest (right side) and the riparian drainage (left) dominated by brush and dense woody vegetation.

RIPARIAN AND AQUATIC HABITAT:

Numerous steep riparian drainages are located throughout Cloverdale, but all are relatively similar in vegetative composition. While most drainages are ephemeral, a few perennial streams are present, most notably Arroyo de los Frijoles which flows from North Bean Hollow Reservoir northward through the Holm Ranch grazing unit before reaching Lake Lucerne near Highway-1. Riparian drainages are generally very steep, dominated by dense brush in the uplands with notable stands of willow trees found throughout many of the stream channels.

The numerous stockponds throughout Cloverdale host an abundance of aquatic vegetation which provides valuable habitat for a variety of special status wildlife species. Most of the stockponds have been fenced to exclude livestock, however, water is pumped from the ponds into nearby troughs for stockwater. While seasonally excluding livestock from the stockponds can benefit species such as the California red-legged frog during breeding season by protecting egg masses in the pond, dense thatch and invasive thistles are growing abundant around many of the ponds which can significantly impact the habitat value. Aquatic vegetation is found along the shore of the Bean Hollow Reservoirs and within the marsh at the upstream end of South Bean Hollow Reservoir, primarily dominated by cattails.

Figure-5: One of the stockponds located in the Hidden Valley grazing unit. The pond is fenced to exclude livestock access and has become inundated with a dense thatch and invasive vegetation including poison hemlock, coyote brush, bull thistle, blackberries, and teasle. Note the solar panel used to pump water to a nearby water trough.

Figure-6: A stockpond on the Goat Ranch grazing unit that was recently fenced to exclude cattle. With recent grazing around the pond prior to the fencing, the vegetation remains relatively free of invasive plants, coyote brush, and dense thatch. Seasonal grazing around the stockponds can enhance habitat for wildlife when timed to protect species during the breeding season.

Figure-7: Arroyo de los Frijoles as it flows from North Bean Hollow Reservoir through the Holm Ranch grazing unit north to Lake Lucerne. Note the dense woody vegetation surrounding the riparian corridor and well-established willows throughout the stream channel. This riparian corridor is exemplary of most on the Cloverdale Ranch.

INVASIVE VEGETATION:

Invasive vegetation has historically impacted the growth of desirable vegetation including forage for grazing livestock. During a May 2022 site visit, Italian thistle (*Carduus pycnocephalus*), Teasel (*Dipsacus laciniatus*), and bull thistle (*Cirsium vulgare*) were found in scattered locations across the Ranch in low densities, though these thistles tend to vary in abundance annually based on precipitation patterns and typically do not dominate grasslands under moderate grazing conditions in San Mateo County. Patches of Jubata grass (*Cortaderia jubata*), French broom (*Genista monspessulana)* and Harding grass (*Phalaris* aquatica) were observed in various locations throughout the property.

Invasive plants found in the riparian corridor are primarily limited to fennel (*Foeniculum vulgare*), Himalayan blackberries (*Rubus armeniacus*), and poison hemlock (*Conium maculatum*). Spiny cocklebur (*Xanthium spinosum*) was noted around the stockponds and other wetland areas. A list of invasive vegetation observed during a May 2022 site is shown in Table-3.

Table 3 – Cal-IPC Rated Invasive plant species list.

INVASIVE VEGETATION (OBSERVED) – May 2022		
Latin Name	**Common Name**	**Cal-IPC Rating**
Carduus *pycnocephalus*	Italian Thistle	Moderate
Centaurea *calcitrapa*	Purple starthistle	Moderate
Cirsium *vulgare*	Bull Thistle	Moderate
Conium *maculatum*	Poison hemlock	Moderate
Cortaderia *jubata*	Pampas grass	High
Dipsacus *laciniatus*	Common teasel	Moderate
Foeniculum *vulgare*	Fennel	High
Genista *monspessulana*	French broom	High
Helminthotheca *ecioides*	Bristly Ox-tongue	Limited
Phalaris *aquatica*	Harding grass	Moderate
Rubus *armeniacus*	Himalayan blackberry	High
Xanthium *spinosum*	Spiny cocklebur	Not Rated

SPECIAL STATUS PLANT SPECIES:

Vollmar Natural Lands Consulting conducted a comprehensive floristic survey for special status and locally rare plants, sensitive natural communities, and invasive weeds in Cloverdale Ranch during late 2021 and 2022. Following the survey VNLC produced a report that provided maps, descriptions of plant community types, identified potential native seed collection sites, and described areas of vegetation management concern. In their report, VNLC identified several special status plant species on Cloverdale and noted a "high" probability for the occurrence of additional species. The species are listed in Table-4 below. Grazing management prescriptions for the protection and enhancement of these special status plant species can be found in Section VII of this RMP.

Table 4 – Special Status plant species on the Cloverdale Ranch [9]. Reference the VNLC Botany Report for additional information.

SPECIAL STATUS PLANT SPECIES			
Latin Name	**Common Name**	**Status**	**Occurrence**
Agrostis blasdalei	Blasdale's bent grass	CRPR 1B.2	High Likelihood
Astragalus pycnostachyus var. *pycnostrachyus*	coastal marsh milk-vetch	CRPR 1B.2	High Likelihood
Castilleja ambigua var. *ambigua*	Johnny-nip	CRPR 4.2	Present
Grindelia hirsutula var. *maritima*	Coastal gumweed	CRPR 3.2	Present
Hosackia gracilis	Harlequin	CRPR 4.2	Present
Lasthenia californica ssp. *macrantha*	perennial goldfields	CRPR 1B.2	High Likelihood
Limnanthes douglasii ssp. *sulpherea*	Pt. Reyes meadowfoam	CA endangered; CRPR 1B.2	Present
Micropus amphibolus	Mt. Diablo cottonweed	CRPR 3.2	High Likelihood
Microseris paludosa	marsh microseris		Present
Perideridia gairdneri ssp. *gairdneri*	Gairdner's yampah	CRPR 4.2	High Likelihood
*Pinus radiata**	Monterey pine	CRPR 1B.1; Cal-IPC Moderate	Present
Piperia michaelii	Michael's rein orchid	CRPR 4.2	High Likelihood
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	CRPR 1B.2	Present
Plagiobothrys diffusus	San Francisco popcornflower	CRPR 1B.1	High Likelihood
Silene scouleri ssp. *scouleri*	Scouler's catchfly	CRPR 2B.2	Present
Silene verecunda ssp. *verecunda*	San Francisco campion	CRPR 1B.2	High Likelihood
Trifolium buckwestiorum	Santa Cruz clover	CRPR 1B.1	High Likelihood
*** *Pinus radiata* is rated as a rare plant only within its historic range which does not include Cloverdale Ranch. Outside of its historic range, this tree is considered a "Moderate" invasive plant and should be prioritized for removal, when appropriate.**			

SENSITIVE NATURAL COMMUNITIES

During the Vollmar Natural Lands Consulting surveys, they identified a number of California Department of Fish and Wildlife sensitive natural communities.

SENSITIVE NATURAL COMMINUTIES (OBSERVED)		
Scientific Alliance	**Common Alliance**	**Status**
Calamagrostis nutkaensis Herbaceous	Pacific reed grass meadows	S2 / G4
Cornus sericea Shrubland	Red osier thickets	S3? / G4
Rubus spectabilis - Morella californica Shrubland	Salmonberry - Wax myrtle scrub	S3 / G4
Nassella spp. - *Melica* spp. Herbaceous	Needle grass - Melic grass grassland	S3S4 / G3G4
Frangula californica - Rhododendron occidentale - Salix breweri Shrubland	California coffee berry - western azalea scrub - Brewer's willow	S3 / G3
Aesculus californica Forest and Woodland	California buckeye groves	S3 / G3
Leymus cinereus - Leymus triticoides Herbaceous	Ashy ryegrass - Creeping wildrye turfs	S3 / G3

WATER SOURCES

Water supply on the Cloverdale Ranch has historically supported year-round livestock grazing but has struggled to produce an adequate stockwater supply under recent drought conditions. Primary water supply for grazing livestock comes from two developed wells, multiple stockponds and spring fed water troughs. Several of the stockponds are situated with a solar powered pumping system which pumps water to nearby storage tanks and livestock water troughs.

STOCKPONDS/RESERVOIRS:

- Butano Farms:

Two ponds/reservoirs are located on the northern portion of Butano Farms. A small, fenced reservoir (approximately 1.3-acre surface area) constructed in 2018 is used primarily to irrigate field crops in the town of Pescadero (Figure-8). A solar powered pump was installed in the reservoir to pump water to nearby storage tanks to be used for stockwater. The reservoir is filled annually via water pumped from Pescadero Creek [2]. An instream perennial stockpond located in an ephemeral drainage provides a secondary source of water for livestock. The pond is not fenced but dense brush and cattails make access to the pond difficult (Figure-9).

Figure-8: Developed reservoir on the Butano Farms property used primarily for irrigating local farm fields. Note the floating solar pump in the water which supplies stockwater to nearby storage tanks and troughs.

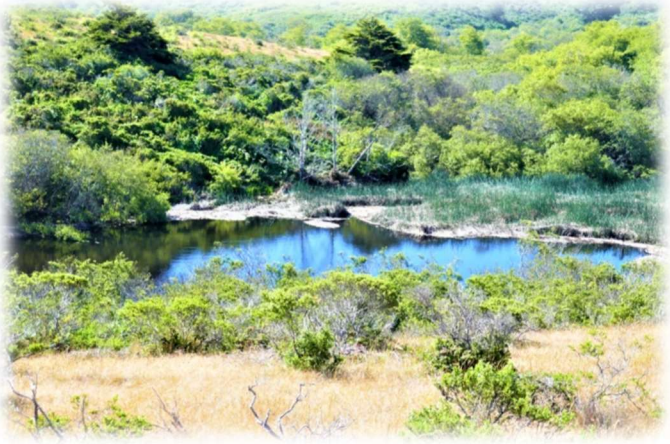


Figure-9: Developed stockpond in an ephemeral drainage in the northern portion of Butano Farms. The perennial pond provides a source of water for livestock, though dense brush and cattails make access to the pond somewhat challenging.

❖ Holm Ranch:

One seasonal stockpond is located on the Holm Ranch grazing unit and provides a limited source of water for livestock. The pond generally holds water during the winter months and dries by late spring.

❖ Hidden Valley:

There are five stockponds located on the Hidden Valley grazing unit. Three of the stockponds have been fenced to exclude access by cattle, however, all three ponds have solar powered pumps in place to provide water to nearby storage tanks and stockwater troughs (Figure-5). While these ponds generally hold water year-round and provide a reliable source of stockwater, the ponds have struggled to supply water over the past couple of years due to extreme drought. A large stockpond in Hidden Valley (Figure-10) is not fenced and provides a source of water for livestock, however, cattle have routinely become entrapped in the mud around the pond during the late summer and fall [10]. A fifth pond near the eastern edge of the grazing unit is surrounded by dense brush and is completely inundated with cattails providing no benefit to the grazing operation on the property.

Figure-10: Stockpond in Hidden Valley used as a water source for livestock.

❖ Goat Ranch:

One stockpond is located in the Goat Ranch grazing unit (Figure-6). The stockpond was recently fenced to exclude livestock access to enhance habitat for CRLF and SFGS. A solar pump was installed in the pond to supply water to nearby storage tanks and livestock troughs. The pond generally holds water year-round.

NATURAL SPRINGS:

Natural springs on the Goat Ranch and Holm Ranch grazing units are limited and a nominal source of livestock water. A single spring located below the old barn in the Hidden Valley grazing unit is developed and supplies water to several storage tanks and a water trough near the south end of the Hidden Valley grazing unit. The western portion of the Butano Farms grazing unit along Bean Hollow Road is watered solely by developed natural springs. Two springs were boxed and collect water in storage tanks to supply nearby water troughs (Figure-11). The springs have struggled to maintain a reliable water supply under current drought conditions. A highly productive spring located in the canyon below the two developed springs is not currently in use for the grazing operation. The spring was historically developed and consistently produces a 2" pipe full of water year-round, even under drought conditions [2].

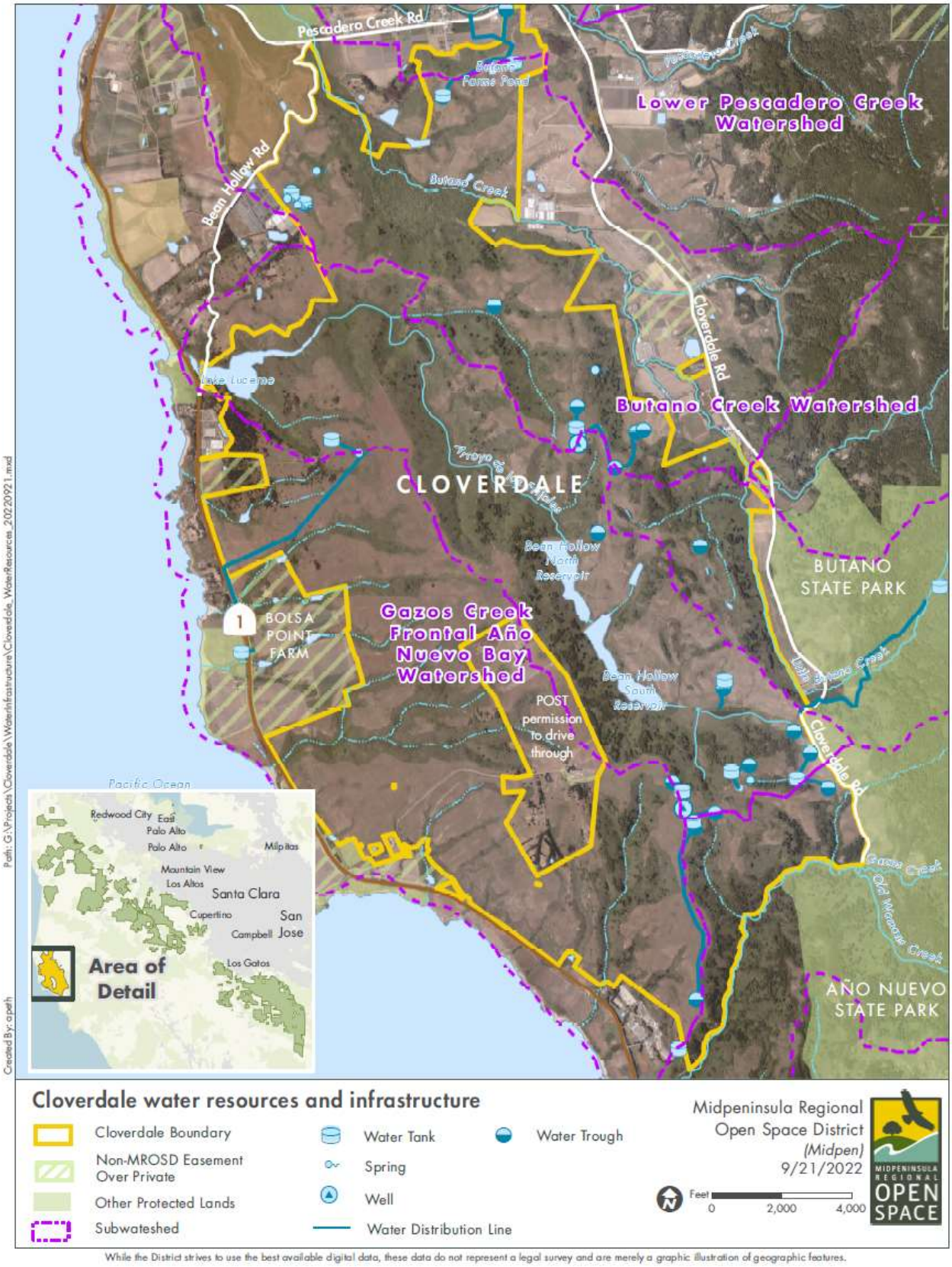
Spring developments vary in design and condition. Developed springs should be evaluated and, if necessary, improved/repaired to prevent wildlife entrapment. If the spring source provides an important source of wildlife water, design spring improvements to provide a "wildlife friendly" alternative water supply at the spring source.

Figure-11: Developed spring with storage tank (right) and plastic water trough (left) located on the western Butano Farms parcels near Bean Hollow Road. Two springs in the area provide the only source of water for livestock. The springs struggle to maintain a reliable water source, particularly during the summer and fall months.

WELLS:

There are two developed wells on Cloverdale that service the livestock grazing operation. The first well is located on the Holm Ranch grazing unit and supplies water to 30,000-gallons of storage tanks. The well is relatively low producing but will keep up with cattle use if the storage tanks are filled prior to the grazing season. The second well is located on the Goat Ranch grazing unit and provides a reliable source of water throughout the upper portion of the grazing unit. Both wells are set up with solar powered pumps which pump water to storage tanks which then feed multiple water troughs via gravity flow.

EXHIBIT-D – CLOVERDALE RANCH WATER RESOURCES MAP



WILDLIFE

Wildlife is abundant throughout the Cloverdale Ranch property. The riparian corridors and other wet areas particularly around the stockponds, provide habitat for various aquatic and amphibian species, including the federally listed California red-legged frog (CRLF) and San Francisco garter snake (SFGS). Black tailed deer, coyotes, American badgers, bobcats, mountain lions and many other animals are present throughout the property.

SPECIAL STATUS WILDLIFE SPECIES [1]

The California Natural Diversity Database (CNDDB) lists several special status wildlife species found within the local region, more specifically the Butano and Pescadero Creek Watersheds, most of which are found in the lower reaches and tidal areas. Special status wildlife species potentially found in the upper portions of the watershed, including the Cloverdale Ranch, are listed in Table-4 below and their known habitat identified on the map in Exhibit-E.

Pathways for Wildlife (Diamond et al) conducted biological surveys within the Cloverdale Ranch with a focus on, burrowing owls (BUOW) and American badgers. The study identified species presence, distribution, breeding habitat, and critical travel corridors essential to the long-term survival of the species. The US Geologic Survey has been monitoring CRLF and SFGS on portions of the Ranch for multiple years and has documented healthy populations important for long term recovery of these species. Findings from these studies support that one or more Conservation Management Units (CMUs) may be warranted for the management of special status species on Cloverdale. A CMU is defined by MROSD Board Policy 4.01 Open Space Use and Management Planning Process as, “areas within preserves, or possibly entire preserves, which because of certain criteria limiting their use, and planned and subsequently managed primarily for preservation of natural resources and viewshed”.

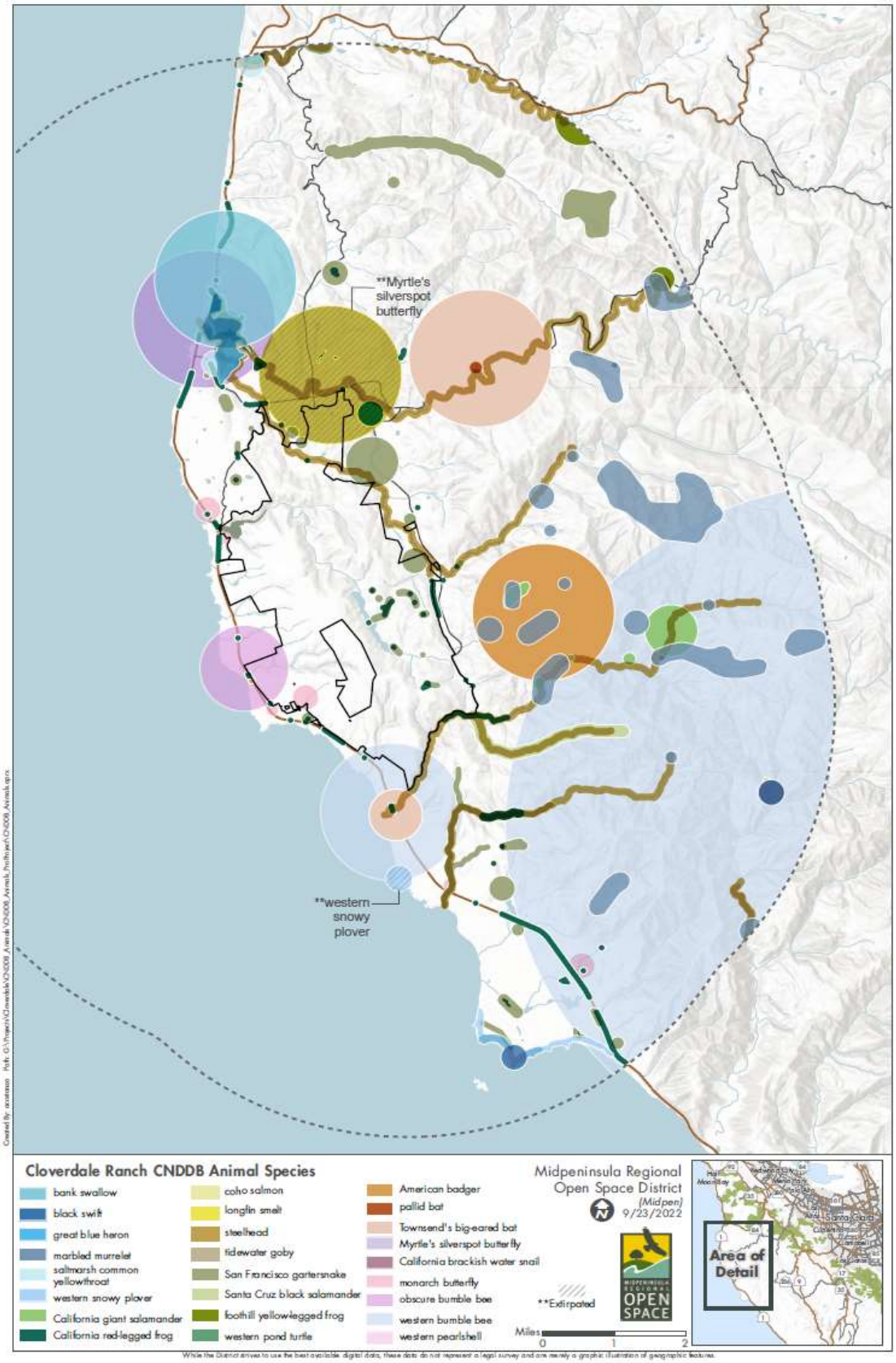
Markegard Family Beef, who currently graze the Goat Ranch, Holm Ranch, and Hidden Valley grazing units, operate under the guidance of the Audubon Conservation Ranching Certification which identifies grassland management objectives to enhance habitat for ground nesting bird species. Program protocols can be found under Attachment-E of this RMP. Grazing management prescriptions within this RMP, specific to the protection and enhancement of special status wildlife species habitat, will primarily focus on SFGS, CRLF, BUOW, and American Badgers while considering the management recommendations identified in the Audubon Conservation Ranching Certification curriculum for ground nesting avian species. Grazing prescriptions specific to wildlife habitat protection and enhancement can be found in Section VII of the RMP.

[1] This information is used for planning purposes only

Table 4 – Special Status wildlife species identified on or near the Cloverdale Ranch.

AMPHIBIANS AND REPTILES		
SCIENTIFIC NAME	COMMON NAME	STATUS
Actinemys marmorata	Western pond turtle	CA species of special concern
Aneides niger	Santa Cruz black salamander	CA species of special concern
Diacamptodon ensatus	California giant salamander	CA species of special concern
Rana boylii	Foothill yellow-legged frog	CA endangered
Rana draytonii	California red-legged frog	Federally threatened CA species of special concern
Thamnophis sirtalis tetratania	San Francisco garter snake	Federal & CA endangered
BIRDS		
SCIENTIFIC NAME	COMMON NAME	STATUS
Ardea herodias	Great blue heron	CA species of special concern Federally protection under MBTA
Ammodramus savannarum	Grasshopper sparrow	CA species of special concern
Athene cunicularia	Burrowing owl	CA species of special concern
Brachyramphus marmoratus	Marbled murrelet	CA endangered Federally threatened
Circus cyaneus	Northern harrier	CA species of special concern
Charadrius nivosus	Western snowy plover	CA species of special concern
Cypseloides niger	Black swift	CA species of special concern
Geothlypis trichas sinuosa	San Francisco (or salt marsh) common yellowthroat	CA species of special concern USFW bird of conservation concern
Passerculus sandwichensis	Savannah sparrow	CA species of special concern
Riparia riparia	Bank swallow	CA threatened Federal protection under MBTA
Selasphorus sasin	Allen's hummingbird	USFW bird of conservation concern
FISH		
SCIENTIFIC NAME	COMMON NAME	STATUS
Eucyclogobius newberryi	Northern tidewater goby	Federal & CA endangered
Oncorhynchus kisutch	Coho salmon	Federal & CA endangered
Oncorhynchus mykiss	Steelhead trout	Federal threatened
Spirinchus thaleichthys	Longfin smelt	CA threatened
MAMMALS		
SCIENTIFIC NAME	COMMON NAME	STATUS
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	CA species of special concern
Puma concolor	Mountain lion	CA "specially protected mammal"
Taxidea taxus	American badger	CA species of special concern
Antrozous pallidus	Pallid bat	CA species of special concern
Corynorhinus townsendii	Townsend's big-eared bat	CA species of special concern
INSECTS		
SCIENTIFIC NAME	COMMON NAME	STATUS
Bombus caliginosus	Obscure bumble bee	CA species of special concern
Bombus occidentalis	Western bumblebee	CA species of special concern
Danaus plexippus	Monarch butterfly	CA species of special concern
Speyeria zerene myrtleae	Myrtle's silverspot butterfly	CA endangered

EXHIBIT-E – CLOVERDALE RANCH CNDDB WILDLIFE SPECIES



EXISTING AGRICULTURAL INFRASTRUCTURE

AGRICULTURAL BUILDINGS:

The lone agricultural structure located on the Cloverdale Ranch is a wood-frame barn with a corrugated tin roof located on the southern end of the Hidden Valley grazing unit (Figure-12). The barn was originally built in the early 1900s and measures approximately 80 feet by 50 feet (4,000 ft^2). The barn is in good structural condition and is used for storage of hay and other ranch equipment by the grazing tenant.

Figure-12: Old barn located along the southern end of the Hidden Valley grazing unit. The barn is in good structural condition and currently used by the grazing tenant to store hay and other ranch equipment.

CORRALS & LIVESTOCK HANDLING FACILITIES:

- Butano Farms:

  There are three (3) corrals located on the Butano Farms grazing unit, all of which are very small, constructed of portable livestock panels. One corral is located adjacent to Pescadero Creek Road, a second corral is located on the ridge top near the reservoir (figure-13), and a third corral is located on the western portion of the unit near Bean Hollow Road (Figure-14). While the three corrals service the current grazing operation, they are all undersized and of poor quality with no associated holding pastures. The corral adjacent to Pescadero Creek Road is primarily used for cattle shipping and receiving.

Figure-13: Corral constructed of portable panels on the ridge top near the reservoir. The corral is undersized and only consists of one large pen and an alley way. There is no holding field associated with the corral. The grazing tenant can "make-do" with this setup but struggles at times to safely and efficiently process livestock.

Figure-14: The corral located on the western side of the Butano Farms grazing unit is small and poorly constructed. The corral is usable but not reliable to efficiently process, ship or receive cattle. The corral has been pieced together over the years with a variety of different gates and panels.

- Holm Ranch:

  There is not currently a set of corrals located on the Holm Ranch. The grazing tenant has been in discussion with POST about installing a new set of corrals on the northeast corner of Holm Ranch adjacent to the row-crop fields. The site is accessible year-round via gravel road; however, the potential corral site is relatively small, challenging to access with trailers, and the proximity to a nearby stream channel and crop fields present health and safety concerns.

- Hidden Valley:

  There is not currently a corral on the Hidden Valley grazing unit.

- Goat Ranch:

  A set of corrals are located on the northeast portion of Goat Ranch adjacent to Cloverdale Road (Figure-15). The corrals currently service the Goat Ranch, Hidden Valley and Holm Ranch grazing units. The corral is accessible year-round. The corral is old and dilapidated but has been improved with portable panels by the livestock tenant. The corral is situated in a good location for access but could use major improvements and upgrades as the portable panels at the corral are owned by the current grazer and would be removed if there were a change in grazing tenants. Several small holding fields are located adjacent to the corral.

Figure-15: Corral on the Goat Ranch grazing unit. Corral consists primarily of panels owned by the current grazing tenant.

STOCK WATER:

- Butano Farms:

  The northern portion of Butano Farms has two water sources. The primary source of water is pumped from the reservoir to two (2) 5,000-gallon water storage tanks which then feed two plastic livestock water troughs, one just east of the reservoir and the other just west of the reservoir. The second water source is the stockpond which was recently de-silted and improved by the local Resource Conservation District (RCD).

  Stockwater on the western portion of Butano Farms is provided by two developed springs that capture and store water in 1,000-gallon water storage tanks which supply water to two plastic livestock water troughs via gravity flow (Figure-11). Water supply and distribution on the western portion of Butano Farms is marginal and should be improved in the future to enhance livestock distribution and more balanced forage utilization throughout the unit.

- Holm Ranch:

  The primary water source for the Holm Ranch is a developed well which pumps water to six (6) 5,000-gallon water storage tanks (Figure-16). The storage tanks then supply water to three (3) concrete water troughs, primarily in the southern and eastern portion of the grazing unit. A seasonal stockpond is present just northwest of the well and storage tanks, however the pond generally dries by late spring and is not a reliable water source. Water is generally well distributed throughout the southern and eastern portion of the grazing unit but is poorly distributed through the northern and western portion of the unit.

Figure-16: (left) A water trough near the eastern edge of the Holm Ranch grazing unit. The trough is supplied via water pumped from the well on the ridgetop to the west.

- Hidden Valley:

  The Hidden Valley grazing unit contains multiple water sources. Three separate stockponds, all fenced to exclude cattle, are outfitted with solar powered pumps which supply water to nearby concrete water troughs, one near each pond (Figure-17). All three of the ponds have

struggled to provide an adequate water supply to keep the troughs full under recent drought conditions. A stockpond in Hidden Valley provides a year-round source, however, cattle tend to get stuck in the mud around the pond later in the fall [10]. A developed spring with a solar pump supplies water to four (4) 5,000-gallon water storage tanks and a water trough on the southern end of the Hidden Springs grazing unit near the old barn. In general livestock water is fairly well distributed in the grazing unit, however, the reliability of the water supply is poor, particularly under drought conditions.

Figure-17: (left) A concrete water trough adjacent to a stockpond. The solar panel (center of photo) powers a pump in the pond which sends water to the trough. Three similar systems are present in the Hidden Springs grazing unit. Under recent drought conditions all ponds have failed to maintain an adequate water supply to keep the troughs full.

❖ Goat Ranch:

Of the four grazing units on Cloverdale, the Goat Ranch grazing unit has the most reliable water supply and most expansive distribution. The primary water source is a well located on the ridge near the northwest portion of the grazing unit that uses a solar pump to supply water to six (6) 5,000-gallon storage tanks. The storage tanks provide water to four concrete water troughs via gravity, strategically placed in the pastures to promote livestock distribution. A perennial stockpond was historically used as a water source but was recently fenced to exclude cattle. A solar pump was installed in the pond and supplies water to two nearby storage tanks that feed a nearby concrete trough. A developed spring with a storage tank provides water to the holding fields and corrals via gravity.

Figure-18: Water storage tanks filled from the well in the Goat Ranch grazing unit.

FENCING:

Fencing on Cloverdale varies in condition between grazing units. The Hidden Valley and Goat Ranch grazing units have primarily all new barbed wire fencing installed around much of the perimeter and several interior pasture fences. The holding fields around the Goat Ranch corral are older but remain functional. The Holm Ranch grazing unit has not received any fence upgrades and much of the perimeter fence is extremely old and in poor condition with interior pasture fences dilapidated beyond a state of functionality. Butano Farms does not contain any interior pasture fencing and perimeter fence varies in condition with some areas recently updated with new fence while other areas have old but functional fence. In many areas of the Cloverdale Ranch grazing units' natural terrain and dense brush barriers have been used historically to contain cattle; however, the natural barriers may become ineffective if wildfire should burn boundaries in these areas.

Newly installed fencing on the Goat Ranch, Hidden Valley and portions of the Butano Farms grazing units is "wildlife friendly" and consists of steel pipe braces, galvanized steel t-posts on 10–12-foot centers, and 5 and/or 6 strands of barbed wire with a smooth bottom wire (Figure-19). Old but functional fencing on the Holm Ranch and Butano Farms grazing units primarily consists of old wooden brace posts in varying condition and 3-5 strands of barbed wire. Many of the posts are rotted or broken off from age and many of the wires are loose though the fencing remains "cow tight" where present around the perimeter.

Figure-19: Recently installed fence on the Goat Ranch grazing unit using steel braces posts and t-posts.

Figure-20: Old fence in poor condition with several loose/missing wires and broken wooden posts.

RANCH ACCESS ROADS:

There are over 50 miles of roads and trails on the Cloverdale Ranch that serve various purposes including cattle grazing operations, farming, water resource management, residential access, private easements, fuel breaks, and general property management [12]. Roads and trails throughout the property vary in condition from well-maintained gravel access roads to seasonal use trails open to ATV/UTV traffic only. Many of the roads present today were designed and constructed decades ago with limited consideration for environmental impacts and erosion prevention. Timothy C. Best, CEG prepared a comprehensive roads and trails inventory report in 2022 and detailed the objectives established by Midpen for the network of roads and trails on the Cloverdale property. These objectives include:

1. Reduce environmental impacts of the road network, including impacts to SFGS and their habitat, and erosion associated impacts to water quality.
2. Maintain a sustainable road and trail network suitable for current and future land uses, including:
    a. Ongoing ranch and agricultural operations,
    b. Utility infrastructure access
    c. Patrol and emergency response
    d. Existing residential and future farm labor housing
    e. Fire management
    f. Access for natural resource management
    g. Public access and ecologically-sensitive recreational use
3. Provide access for existing easement holders
4. Minimize long term road maintenance costs by upgrading roads as needed and closing or reducing road profiles and/or use types not needed for current or planned land uses.

Per the roads and trails objectives established by Midpen, relevant to this RMP and continued conservation grazing uses on Cloverdale, maintaining a road system that provides access for grazing operators is critical to the long-term sustainability of conservation grazing on the property. For site specific road and trail conditions and maintenance recommendations, refer to the April 2022 “Cloverdale Ranch Road Assessment” report prepared by Timothy C. Best, CEG.

EXHIBIT-F – CLOVERDALE RANCH GRAZING INFRASTRUCTURE MAP

RANGELAND CONDITION

The Cloverdale Ranch grazing units are comprised of approximately 33 percent annual grasslands and/or grassland-coastal scrub, much of which was historically farmed, and more recently grazed with cattle. Grazing units encompass approximately 6,472 acres of which approximately 2,120 acres are comprised of annual grassland or a coastal scrub/grassland mix that provide palatable forage for livestock. Forage production is heavily impacted by coyote brush encroachment throughout all grazing units.

Current forage conditions on Cloverdale, where not impacted by coyote brush encroachment, appear good with abundant palatable forage available for livestock. Forage conditions and residual dry matter (RDM) on the property indicate a slightly low stocking rate in relation to current forage production [8]. Livestock distribution and overall forage utilization vary based on available stockwater. Stockwater distribution is limited, and cattle tend to graze the areas within close proximity to water. As a result, livestock distribution and overall forage utilization have been lower than expected. The Cloverdale Ranch is operated as four separate grazing units. The Butano Farms grazing unit, grazed by Reno Denelli, is grazed as two non-contiguous pastures. Holm Ranch, Hidden Valley, and Goat Ranch grazing units are contiguous, all grazed by the Markegard Family. Hidden Valley and Goat Ranch are further divided into multiple smaller pastures while Holm Ranch is grazed as one large pasture.

FORAGE QUALITY:

Forage quality in addition to forage quantity (annual production) play a key role in determining carrying capacity for a pasture and for the entire ranch. Forage quality as well as forage production vary somewhat across the Ranch based on soil type, topography, aspect, invasive vegetation, water, and brush encroachment. In general, forage quality is good with a high abundance of palatable, nutritious grasses and forbs in the grasslands. Forage quality in some areas is negatively impacted by the presence of invasive vegetation. Many of the steeper, forested/brushy slopes provide little to no palatable forage for livestock.

Mineral and nutrient supplements are currently provided to livestock on the ranch to maximize productivity and maintain livestock health, though it is not known if mineral and/or nutrient supplements are necessary to account for potential nutrient deficiencies in native forage. A thorough nutrient analysis may be performed on forage samples from the Ranch, if desired by the livestock operator(s), to determine forage nutrient quality and livestock supplement requirements more accurately.

FORAGE PRODUCTION:

Palatable forage production ranges from good to poor across Cloverdale excluding the steeper, wooded slopes, and dense brushy canyons. Forage production may be slightly lower around rocky outcroppings or eroded slopes, as the soil tends to be shallow, which can limit rooting and nutrient/water uptake by plants. Palatable forage production is impacted by the presence of invasive vegetation, predominantly coyote brush, which outcompetes desirable vegetation, and is evident in most pastures throughout the property. Highly palatable annual grasses and low growing forbs comprise most of the vegetation available for grazing livestock. Based on available standing forage observed during a May 2022 site visit, the current stocking rate is low when compared to annual forage production on the property [8].

Estimated annual forage production for the grazed pastures on Cloverdale is determined through estimates based on soil class provided in the San Mateo County Soil Survey (USDA, 1985). Non-forage producing areas of the Ranch, including the reservoirs, stockponds, forested slopes, and dense brushy canyons have been deducted from the total grassland acres utilized to calculate available dry weight forage production shown in Table-7. Total dry weight forage production estimates per soil class are shown in Table-5:

Table-5: Total forage production estimates per soil class provided by NRCS for grassland acres.

Soil Map Unit		Approx. Grassland Acres	Total Dry Weight Forage Production (lbs./acre)		
			Unfavorable Year	Normal	Favorable Year
Bda, BdB, BfB, BeC2, BoC	Botella loam	13.6	1,500	2,500	3,500
CmD2, CmE2, CmF2, CmF3, ClC2, ClD2, ClE2, ClF2	Colma loam & Colma sandy loam	171.5	1,500	2,500	3,000
DwB, DuD2	Dublin clay	4.1	1,750	2,750	3,500
EhB, EhC2, EhE3	Elkhorn sandy loam	82.2	1,980	2,880	3,240
GbC2, GbD2, GbE2, GbF2, GoF3, GsF2	Gazos loam & Gazos Lobitos soils	254.2	1,980	2,880	3,240
LdC2, LfD2, LlD2, LlE2, LlF2	Lobitos loam	232.5	1,500	2,500	3,500
Ma	Mixed alluvial land	8.4	1,500	2,500	3,000
PpC2, PpD2, PpE2	Pomponio loam	293.6	1,700	2,750	3,500
Rb	Rough broken land	8.6	750	1,500	2,000
TeC2, TeD2, TeC2, TeD2, TeD2, TeE2, TeE3, TmC2	Tierra loams	319.8	1,500	2,500	3,200
TuC2, TwB	Tunitas clay loam	32.6	1,980	2,700	2,880
WmE3	Watsonville loam	1.0	1,500	2,250	3,000
	Total Acres	**1,427**			

VI. Capacity for Conducting Agricultural Uses

A capacity assessment of agricultural uses on Cloverdale has been approximated by reviewing both current and historic agricultural uses and other factors. Information provided in the following section establishes a basis for determining potential levels of agricultural uses on the property by quantifying the carrying capacity based on existing infrastructure, forage production, soil quality, water availability, and space while protecting ecological resource values.

GRAZING CAPACITY ESTIMATE

Rangeland livestock production is the primary agricultural use on Cloverdale in terms of acres in production. Forage production estimates are utilized to determine livestock carrying capacity and an estimated range of stocking rates. Proposed carrying capacity estimates for Cloverdale are established using forage production estimates based on soil class units derived from the San Mateo County Soil Survey [6].

Table-6: Animal Unit Equivalents.

Animal Unit Equivalents	
Animal Kind & Class	**Animal Unit Equivalent**
Cow, dry	1.00
Cow, with calf	1.00
Bull, mature	1.50
Horse	1.75
Replacement Heifer	0.50
Replacement Heifer	0.75
Sheep, mature	0.25
Lamb, 1 year old	0.15

[1] An animal unit month (AUM) is the amount of dry forage consumed by one animal unit in one month (assuming consumption of dry weight forage equal to 3.3% of body weight), roughly equivalent to 1,020 pounds.

Table-7 depicts available forage, per the Soil Survey description, for 'favorable', 'normal', and 'unfavorable' production years. 'Available forage' is calculated by deducting the RDM desired at the end of the grazing season (average of 1,000 lbs. per acre) from the total forage production. Based on available forage on the currently grazed pasture areas of Cloverdale, leaving an average of 1,000 pounds of RDM, the estimated carrying capacity ranges from 2,097.4 AUMs in a favorable year to 1,320.0 AUMs in an unfavorable year with an average carrying capacity of 1,802.1 AUMs in normal production years (Table-8).

- Favorable Production Year:
  2,097.4 AUMs = Approximately 175 cows grazing year-round.
- Average Production Year:
  1,802.1 AUMs = Approximately 150 cows grazing year-round.
- Unfavorable Production Year:
  1,320.0 AUMs = Approximately 110 cows grazing year-round.

Table-7: Available dry-weight forage for grazing livestock (grassland and or coastal scrub on currently grazed pastures) derived from NRCS Soil Survey data. Calculations assume leaving an average of 1,000 pounds per acre of RDM and 10% forage loss due to natural conditions such as wind, trampling, etc. Acreage has been deducted for the dense brush/wooded areas that provide little to no palatable forage.

Soil Map Unit		Approx. Acres	Available Dry Weight Forage Production (lbs./acre)		
			Unfavorable Year	Normal	Favorable Year
Bda, BdB, BfB, BeC2, BoC	Botella loam	13.6	500	1,500	2,500
CmD2, CmE2, CmF2, CmF3, ClC2, ClD2, ClE2, ClF2	Colma loam & Colma sandy loam	171.5	500	1,500	2,000
DwB, DuD2	Dublin clay	4.1	750	1,750	2,500
EhB, EhC2, EhE3	Elkhorn sandy loam	82.2	980	1,880	2,240
GbC2, GbD2, GbE2, GbF2, GoF3, GsF2	Gazos loam & Gazos Lobitos soils	254.2	980	1,880	2,240
LdC2, LfD2, LlD2, LlE2, LlF2	Lobitos loam	232.5	500	1,500	2,500
Ma	Mixed alluvial land	8.4	500	1,500	2,000
PpC2, PpD2, PpE2	Pomponio loam	293.6	700	1,750	2,500
Rb	Rough broken land	8.6	250	500	1,000
TeC2, TeD2, TeC2, TeD2, TeD2, TeE2, TeE3, TmC2	Tierra loams	319.8	500	1,500	2,200
TuC2, TwB	Tunitas clay loam	32.6	980	1,700	1,880
WmE3	Watsonville loam	1.0	500	1,250	2,000
	Total Acres	**1,427**			

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. Table-8 details the estimated carrying capacity for the property, in AUMs and AUs, as derived from forage production data provided in the NRCS Soil Survey. The estimated carrying capacity for Cloverdale is comparable to historic stocking levels.

Table-8: Estimated carrying capacity for currently grazed pasture lands on the Cloverdale based on calculated available forage production on grazeable, forage producing acres. Grazing capacity estimates are provided per grazing unit with a cumulative total for the entire property at the bottom.

Soil Map Unit	Approximate Grassland Acres	Estimated Carrying Capacity (Animal Unit Months)		
		Unfavorable Year	Normal	Favorable Year
BUTANO FARMS				
Botella loam	12.4	10.5	14.2	16.1
Colma sandy loam	70.2	59.6	80.6	92.7
Elkhorn sandy loam	82.2	87.5	118.3	136.0
Gazos loam	109.6	116.7	157.7	181.4
Lobitos loam	41.7	35.4	47.9	55.1
Mixed alluvial land	8.4	7.1	9.6	11.0
Pomponio loam	6.1	6.1	8.2	9.4
Tierra loam and sandy loam	94.1	80.0	108.1	124.3
Tunitas clay loam	5.3	5.1	6.9	7.9
SUBTOTAL (AUMs / COWS YEAR-ROUND)	**430.0 acres**	**408.0 / 34**	**551.5 / 46**	**633.9 / 53**
HOLM RANCH				
Botella loam	0.7	0.6	0.8	1.0
Colma sandy loam	92.5	83.1	112.3	132.1
Gazos loam	38.3	43.1	58.3	68.6
Lobitos loams	35.4	31.8	43.0	50.6
Pomponio loam	25.1	26.3	35.5	41.8
Rough broken land	6.2	1.5	2.0	2.3
Tierra loam and sandy loam	102.5	75.9	124.4	146.4
Tunitas clay loam	1.0	1.0	1.4	1.6
Watsonville loam	1.0	0.7	1.0	1.2
SUBTOTAL (AUMs / COWS YEAR-ROUND)	**302.7 acres**	**264.0 / 22**	**378.7 / 32**	**445.6 / 37**
HIDDEN VALLEY				
Dublin clay	0.3	0.2	0.4	0.5
Gazos loam	78.3	11.5	15.8	18.2
Lobitos loams	125.4	130.7	179.1	206.0
Pomponio loam	108.3	133.4	180.5	207.6
Tunitas clay loam	4.7	5.6	7.6	8.7
SUBTOTAL (AUMs / COWS YEAR-ROUND)	**317.0 acres**	**281.4 / 24**	**383.4 / 32**	**440.6 / 38**
GOAT RANCH				
Botella loam	0.5	0.5	0.6	0.7
Colma sandy loam	8.8	8.0	10.7	12.6
Dublin clay	3.8	4.1	5.4	6.3
Gazos loam	28.0	32.0	42.6	50.1
Lobitos loam	30.0	27.4	36.5	42.9
Pomponio loam	154.1	163.7	218.3	256.8
Rough broken land	7.3	2.3	3.0	3.5
Tierra loam and sandy loam	123.2	112.2	149.6	176.0
Tunitas clay loam	21.6	16.4	21.8	25.7
SUBTOTAL (AUMs / COWS YEAR-ROUND)	**377.3 acres**	**366.6 / 31**	**488.5 / 41**	**574.6 / 48**
TOTAL AUMs	**1,427 acres**	**1,320.0**	**1,802.1**	**2,097.4**
Year-round Stocking Rate in Animal Units (AUs) (AUMs ÷ 12 months)		**110**	**150**	**175**

Coyote brush is well established in many of the steeper canyons and has expanded into the ridgetops and open grassland areas in most locations. Coyote brush encroachment in the grasslands has reduced forage production by 60-80 percent in many areas. A coyote brush management plan should be developed for Cloverdale to prioritize objectives, treatment areas and methods. Future brush control efforts should be considered following the recommendations in the coyote brush management plan to maintain the estimated grazing capacity and to protect grassland habitats critical to grassland reliant species.

DAIRY CAPACITY:

The Steele Brothers dairies began operating in the area in the 1850's and established several large dairy and creamery operations ranging from Point Reyes south to Santa Cruz. One of their original dairies was located along Cloverdale Road on what is now Cloverdale. The dairy remained in business until the early 1900's [13]. All historic infrastructure related to the dairy operation is no longer in existence. Instating a dairy operation on Cloverdale is not recommended based on infrastructure requirements, associated economic constraints, and potential ecological/water quality impacts.

ADDITIONAL LIVESTOCK:

Cloverdale is currently used primarily for beef cattle production on the productive and accessible grasslands. In addition to cattle, the Markegard Family has seven (7) horses and a donkey on the property grazing in the Hidden Valley and Goat Ranch grazing units. Two colts were noted amongst the horses so at least a portion of the horses would not be classified as working ranch horses for use on the grazing operation. Cloverdale has the potential to host small scale livestock production such as chickens, goats, pigs, or sheep, however these animals would require additional infrastructure and, aside from goats/sheep, do not provide ecological benefits on the property. Small livestock production and horse grazing are not recommended on Cloverdale. If Midpen allows small livestock production and/or horse grazing in the future, a separate agricultural use plan should be developed.

FIELD CROP/ORCHARD PRODUCTION:

Portions of Cloverdale, primarily the open ridge tops, were historically farmed up until the 1950s but have not been farmed since that time [2]. The landowner and tenant(s) do not plan to implement a cultivated farming operation on Cloverdale and plan to continue use of the pastures for livestock grazing with a focus on resource enhancement. While portions of the property have suitable land for farming, sediment from the highly erodible soils would negatively impact downstream water quality and disrupt/destroy valuable wildlife habitat. Cultivated farming

and/or orchard operations are not recommended in any capacity on Cloverdale. In addition to farming operations, the practice of bee-keeping is highly discouraged on Cloverdale. European bees commonly used in bee-keeping carry a host of diseases that can negatively impact the sensitive native pollinators. Impacts from European bees are possible up to 1-mile from the hive.

VII. Management Recommendations & Best Management Practices (BMPs)

Cloverdale has a long history of diversified agricultural production. The following management recommendations and Best Management Practices (BMPs) will help ensure the sustainability of agricultural production on the property while protecting rangeland health, soil stability, water quality and the control of invasive vegetation to cooperatively conserve and enhance habitat for wildlife.

RANGELAND LIVESTOCK OPERATION:

- Vegetation Prescriptions:

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, all grazed pastures on the ranch should meet 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.

- 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.

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 and infrastructure constraints. If constraints on the grazing operation limit grazing use on the pastures, grazing operators should manage 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, manage livestock to reduce, at 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.

Utilizing conservation grazing to enhance habitat for target wildlife species such as BUOW and American badgers often require different forage height and/or RDM prescriptions based on the breeding, burrowing, and foraging habits of the species. Prescribed forage heights and RDM levels for BUOW are often far lower than those prescribed by UCCE while managing grasslands for ground nesting bird habitat under the Audubon Certification often requires greater forage heights and RDM levels than recommended by UCCE. Maintaining grassland patches and preventing coyote brush encroachment are two tenets of Audubon's Conservation Ranching goals to support bird species significant to Cloverdale (grasshopper/savannah sparrow and BUOW). To meet forage standards for a variety of grassland dependent species, identify ecologically important sites for each species and work to manage livestock grazing to achieve prescribed forage levels in those locations as well as critical travel corridors. Grazing regimen must be utilized (e.g., rest rotation grazing) to create a patchy heterogeneous landscape in which stocking rate and grazing duration are managed to provide nesting cover. Residual vegetation should be managed so that nesting cover remain on at least 25% of native/naturalized rangeland for the avian breeding season (April 1 – July 15) [25]. Reference the "American Badger and Burrowing Owl Habitat Suitability Report" (Pathways for Wildlife, 2022) and the "Special Status Species Report 2020" for critical habitat and linkages where site specific forage management will benefit special status wildlife species.

- Grazing Season:

A light to moderate year-round rotational grazing regime is best suited for the Cloverdale Ranch. Rotating livestock between pastures, particularly when grazing for a short duration, will require a greater commitment by the livestock operator(s) in terms of time and monitoring, but may ultimately enhance biodiversity, aesthetics, and overall forage production. The Goat Ranch and Hidden Valley grazing units have established pasture fencing while Holm Ranch can be incorporated into the rotation under use as one large pasture. Repairing or installing new interior pasture fences is recommended in the Holm Ranch, though poor stockwater distribution may

limit options for pasture development. Butano Farms is currently grazed as two separate pastures separated by natural barriers. See fencing recommendations in Section VIII, "Improvements and Maintenance Recommendations" below.

In a rotational grazing regime, standing forage will determine pasture rotation, at the livestock operator's discretion, provided they remain within the recommended forage standards. On steeper, more erosion prone slopes, and riparian pastures with softer soils, grazing should be delayed until soil is firm enough to withstand grazing pressure without impacting soil stability. Livestock grazing should be managed to protect the soil from erosion as loss of the surface layer can severely decrease long-term forage productivity.

- Water Supply:

Livestock generally prefer the cleaner, cooler water in troughs. Developing alternative water sources will reduce dependence by livestock on seasonal streams and ponds, minimizing potential impacts to aquatic vegetation and stream bank stability. Strategically distributing water throughout the property will increase livestock distribution and promote more even forage utilization. Perform routine maintenance on existing spring developments, pipelines, storage tanks, pumps, and water troughs to ensure they remain in good working order. All new water troughs must include a wildlife escape ramp and ramps should be added to all existing troughs.

Developed wells in the Holm Ranch and Goat Ranch grazing units are the most reliable water source on the property. The Holm Ranch pipeline should be extended south into the northern portion of Hidden Valley to provide an additional water source(s) where water is currently limited. Look at options to extend the water system into the northwestern portion of Holm Ranch. The well system in Goat Ranch should be extended down to the storage tanks and trough near the stockpond to provide a backup water supply for the lower system. Assess the high producing natural spring in the Butano Farms west pasture and if feasible, repair the spring development. Install a solar pump, additional water storage tanks and new wildlife-friendly troughs on the ridge top. See Proposed Infrastructure & Improvements Map for location of proposed water infrastructure improvements.

- Stockponds:

Perform routine maintenance of stockponds, including de-silting and vegetation management to maintain storage capacity, habitat value, and protect downstream water quality, as necessary. Maintain the spillway and berm on the stockponds to preserve storage capacity, extend lifespan of ponds, and enhance habitat for aquatic species. The stockpond in Butano Farms was recently de-silted. All stockponds on Cloverdale appear to be impacted by cattails and invasive

vegetation. Work to remove cattails to maintain open water and remove invasive vegetation in/around ponds. Pond management activities require a suite of regulatory agency approvals and should not be undertaken unless appropriate permits are obtained. Stockponding depth and duration is important to special status species and supporting persistence of their populations may take priority over stockwater needs under drought scenarios and should be planned for accordingly.

- Supplemental Feed:

Proper placement of livestock water troughs and supplemental feed/mineral stations will promote good livestock distribution. Supplemental feed (mineral, salt blocks, etc.) should be placed on uplands and ridge tops away from water sources and riparian features. Supplemental forage provided to livestock should be certified as "Weed Free" or be locally grown hay that is thoroughly inspected prior to feeding to ensure it does not contain invasive vegetation that may spread seed into pastures. Supplemental feeding should not be used to extend the grazing season beyond the point at which the prescribed RDM levels are reached in the pastures.

- Fencing:

Responsibilities for the maintenance of existing ranch infrastructure in good condition and to make repairs or improvements as necessary are defined in the grazing lease documents. Maintaining quality, functional infrastructure, including fencing and corrals, will increase the ease of livestock handling and effectiveness of rotating livestock between pastures as well controlling livestock access to protect and enhance wildlife habitat and sensitive resources. Using fencing to prevent livestock from accessing riparian corridors, especially in conjunction with riparian restoration plantings, may enhance carbon storage by protecting riparian woody vegetation from trampling and browsing.

Perimeter fences and interior pasture fences on the Goat Ranch and Hidden Valley grazing units are relatively new and in good condition. Assess the condition of perimeter fences on the Butano Farms and Holm Ranch grazing units. Replace perimeter fence as needed to maintain a secure perimeter to contain grazing livestock. Replace the existing dilapidated cross-fence in the Holm Ranch grazing unit on the ridge near the well/storage tanks. Assess the Holm Ranch for the potential to install additional cross-fencing to create up to three (3) separate pastures. Available stockwater may limit the options in further dividing the Holm Ranch grazing pasture. Dilapidated or non-functional fencing should be cleaned up and removed from the property as it can create an entanglement danger for wildlife and livestock. Reference Section VII "Improvements and Maintenance Recommendations" of this RMP for a list of fence improvements. Use Midpen

specifications for livestock fencing including galvanized wire, galvanized steel t-posts, and galvanized pipe braces when making repairs or replacing old fence. Consider the need for wildlife passage in key areas and upgrade existing fencing and/or install new fencing that is wildlife friendly (e.g., has a smooth bottom wire that is 18 inches from the ground).

- Corrals:

Landowner and grazing tenants should continue to maintain existing ranch infrastructure in good condition and make repairs or improvements as necessary. Maintaining quality, functional corrals increases the ease and efficiency of livestock handling. Utilizing safe facilities provides a low-stress atmosphere for livestock and will minimize the risk of injury to livestock.

Corrals on the Butano Farms grazing unit are primarily composed of portable panels and are undersized to adequately serve the current grazing operation. The small corral adjacent to Pescadero Creek Road is primarily used for loading/unloading cattle. The upper corral near the reservoir should be improved to add an additional panel pen with a new barbed wire holding pasture installed around the corral. The corral located on the west Butano Farms pasture is pieced together over time with a wide variety of gates and panels and other various pipes and wire. This corral should be upgraded to include a uniform set of portable panels secured with steel pipes and include a functional squeeze chute for processing.

A single corral located on the Goat Ranch grazing unit currently services the Goat Ranch, Hidden Valley and Holm Ranch grazing units. The permanent portion of the corral is old and in poor condition. The grazing tenant installed portable panels to make the corral functional for the grazing operation. The grazing tenant and POST proposed installing a new, permanent set of corrals on the northwest edge of Holm Ranch adjacent to a stream channel and row-crop farming operation. An analysis of both corral locations was conducted, and the following corral improvements are recommended:

- Holm Ranch Corral Site:
  The site selected for the corral is slightly sloped and relatively small with no associated holding field and no water supply. There is currently no infrastructure in place at the location. Access to the site requires travel through a private parcel that is currently under cultivated farm production and there is limited space to turn a truck/trailer around to load/unload livestock. The close proximity to a perennial stream channel and cultivated farm field poses the risk of potential impacts from livestock fecal material and pathogens. There are currently no corrals on the Holm Ranch and access to the main upper portion of the grazing unit is very difficult with a stock trailer. The proposed corral location is the only accessible point on the grazing unit, however getting cattle from the main portion of the grazing unit down to the

proposed corral location will be challenging due to steep terrain. Given the constraints, this site is suitable only for temporary, limited use corrals.

- Goat Ranch Corral Site:
  The current corral location is accessible year-round via Cloverdale Road. There is a reliable water supply and water troughs in place and there are multiple holding fields established adjacent to the corral. The original corral is in poor condition and the grazing tenant has installed a number of their personal livestock panels to complete the corral and make it functional. If there is a future change in grazing tenants, the panels will be removed by the current grazing tenant and the corral will no longer be functional. While the corral is a long distance from the Holm Ranch, it is in an ideal location with necessary water and fencing infrastructure already in place. There are no cultivated fields or perennial waterways nearby that may be impacted by cattle waste.

CORRAL RECOMMENDATION:

Devote funding and resources to fully upgrade the Goat Ranch corrals which will adequately serve the Goat Ranch and Hidden Valley grazing units and can be used to serve the Holm Ranch grazing unit for large tasks such as processing/branding cattle. This will establish a permanent set of corrals on the Goat Ranch unit, owned by Midpen, and will be available for future grazing lessees. Work with the current grazing tenant to relocate their portable panels (currently at Goat Ranch) to the proposed Holm Ranch corral site and set up a temporary/portable corral using their portable panels. The portable corral on Holm Ranch can be used in a limited capacity for light cattle work such as loading/unloading cattle to minimize potential impacts to nearby resources. The corral will not be used to hold cattle overnight and will not be used for processing/vaccinating/branding livestock. Use will be limited to no more than 10-days per year.

- Herd Health:

Maintaining a healthy, productive livestock herd is fundamental to profitability and sustainability. A herd health program that includes appropriate inoculations is recommended. De-worming livestock and providing additional nutrients will further increase productivity. 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. Routinely perform herd checks to ensure livestock remain healthy.

- Ranch Roads:

Ranch roads provide access for the grazing operation, infrastructure/ranch maintenance, resource management, recreation, and emergency response. Work to maintain ranch roads in good condition as access is critical to maintaining a viable conservation grazing program on the property. Routine maintenance such as cleaning ditches and culverts, particularly during storm events, is important. Maintaining road grades, water diversions, and water bars during winter months to minimize water flow on road surfaces is important in reducing potential soil erosion and road damage. Mowing vegetation on road surfaces is recommended to provide a safe driving environment. Mowing, as opposed to grading, is recommended to leave a vegetation cover on the road surface that helps hold soil in place during storm events and reduce the risk of erosion and damage to ranch roads. Additionally, mowing roads will not create a soil disturbance that can lead to increased spread of invasive plant species. Clean equipment between sites to prevent the spread of pathogens and invasive vegetation. In areas where invasive species are present, mowing should be timed to limit seed production, if possible.

Reference the "Cloverdale Ranch Road Assessment" (Best, 2022) for specific road maintenance recommendations. Road repairs that could discharge sediment into downstream watercourses may require permits from regulatory agencies prior to implementation. Proposed road work should meet regulatory compliance.

- Drought Preparedness

Agricultural production has historically provided a significant source of income for the Cloverdale Ranch and continues to be an important factor in maintaining its sustainability. Drought conditions can severely hinder the operational capacity and productivity of a ranch and can threaten long-term sustainability. Planning ahead to accommodate for a drought can alleviate some of the potential impacts such as lack of forage, lack of water, herd health, mineral deficiencies, and overall lack of production by livestock when droughts occur. The following management practices can help alleviate the impacts of drought:

- Water requirements for special status species must be considered alongside livestock water use to sustain their populations during drought periods
- Maintain a clean, reliable water sources for livestock and maintain an increased water storage capacity. Cloverdale currently has a good water supply system in place, though water production is often limited during summer/fall months and drought. Develop additional water sources such as springs and wells if feasible. If water yield increases, increase water storage by adding additional water storage tanks for livestock drinking water.

- Lower stocking rates to slightly below the recommended carrying capacity for the forage production year to provide a small surplus of forage to carry livestock through the fall until new, green forage is available. If drought conditions persist, lower stocking rates further to extend the grazing season and use of available forage.
- Implement a grass banking system. Save forage in a designated pasture by minimizing or eliminating grazing pressure during the late spring and summer. If available forage is depleted in grazed pastures, forage will be available in the grass bank pasture.
- Store supplemental forage, such as hay, that can be fed to livestock to supplement the natural forage during a drought.
- Provide livestock with mineral/protein supplements to increase forage utilization, herd health, and overall productivity.

PATHOGEN REDUCTION AND RISK MANAGEMENT

Livestock fecal material can contain microorganisms such as bacteria, viruses, and protozoa. Some of these microorganisms do not cause sickness in animals or humans, however, some are pathogens, meaning they are capable of causing disease in animals and/or humans. Pathogens can be transmitted to humans directly through contact with animals and animal waste or indirectly through contaminated water or food. Common pathogens responsible for health-related ailments in humans include cryptosporidium, E. coli, Leptospira, and salmonella. The following BMPs should be implemented to help reduce the risk of animal waste contaminating water sources within and downstream of the Cloverdale Ranch:

- Work to control livestock access to perennial streams to eliminate fecal deposits in the waterway, particularly upstream of the Bean Hollow Reservoirs and Arroyo de los Frijoles.
- Maintain a natural vegetative buffer of no less than thirty (30) feet from the top of bank, where feasible, in perennial streams. The vegetative buffer will act as a natural filter to trap potential pathogens before they reach the water body.
- Control runoff and leaching from any stockpiled manure, confined livestock, and/or corral facilities. Maintain a 100-foot setback with a 50-foot vegetative buffer between corrals/confined livestock pens and streams; an impermeable barrier can substitute the setback and/or buffer.
- Fly and vector control in livestock facilities may also reduce the spread and subsequent infection of other animals with pathogenic bacteria. Flies and bird fecal samples from cattle

farms in the U.S. have tested positive for *E. coli*. Numerous studies indicate that *Salmonella* can survive for at least several days, and for as long as nine months, on insects and rodents, and for up to five months in rodent feces [15].

- Provide off-stream livestock water sources such as water troughs to reduce the use of streams by cattle and other livestock for water.
- Implement a comprehensive livestock husbandry program including appropriate and timely inoculations and de-worming to minimize the risk of contracting and/or spreading disease to other livestock, humans, and wildlife.
- Clean vehicles and equipment to prevent the spread of pathogens and invasive vegetation.

SPECIAL STATUS SPECIES MANAGEMENT

- California red-legged frog

Managing the intensity and timing of livestock grazing is important in managing waterways and upland habitat for the California red-legged frog (CRLF) as it has important consequences in terms of emergent vegetation and water quality important for breeding. Maintaining stockponds and controlling non-native predators are also important factors in protecting and enhancing habitat for CRLF. Water diversion from stockponds needs to be timed and monitored to ensure sufficient water ponding depth and duration is available within ponds to support breeding and ongoing use by CRLF. In general, livestock use of stockponds is beneficial for CRLF [16]. Appropriate timing and grazing intensity around stockponds can produce positive ecological benefits on vegetation cover, nutrient levels, and turbidity conducive to CRLF breeding and subsistence. For more specific management recommendations, please reference Attachment-C to this plan [17].

- San Francisco garter snake

Management for California red-legged frog is also beneficial to San Francisco garter snake. Use of vegetation and/or fencing off portions of ponds to provide adequate escape habitat during the frog mating season (Dec to March) and San Francisco garter snake breeding season (March to June and September to October) and young frog emergence period (July to September) can be beneficial for both species. Using grazing to manage surrounding upland habitats for a mosaic of microhabitats (some open grassland, some brush, some downed woody debris areas, etc.) can also be beneficial for successful management of San Francisco garter snake.

- Choris' Popcorn Flower

Choris' popcorn flower is an annual herb found in coastal prairie and coastal scrub habitats in San Mateo and portions of Santa Cruz County, listed by CNPS as "fairly endangered". The species is at risk from urban development, however, under rangeland conditions, primary threats to the species result from foot traffic/trampling and competition from non-native plants/annual grasses [18]. Choris' popcorn flower typically blooms from March-June [18] and will benefit from the reduction of annual/non-native vegetation through timed livestock grazing prior to bloom (December-February). Once flowers have dropped seed, livestock grazing may commence, typically in July. Continue to monitor for presence of the species and note any changes in distribution and abundance of known populations. Adjust timing of grazing as necessary to promote reproduction. If trampling or vehicle traffic is noted to impact the Choris' popcorn flower, temporary fencing may be installed to protect populations.

- American Badger

American badgers prefer to live in dry, open grasslands, fields, and pastures. They are found from high alpine meadows to sea level. The principal habitat requirements for this species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground [19]. Badgers are occasionally found in open chaparral (with less than 50% plant cover) and riparian zones, however, they are not usually found in mature chaparral Badgers construct underground burrows for protection and sleeping; natal dens are constructed for raising young. When not breeding, badgers are highly mobile and only use a burrow for a few days before moving on to a new area. A typical badger den may extend 3 meters below the surface and contain approximately 10 meters of tunnels. Badgers use multiple burrows within their home range [19]. Badgers use of home range varies with season and by sex. Different areas of the home range are used more frequently at different times of the year and usually related to prey availability. Males generally have a larger home range than females, with an average annual range of 2,100 acres. The average home range of females is 1,790 acres in summer, 131 acres in fall, and 5 acres in winter [20]. To enhance habitat for American badgers on Cloverdale, focus efforts on clearing coyote brush, particularly on grassland ridgetops that have more recently been impacted by coyote brush encroachment. The large home range for badgers is important in foraging prey and breeding. Identify critical travel corridors for badgers noted in the "American Badger and Burrowing Owl Habitat Suitability Assessment Report 2019-2022" and work to maintain suitable habitat free of development or other unnatural obstructions (such as impassable fencing) to badger travel. Utilize livestock grazing to create a mosaic of grassland heights, including short grass (≤6" height), preferred by badgers for hunting prey. Design and install grazing infrastructure that is conducive to badger movement with a focus on livestock

fencing which should have a minimum bottom wire heigh of 18 inches from the ground surface which will allow badgers to safely cross underneath fences.

- Burrowing Owl

Burrowing owls and California ground squirrels prefer vegetation to be ≤ 6 inches tall, year-round, adjacent to their burrow complexes. This allows both species to observe approaching predators and provides suitable foraging conditions for burrowing owls [22]. Burrowing owls are approximately nine inches tall, and when they stand sentinel at the burrow entrance, their eye-level needs to be above average vegetation height. Thus, vegetation taller than six inches is unsuitable, especially during the breeding season when young are emerging from the nest burrow. When vegetation grows too tall, burrowing owls will often abandon a site [22]. Identify suitable and/or critical BUOW habitat noted in the "American Badger and Burrowing Owl Habitat Suitability Assessment Report 2019-2022" on Cloverdale and focus vegetation management efforts on these high priority locations. Utilize livestock grazing as well as mowing or weed whipping, if necessary, to maintain grassland vegetation height of ≤6 inches year around. Monitor and regularly clear coyote brush as well as other invasive vegetation in these areas.

- Grasshopper Sparrow

Grasshopper Sparrows are small, non-descript, secretive birds found locally, including on Cloverdale, and are a California Bird Species of Special Concern. Very little is known about their populations within California, other than that they are declining steeply and they are dependent upon grasslands for food and nesting sites. Point Blue used data from San Mateo County rangelands to describe Grasshopper Sparrow habitat associations. Research found that the greater the cover of perennial grass at a sampling location, the more likely it was to have a Grasshopper Sparrow. They also found that Grasshopper Sparrows were more likely in short grass (like native California oatgrass, *Danthonia californica*) than tall grass (such as non-native Harding Grass, Phalaris aquatica).

Midpen and the grazing operator(s) should work collaboratively to identify stands of native perennial grasses, such as California oatgrass, and manage livestock grazing to promote the growth, reproduction and distribution of these preferred grassland species. Additional efforts such as coyote brush control should be implemented to maintain existing native grass stands and potentially open up areas that were historically grasslands to further expand habitat for the Grasshopper sparrow.

INVASIVE PLANT CONTROL

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, 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. To prevent an increase in the current extent of invasive vegetation and avoid the introduction of new invasive species on Cloverdale, the landowner should manage the property with the minimum goal of containing current weed infestations to the current extent and preventing the introduction of new invasive species. Invasive plant control methods must be in compliance with the referenced Midpen resource management policies and adopt Integrated Pest Management Program. Implement an integrated approach described below to identify and treat invasive plants on Cloverdale that are impacting forage production and grassland habitat. Work with Midpen, UCCE and/or local NRCS or RCD to determine best options and timing for specific treatments.

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 to maintain a minimum of two-three inches of beneficial, vegetation ground cover at all times.
- Distribution and percent cover of invasive thistles are low on the property, so manual removal is a feasible option for control. Manually remove invasive thistle species such as bull thistle, milk thistle, Italian thistle, teasel and spiny cocklebur. Application of a broadleaf herbicide can also be an effective means of control provided herbicide is in compliance with referenced resource management policies and follows the direction of Midpen's natural resources staff and a Pest Control Advisor.
- 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. Use clean equipment to prevent spread of thistle seeds into new areas.

- Prioritize invasive plant removal where the likelihood of seed spread is high such as staging areas, corrals, roads, and trails.
- **Jubata Grass** is present in sporadic locations on the property and best controlled early as seeds remain viable in the soil for decades. Once well established, removal is extremely resource intensive.
- **Coyote brush** encroachment throughout the grasslands limits available forage for livestock and impacts grassland habitat value for ground nesting birds, BUOW, and American badger habitat. Establish a coyote brush management plan to prioritize treatment locations and effectively control brush to maintain current grasslands and recover grassland habitat that has more recently been impacted or lost to coyote brush encroachment.
- Carefully monitor areas where outside feed is brought in for new invasive species and remove new weeds before they become established. If feasible, feed locally sourced Certified Weed Free hay to minimize the risk of introducing new invasive plant species.
- Do not import outside soil or fill material. It is often contaminated with invasive species and is not consistent with policies and management objectives of landowner.
- Be aware of seed transport on ranch equipment and vehicles. 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.

EROSION CONTROL AND PREVENTION

Several locations across Cloverdale show signs of gullying and erosion. Soil types near the coast are often sandy and highly erosive, particularly on steep slopes and in natural drainages. Erosion on the property is primarily a result of natural causes and conditions. Naturally occurring gully erosion can be extremely expensive and logistically challenging to fully restore and is often unsuccessful due to poor-quality soils. Landowner should, at a minimum, implement BMPs to minimize the risk of future erosion at these sites and prevent new gullying/erosion where possible to protect downstream water quality. Some BMPs to manage gullied/erosive sites may include maintaining prescribed levels of forage/RDM to help stabilize soil during wet winter months and planting woody vegetation such as deep-rooted perennial shrubs that can help stabilize soil in these locations. Soil erosion and gullying caused by manmade features such as roads should be repaired/restored to control water flow and minimize the risk of future erosion.

Improvements and Maintenance Recommendations

FENCE REPAIRS AND INSTALLATION

Perimeter fencelines as well as interior pasture fences within the Goat Ranch and Hidden Valley grazing units are relatively new and in good condition. Assess the perimeter fence around the Holm Ranch grazing unit and replace the old, dilapidated fences as necessary to contain livestock. The Holm Ranch is the only grazing unit without recent extensive fence upgrades. Assess the perimeter fence around the Butano Farms grazing unit and replace/repair fencing as necessary to contain livestock. Replace the existing interior pasture fence on the ridge top in the Holm Ranch grazing unit near the water storage tanks to develop two (2) large grazing pastures. Further assess the Holm Ranch pasture configuration and water distribution to determine if further dividing the pasture into three (3) total grazing pastures is feasible. If further dividing the Holm Ranch grazing unit is feasible, identify key natural resources and install fencing to better control grazing to enhance ecological resources in the pasture. Replace riparian fence along the east side of Arroyo de Frijoles in Holm Ranch. Continue to monitor existing fences and maintain them in good condition. Remove old dilapidated interior fencing that is no longer functional and may present an entanglement hazard for wildlife and livestock.

Six-strand barbed wire fence is recommended for perimeter fences and holding fields and 5-strand barbed wire fence is recommended for interior pasture fences. Either style fence can be made wildlife friendly if the bottom wire is situated an average of 18" above the ground allowing wildlife to cross underneath while functioning to contain livestock.

Fencing Improvement Projects, Priority, and Schedule:

PRIORITY	PROJECT	SCHEDULE
Priority – 1	Assess and replace perimeter fence around the Holm Ranch grazing unit as necessary. Remove any old, dilapidated fence material that may be an entanglement hazard for wildlife and livestock.	2023-2024
Priority – 1	Replace the riparian fence along the west side of Arroyo de los Frijoles in the Holm Ranch grazing unit to restrict livestock access into the riparian corridor.	2023-2024
Priority – 2	Assess perimeter fence around Butano Farms grazing unit and replace perimeter fence as needed.	2023-2024
Priority - 3	Replace existing cross-fence in Holm Ranch grazing unit. Look for feasible options for additional interior fence that could divide the larger unit into three (3) total pastures if water is adequately distributed.	2024+

CORRAL REPAIRS AND UPGRADES

Replace the existing corral in Goat Ranch with an updated, permanent set of corrals that should be comprised of steel pipe and/or steel Powder River style panels welded in place. The updated corral should replicate the existing corral footprint and should include an alleyway and squeeze chute so that grazing tenant can process and treat cattle. The alleyway and squeeze chute should be installed on a concrete pad for stability and traction. Remove the portable panels (owned by the grazing tenant) from the Goat Ranch corral area and assist the grazing tenant in establishing a temporary corral, using their portable panels, at the proposed corral site on the east side of the Holm Ranch grazing unit.

The three (3) existing corrals located on the Butano Farms grazing unit are all comprised of portable panels owned by the existing grazing tenant. Strongly consider replacing the ridgetop corral near the reservoir and the corral near Bean Hollow Road with permanent corrals owned by Midpen for use by future grazing tenants. Add an additional panel pen to the ridgetop corral near the reservoir and install a barbed wire holding field around the corral to improve functionality and efficiency in gathering and processing livestock. Both corrals should be improved to include steel pipe and/or steel Powder River style panels welded in place. Both corrals should include an alleyway and squeeze chute so that the grazing tenant can process and treat cattle. The alleyway and squeeze chute should be installed on a concrete pad for stability and traction. Upon completion of the new corral near Bean Hollow Road, the grazing tenant should remove the assortment of existing debris, wire, gates, etc. that are currently in place.

Corral Improvement Projects, Priority, and Schedule:

PRIORITY	PROJECT	SCHEDULE
Priority – 1	Replace the Goat Ranch corral with a permanent set of steel pipe and/or Powder River style steel panels welded in place. Remove the portable panels currently in place.	2023-2024
Priority – 1	Replace the Butano Farms ridgetop corral near the reservoir with a permanent set of steel pipe and/or Powder River style steel panels welded in place. Remove the portable panels currently in place.	2023-2024
Priority - 2	Replace the corral near Bean Hollow Road in the Butano Farms grazing unit with a permanent set of steel pipe and/or Powder River style steel panels welded in place. Remove the existing debris, wire, gates, etc.	2023-2024
Priority - 3	Assist the grazing tenant in setting up their temporary panels at the proposed corral location on the Holm Ranch to create a temporary "light-use" corral for ingress/egress and emergency livestock husbandry.	2024+

WATER INFRASTRUCTURE IMPROVMENTS

Water for livestock is relatively limited throughout the property, particularly when stressed by extreme drought conditions. Three water improvement projects are recommended that will greatly enhance water availability.

In the Butano Farms grazing unit, redevelop the high production spring in the canyon below the Bean Hollow Road corral. Install a solar pump to pump water to the ridgetop and install storage tanks for the water (5,000 gal. per trough). Install a water line and two new concrete water troughs on the ridgetop, one near the corral and one on the southern end of the grazing unit. Each trough should have a water storage tank installed for a reliable water supply. Reference Exhibit-G1 for details. Ensure that all troughs on site have functional wildlife escape ramps.

On the Goat Ranch grazing unit install a new section of waterline that will connect the existing well and storage tanks to the lower pond fed water system (Exhibit-G2). If the pond level drops too low to pump water or to support use by special status species, then water from the well can supply the lower pond fed water system.

Utilizing the existing water infrastructure in Holm Ranch, extend the waterline from the southernmost trough in Holm Ranch south into the northern portion of the Hidden Valley grazing unit. Install two (2) new concrete water troughs in Hidden Valley and connect the new pipeline to an existing trough near the stockpond (Exhibit-G3). This will provide a reliable source of water in the north end of Hidden Valley that is supplied via the existing Holm Ranch well and storage tanks. Assess options to extend the water system to the northwest part of Holm Ranch if needed.

Water Infrastructure Projects, Priority, and Schedule:

PRIORITY	PROJECT	SCHEDULE
Priority – 1	Repair spring development in canyon below the Bean Hollow Road corral. Install a solar pump and waterline to supply two (2) new concrete water troughs and water storage tanks on the ridgetop. Install one trough near the corral and one trough near the southern end of the pasture. System will include a spring development, solar array/ pump, two (2) water storage tanks, two concrete wildlife-friendly water troughs and approx. 5,000 feet of waterline.	2023-2024
Priority – 1	Extend a waterline from the southernmost trough in Holm Ranch south into Hidden Valley and tie the waterline into the existing water trough near the stockpond. Add two additional troughs in Hidden Valley grazing unit. This will require approx. 4,000 feet of new waterline and two (2) new wildlife-friendly water troughs.	2023-2024
Priority – 2	Extend the waterline from the well-fed water system in Goat Ranch down to the pond fed water system/storage tanks. This will require approx. 1,550 feet of new waterline to be installed.	2023-2024

VEGETATION MANAGEMENT

Implement an integrated approach (reference Midpen resource management policies) to controlling invasive vegetation with a focus on coyote brush, French broom, and jubata grass. Manual, mechanical, biological, and chemical control measures may be implemented including but not limited to timed grazing, mowing, hand digging, herbicide application, reseeding, and burning/torching. Estimated annual costs for treatment of invasive vegetation will vary based on presence and distribution of invasive vegetation and treatment methods. Develop a strategic plan for control of coyote brush on Cloverdale with a focus on ridge tops, around stockponds, special status species habitats, and grasslands with established stands of native grasses and forbs.

Coyote brush is well established in many of the steeper canyons and has expanded into the ridgetops and many of the open grassland areas over time. Coyote brush encroachment in the grasslands has reduced forage production by 50 to 70 percent in many areas. A coyote brush management plan should be developed for the property to prioritize treatment areas and methods. The plan should comply with the landowner's resource management policies and the adopted Integrated Pest Management Program. Future brush control efforts should be considered following the recommendations in the coyote brush management plan to maintain the estimated carrying capacity for livestock grazing and to protect ecological values.

STOCKPOND MANAGEMENT AND IMPROVEMENTS

Stockponds provide a valuable water source for livestock as well as habitat for special status wildlife species. Management and long-term maintenance of stockponds is important in maintaining a water source as well as ecological values. The pond management plan produced by Vollmar and Alnus Ecological in 2005 provides specific targets and management recommendations for each stockpond. Stockpond improvements and maintenance are intended to ensure the long-term sustainability and integrity of ponds on the property. Manage stockponds to provide open water as well as shoreline and emergent vegetation. Work to control invasive vegetation in and around stockponds as well as control cattails to maintain open water. Seasonally graze the areas around the stockponds to reduce invasive vegetation and thatch buildup which can be detrimental to aquatic wildlife. Seasonal grazing should occur outside of the known breeding season for CRLF and SFGS. Monitor ponds annually for breeding wildlife, water quality, and hydroperiod. Over time these data will provide insights into shifting water resource baselines and their potential impact on wildlife.

EXHIBIT-G1 – PROPOSED INFRASTRUCTURE IMPROVEMENTS IN BUTANO FARMS

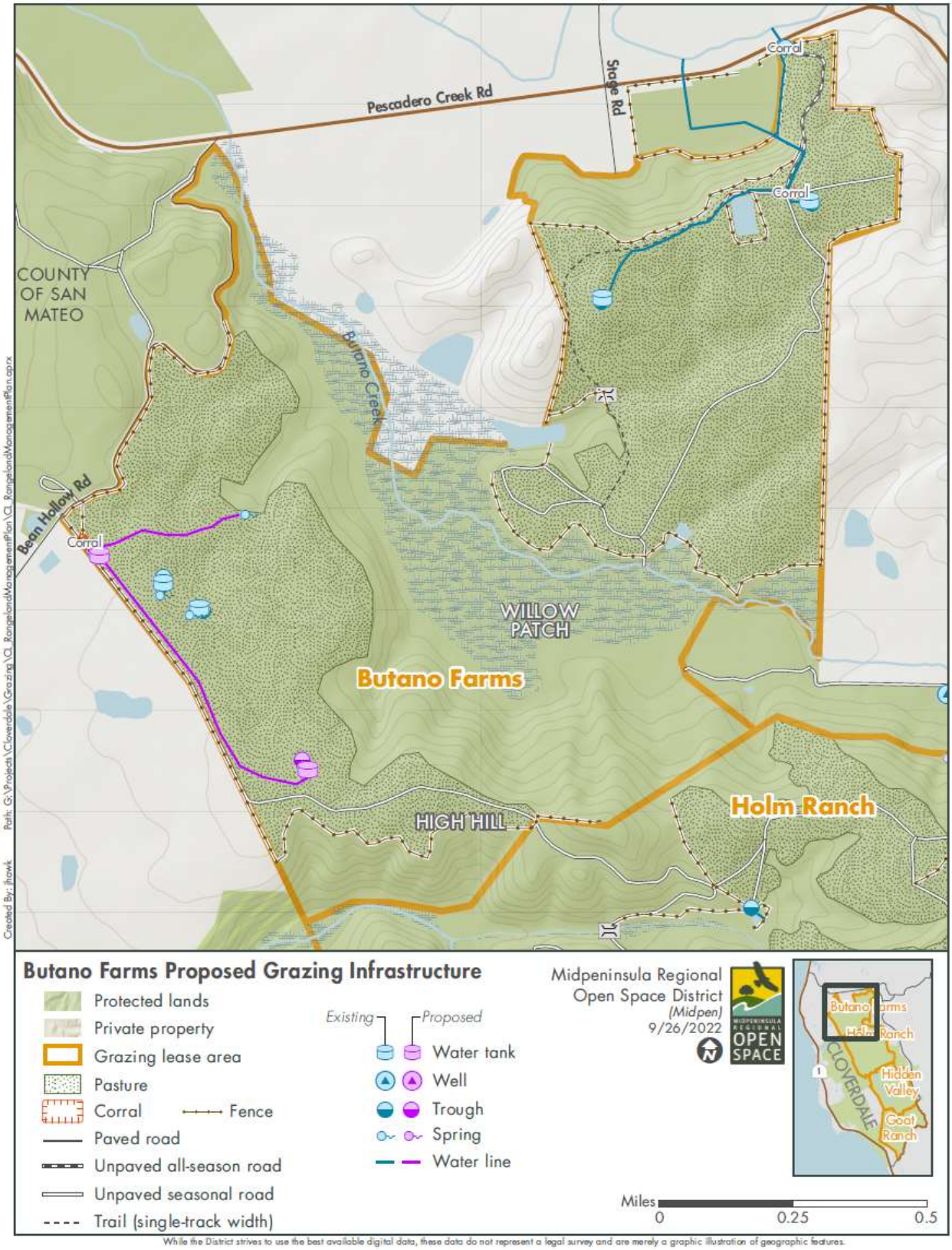


EXHIBIT-G2 – PROPOSED INFRASTRUCTURE IMPROVEMENTS IN GOAT RANCH

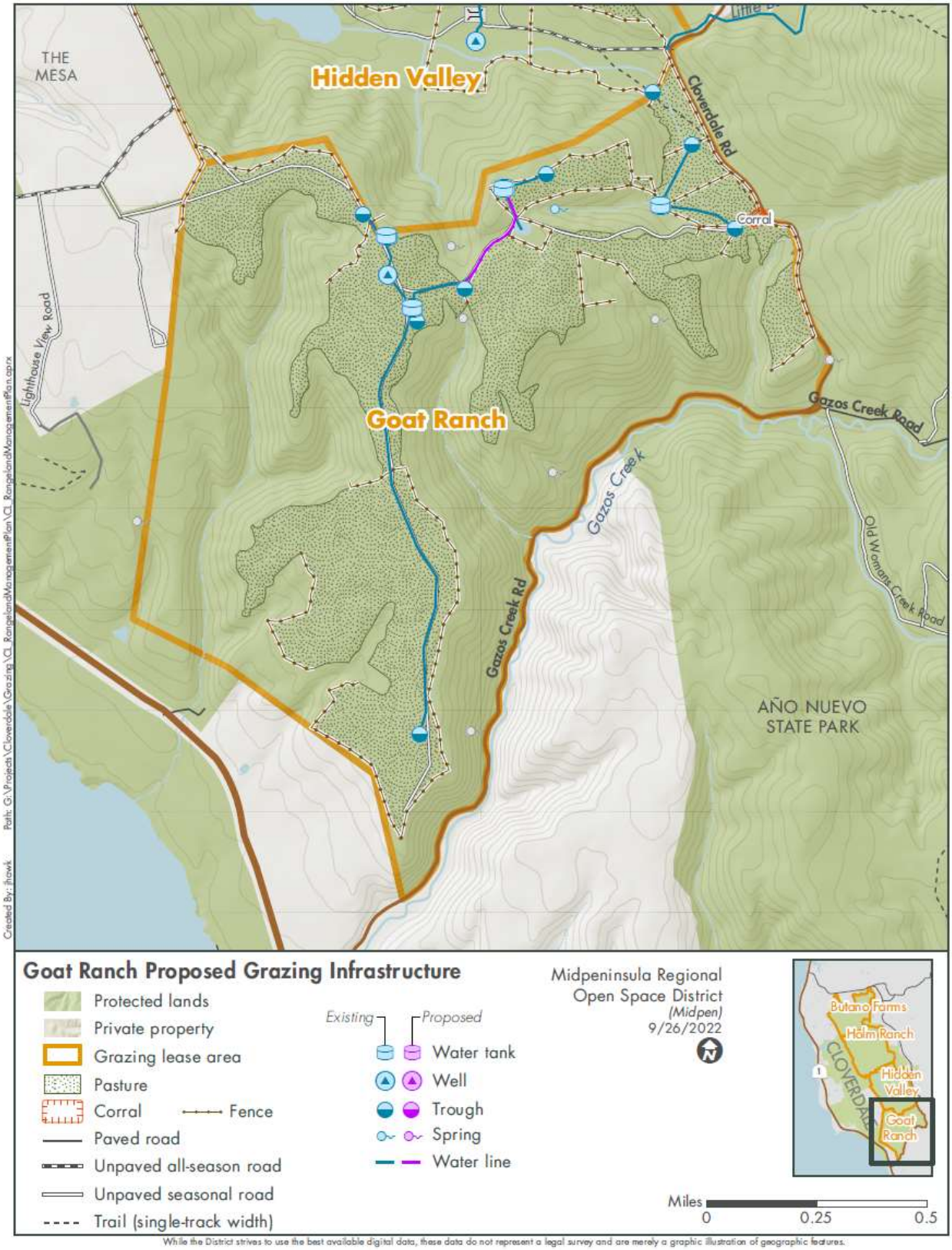


EXHIBIT-G3 – PROPOSED INFRASTRUCTURE IMPROVEMENTS IN HIDDEN VALLEY

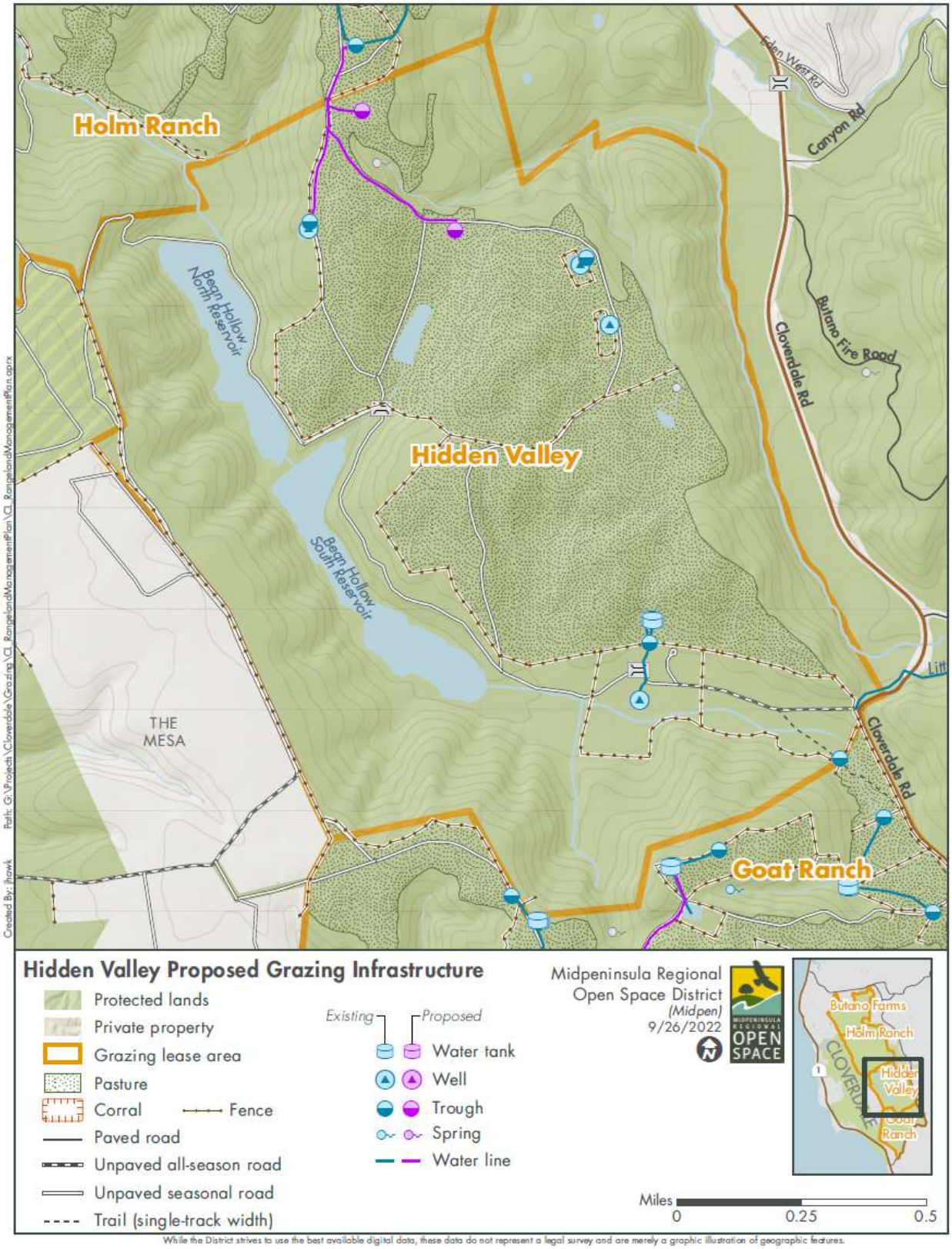
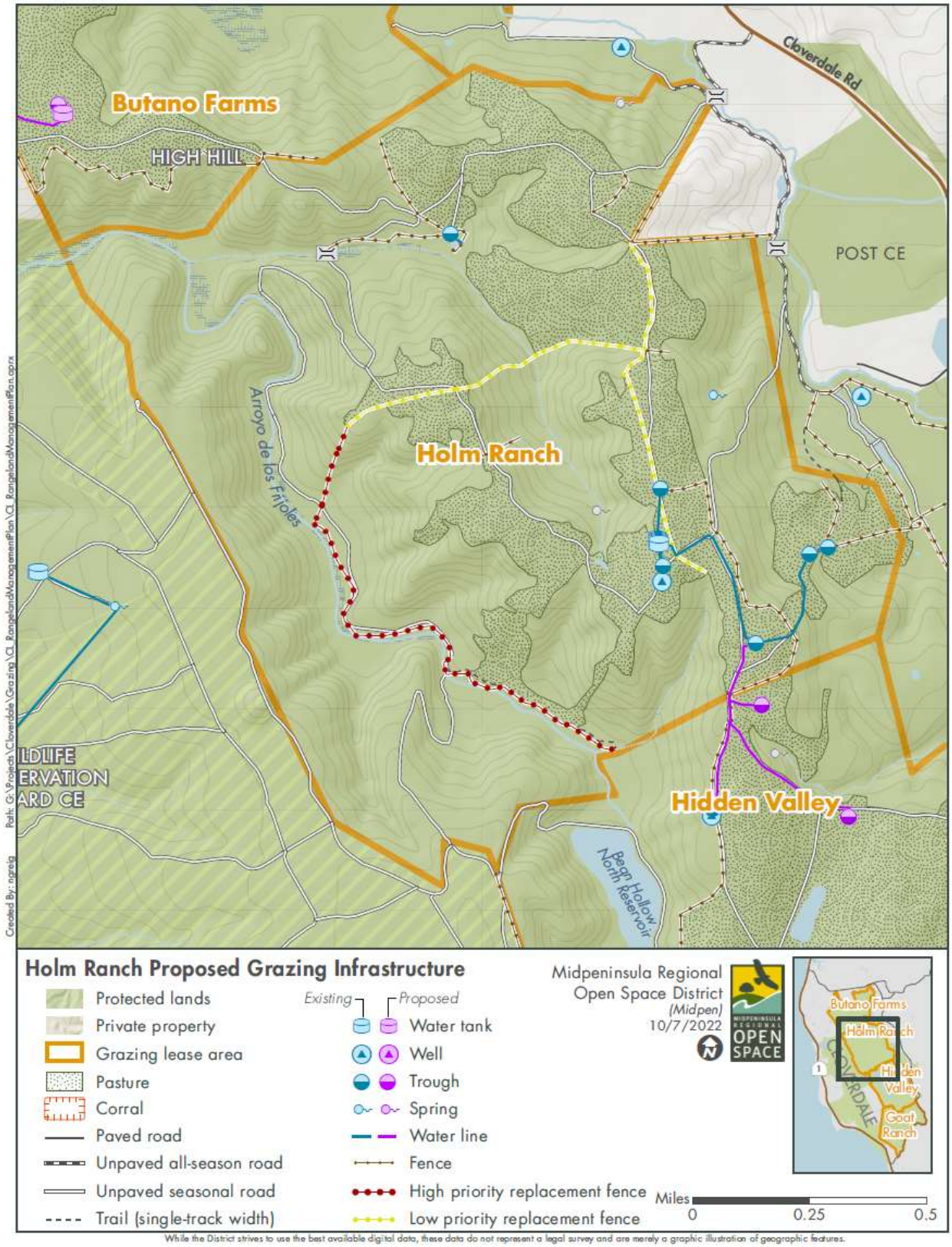


EXHIBIT-G4 – PROPOSED INFRASTRUCTURE IMPROVEMENTS IN HOLM RANCH



VIII. Recommended Monitoring Protocols

The monitoring program for the grazed rangeland pastures on Cloverdale is designed to ensure that the specific rangeland uses are in compliance with this Rangeland Management Plan and the land stewardship goals and objectives. It is recommended that the landowner/operator establish a routine monitoring protocol for Cloverdale. The following guidelines outline suggested monitoring criteria:

- Monitor forage utilization and livestock distribution trends to ensure appropriate RDM remains on the ground to achieve desired resource management objectives, including soil stability and water quality.
- Monitor the condition of livestock infrastructure, including water systems, gates and fencing, to ensure conformity with the terms of the easement and to improve rangeland and grazing management practices.
- Monitor non-native invasive vegetation with an emphasis on location, distribution and abundance of plant species. Describe methods for treatment or control of invasive species (grazing, herbicide application, mowing, etc.) and vegetation response to treatment methods.
- Monitor ponds to ensure habitat for special status wildlife species free of invasive predators such as fish and/or bullfrogs. Opportunistically record water levels and develop recommendations needed to adjust pumping from the ponds to support breeding and ongoing use by wildlife.
- Monitor desirable vegetation including native grasses, wildflowers, and trees with an emphasis on location, distribution, and abundance. Describe any impacts, positive or negative, observed as a result of agricultural practices (grazing).
- Monitor vegetation that was planted as part of restoration or remediation work (where applicable) with an emphasis on location, distribution, abundance, and survival rate.
- Monitor roads and known gullies for erosion especially after large precipitation events. Repair road gullies as needed and assess naturally occurring gullies to determine if repairs are necessary and feasible.
- Natural hazards and events (drought, floods, fire, earthquakes, landslides, etc.), erosion and other geomorphic changes, and biologic cycles beyond the landowner's control should be noted and described as applicable.
- Stocking rates, herd type, and duration of grazing should be recorded.

Monitoring observations can be used as a guideline for adaptive management changes, as needed, based on the results of annual monitoring. To evaluate the above listed monitoring criteria, several baseline photo-monitoring points should be established, and a monitoring form completed for each site on an annual basis. Monitoring should occur in the fall prior to the first fall/winter rainfall of the year. A sample photo monitoring form can be found under Exhibit-H. Annual monitoring visits conducted by the landowner will document and photograph any concerns, trends, and general overall resource conditions observed throughout the property.

Recommended Monitoring Items:

- ✓ Residual Dry Matter (RDM): RDM levels can be recorded using pounds per acre and measurements can be calculated or ocular estimates dependent on the skill set and experience of the monitor. RDM average standards are based on the University of California Cooperative Extension (UCCE) and Natural Resources Conservation Service (NRCS) prescribed grazing performance standards. The prescribed RDM standard for moderate grazing is an average minimum of 800-1,000 pounds per acre of dry matter (two to three inches of standing RDM) on slopes of 0 to 30 percent, and 1,000-1,200 pounds per acre of dry matter (three to four inches of standing RDM) on slopes greater than thirty percent. RDM values may be higher in areas identified as important corridors or habitat use areas for badgers. Leaving prescribed levels of RDM on the ground surface will provide a grassland seed crop for the following season, minimize the risk for soil erosion and sedimentation, and protect water quality. Please reference Attachment-B, 'Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California', for more detailed information on RDM standards and data collection.

  RDM measurements should be taken in the fall of each year at sites that are exemplary of the average RDM level in a pasture. Areas that are heavily frequented by livestock or do not adequately represent the average RDM level in a given pasture should be exempt from data collection. The following is a list of areas that should be avoided when collecting RDM samples or measurements:

  a. Areas that have burned
  b. Roads
  c. Corrals, and associated lanes and holding fields/traps
  d. Sites with low soil fertility (rock outcrops, sandy soils) or high tree cover
  e. Areas within 150 feet of water sources, stockponds, supplemental feeding sites
  f. Areas subject to damage by wildlife such as feral pigs
  g. Areas that are or have been recently cultivated

- ✓ Plant Communities Observed: Include a list of the plant communities observed within view of the photo point for example annual grassland, woodlands, wetlands, etc. Note any measurable trends or transition between plant community types from the prior year.

- ✓ Invasive Species Observed: Include a list of observed invasive plant species noting relative abundance, location, and density. Note any differences from the prior year.

- ✓ Infrastructure: Identify infrastructure relevant to the grazing and/or agricultural operation (water troughs, tanks, fencing, irrigation lines) noting location, current condition and need for adjustments or repairs.

- ✓ Soil Erosion: Identify areas that are at risk for erosion or where soil loss has occurred as a result of surface water flow, wind, fire, or human activity. These sites may include gullies, bare ground exposure, landslides, ruts, or notable surface runoff. Note historic activity and any current activity. Recommend soil protection measures.

- ✓ Access Road Observations: Note condition of road including surface condition, vegetation cover, culverts, recent maintenance or grading, and water diversion measures that are in place. Identify any signs of erosion, rutting, or gullying on the road surface or below road, particularly downstream of channel crossings.

- ✓ Wildlife Observed: Identify wildlife species observed at location of the photo point including specie information and relative abundance. Observations of special status species shall be documented and included in any annual reporting to regulatory agencies.

- ✓ Annual Precipitation: Note the rainfall, in total inches, for the season. Keeping annual precipitation records is important in determining whether rainfall amount and distribution were average, below average, or above average. In average and above average rainfall years the RDM performance standards should be met. In below average rainfall years, RDM performance standards may be exceeded, but not for more than a period of two consecutive years. Annual stocking rates and grazing duration should be adjusted annually to accommodate forage production and annual precipitation.

EXHIBIT – H

GRAZING MONITORING CHECKLIST (SAMPLE)

SITE NAME_____ DATE_____ PHOTO POINT_____

MONITOR(S): _____

MEASURED RAINFALL (_____INCHES): [ ] < AVERAGE [ ] AVERAGE [ ] >AVERAGE

MONITORING ITEMS:

___RESIDUAL DRY MATTER (RDM) Lbs. PER ACRE: _____0-30% slope _____>30% slope

Estimated [ ] Actual Measurement [ ]

___PLANT COMMUNITIES OBSERVED:

[ ] Annual Grassland [ ] Mixed Forest [ ] Coyote Brush/Scrub

[ ] Oak Woodland [ ] Aquatic Habitat [ ] Riparian Habitat

[ ] Other Communities: _____

[ ] Native Grasses: _____

___WILDLIFE OBSERVED:

PLACE PHOTO HERE

INFRASTRUCTURE / ROADS (Improvements, Condition, New Items, Future Concerns, etc.):

PONDS /STREAMS /AQUATIC FEATURES (Access, Vegetation, Water Clarity, Culverts, Spillways, etc.):

VEGETATION (Invasives, Natives, Thatch Amount, Encroachment, Plant Mortality, etc.):

*Relative Abundances: 1 = 1-10 / 2 = 10-100 / 3 = 100+ / 4 = Dominant Vegetation Type

EROSION CONCERNS (Gullying, Rilling, Slides, Surface Runoff, Bare Soil, etc.):

GENERAL NOTES (Cattle info, Landscape Changes, etc.):

DISCUSSION ITEMS/CONCERNS:

REFEERENCES

1. https://OpenSpaceTrust.org/blog/Cloverdale-Ranch/. Last accessed online in June 2022.

2. PERSONAL COMMUNICATION: Denelli, Reno (grazing tenant). June 2022. Personal communication with Clayton Koopmann, Koopmann Rangeland Consulting.

3. Ogden, Hoffman, 1862, *Reports of Land Cases Determined in the United States District Court for the Northern District of California*, Numa Hubert, San Francisco.

4. PERSONAL COMMUNICATION: Peth, Aaron (Midpen). June 2022. Personal communication with Clayton Koopmann, Koopmann Rangeland Consulting.

5. Annual Crop Report, San Mateo County. 2020. San Mateo County Agricultural Commissioner's Office.

6. National Cooperative Soil Survey. Soilseries.sc.egov.usda.gov. 2014.

7. Natural Resources Conservation Service (NRCS). 2007. San Mateo County, California (CA041) Soil Data, (Version 5, Dec 10, 2007).

8. PERSONAL OBSERVATION: Koopmann, Clayton. June 2020 site visit.

9. *Target Plan Lists – Cloverdale Ranch Botanical Surveys*. Vollmar Natural Lands Consulting (VNLC). Vollmar, John and Schweitzer, Jake. June 2021.

10. PERSONAL COMMUNICATION: Markegard, Eric (grazing tenant). June 2022. Personal communication with Clayton Koopmann, Koopmann Rangeland Consulting.

11. *American Badger and Burrowing Owl Habita Suitability Assessment Report 2019-2022*. Pathways for Wildlife. Diamond, Tanya, and Sandoval, Ahiga. Hickman, K., Wang, Y., Wenny, D. May 2022.

12. *Cloverdale Ranch Road Assessment*. Best, Timothy C., April 2022.

13. https://HMDB.org/m.asp?m=92651. "Steele Brothers Dairy Ranchers". Last accessed online in June 2022.

14. Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California. University of California Cooperative Extensions (UCCE). Publication 8092. 2002.

15. *A review of Shiga toxin Escherichia coli and Salmonella enterica in cattle and free-ranging birds: potential association and epidemiological links*. University of Nebraska, Lincoln. Pedersen, Kerri and Clark, Larry. 2007.

16. 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.

17. 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.

18. California Natural Diversity database last accessed online June 2022.

19. De Bos, A. (1969). "Ecological conditions affecting the production of wild herbivorous mammals on grasslands". Pp 137-179 in *Advances in ecological research*. On file at U.S. Department of Agriculture, Forest Service, Intermountain Research Station, Fire Sciences Laboratory. Missoula, MT.

20. Quinn, Ronald D. (1990). "Habitat preferences and distribution of mammals in California chapparal". Research paper PSW-202, Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station.

21. Lindzey, Fredrick G. (1971). "Ecology of Badgers in Curlew Valley, Utah and Idaho with Emphasis on Movement and Activity". Research Paper. Utah State University, Wildland Resources.

22. California Native Plant Society. *Online database*. www.rareplants.cnps.org. Accessed June 2022.

23. California Natural Diversity database last accessed online June 2022.

24. California Invasive Plant Council, *Invasive Plant Inventory Database*. http://www.cal-ipc.org/paf. Accessed online, June 2022.

25. Audubon Conservation Ranching Program Protocols: Region - Central California Foothills and Coastal Mountains. May 2020.

PLAN PREPARED BY:

Having prepared this Rangeland Management Plan (RMP), 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 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 — October 20, 2022

Clayton W. Koopmann — Date

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

Koopmann Rangeland Consulting

Rangeland Resource Management Services

ATTACHMENT – A

2022 Baseline Photos: Cloverdale Ranch

(Baseline photos can be used as reference for establishing photo-monitoring points annually by the landowner. Long term trends can be noted when comparing the baseline photo updates against the original baseline photos.)

ATTACHMENT – B

Guidelines for Residual Dry Matter Monitoring
University of California

ATTACHMENT – C

Recommended management approach and best management practices for California red-legged frogs on the Cloverdale Ranch property

Managing Rangelands to Benefit California Red-Legged Frogs & California Tiger Salamanders – Chapters 4, 5 & 8

ATTACHMENT – D

Cloverdale Ranch Soils Report

ATTACHMENT – E

Audubon Conservation Ranching

Program Protocols

ATTACHMENT 4

South Cowell Addendum to the Elkus Ranch Uplands and Lobitos Ridge Rangeland Management Plan

Prepared for:

Midpeninsula Regional Open Space District

5050 El Camino Real

Los Altos, CA 94022

Prepared by:

Koopmann Rangeland Consulting December 2020

under Peninsula Open Space Trust property ownership

Adopted by the Midpeninsula Regional Open Space District December 11, 2024

CONTENTS

I. OVERVIEW & PURPOSE

This document serves as an addendum to the original Elkus Ranch Uplands & Lobitos Ridge Properties Grazing Management Plan (Plan), approved by the Midpeninsula Regional Open Space District (District) Board of Directors, in November 2010. The original Plan encompasses 839± acres in a portion of the Purisima Creek Redwoods Open Space Preserve that includes the Elkus Ranch Uplands (450 acres) and the Lobitos Ridge property (389 acres) which are contiguous to one another. The properties are located in unincorporated San Mateo County, south of the town of Half Moon Bay (Figure-1). This addendum is prepared by Koopmann Rangeland Consulting at the request of Mike Williams, Real Property Manager for the District. The grazed properties were acquired by the District throughout the early 2000's from various property owners. Peninsula Open Space Trust (POST) acquired an undivided 87% interest in the 600± acre South Cowell Ranch in June 2020. The South Cowell Ranch is located adjacent to Elkus Uplands and Purisima Upland. The District plans to acquire 361 acres of South Cowell Ranch east of Verde Road and manage it in cooperation with the Elkus Ranch Uplands and Lobitos Ridge properties.

Elkus Ranch Uplands and Lobitos Ridge were historically grazed by the former owners and continue to be grazed under District ownership to enhance ecological values, reduce wildfire fuel loads, and support local agriculture on the coast. POST, the present owner of the South Cowell Ranch, is currently working to improve grazing infrastructure on the South Cowell Ranch property including installation of a new corral, improving livestock water, and replacing many of the perimeter fences, prior to the planned sale of the property to the District. Vince Fontana currently leases the cattle grazing rights on the South Cowell property which he grazes in conjunction with the adjoining Lobitos Ridge and Elkus Uplands properties owned by the District. Upon acquisition, the District plans to incorporate the South Cowell Ranch property into the existing grazing management program and enter into a grazing lease with Mr. Fontana. In addition to the South Cowell property, a small portion of the adjoining Purisima Upland property, approximately 6.0 acres in the southeast corner, will be added to the grazing lease area. The addition of the 6.0 acres will provide a reliable access route between South Cowell Ranch and Elkus Uplands where an existing dirt road connects the properties.

This addendum serves to add the 361± acre South Cowell Ranch property east of Verde Road and approximately 6.0± acres of the Purisima Upland property to the original Elkus Ranch Uplands & Lobitos Ridge Rangeland Management Plan. Rangeland management and grazing prescriptions, management strategies, and best management practices (BMPs) recommended in the Plan 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 conservation grazing objectives for the site.

II. PROPERTY BACKGROUND & DESCRIPTION

LOCATION:

The Elkus-Lobitos properties are part of the larger Purisima Creek Redwoods Open Space Preserve (PCR) located in rural San Mateo County south of the town of Half Moon Bay, bordered by Skyline Boulevard on the east, Purisima Creek Road to the North, and Highway-1 to the west (Figure-1). The Elkus-Lobitos properties are located on the western portion of PCR with the 361± acre South Cowell Ranch situated on the western-most edge (Figure-2). South Cowell Ranch runs along the eastern side of Verde Road where a gravel road provides access to the property. A small portion of the South Cowell property is situated between Verde Road and Highway 1 however, this area will not be included in the grazing management area.

SITE DESCRIPTION:

The proposed pasture expansion encompasses approximately 361± grazeable acres of the South Cowell Ranch and 6.0± acres of the Purisima Upland property (367± acres total) to be an addition to the Plan. The pasture area is primarily west and south sloping, comprised of coastal annual grasslands and coastal scrub with dense stands of coyote brush, ranging in elevation from 250 feet at Verde Road to 790 feet on the ridgetop in the northeast corner. Approximately sixty percent of the property drains directly to the Pacific Ocean via unnamed tributaries while the remaining forty percent drains south into Lobitos Creek. Cattle will not have access to the stream channel, restricted by a fenceline just above Lobitos Creek Road. Lobitos Creek drains into the Pacific Ocean approximately 1-mile west of South Cowell Ranch.

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 pasture have been impacted by coyote brush encroachment. Well-established coyote brush and willows dominate many of the steeper drainages. Numerous species of native perennial bunch grasses were noted throughout the property. The property contains a variety of non-native invasive vegetation primarily found sporadically throughout the site in sparse patches.

A seasonal stockpond is located along the southern edge of the property above Lobitos Creek Road and a larger perennial stockpond is located near the northeast corner of the property. A developed natural spring, located adjacent to the gravel road near the western property boundary provides stockwater to two troughs. Additional piping, a storage tank, and a new trough will be installed in the holding field and corral which are currently under construction. The property also has adjudicated Purisima Creek water rights for stock water [2].

HISTORIC, CURRENT & PLANNED LAND USE:

Ridgetops on the property were historically farmed for safflower and other grains up until the 1970s, in addition to livestock grazing. Once farming operations ceased, the site has continually been used for cattle grazing. Several graded level pads are located throughout the property where oil wells were located during the 1970s and 1980s, though remnants of the oil wells and associated infrastructure are now gone.

The property is currently leased to Mr. Vince Fontana who grazes beef cattle on the site throughout the year in conjunction with neighboring parcels. The District plans to acquire the South Cowell Ranch from POST in the future and will enter into a grazing lease as part of the District's conservation grazing program which aims to control non-native invasive vegetation, promote desirable vegetation and native grasses, enhance habitat for wildlife, reduce fine fuels for wildfire protection, and promote the rich agricultural heritage of the San Mateo Coast. In addition to livestock grazing, the District plans to develop a trail system for low intensity recreation that will link PCR on Skyline Boulevard to the Pacific Ocean, known as the Purisima to the Sea Trail. The trail system will begin near Verde Road and pass-through South Cowell Ranch as it makes its way to Bald Knob to the east and ties into the existing PCR trail system.

III. CULTURAL AND ECOLOGICAL RESOURCES

ECOLOGICAL RESOURCES & SPECIAL STATUS SPECIES:

Wildlife is abundant throughout the South Cowell Ranch property. The grasslands and riparian corridors, particularly around the stockponds, provide habitat for various aquatic and amphibian species, and could potentially support the federally listed California red-legged frog (CRLF). Black tailed deer, coyote, mountain lions, blue herons, and many other animals are present on the Ranch.

Special Status Species[1]

The California Natural Diversity Database lists a number of special status wildlife species found within the Lobitos Creek and Purisima Creek watersheds, most of which are found in the lower reaches and tidal areas. Special status wildlife species potentially found in the upper portions of the watershed, including the South Cowell Ranch, include:

A. Animals

AMPHIBIANS/REPTILES:

Actinemys marmorata, Western pond turtle – CA species of special concern

Rana draytonii, California red-legged frog - Federal threatened, CA species of special concern

***Thamnophis sirtalis tetratania*,** San Francisco garter snake – and State Federal endangered

[1] This information is used for planning purposes only

BIRDS:
Athene cunicularia, Burrowing owl – CA species of special concern
Circus cyaneus, Northern Harrier – CA species of special concern
Geothlypis trichas sinuosa, San Francisco common yellowthroat – USFW bird of conservation concern & CA species of special concern
Selasphorus sasin, Allen's Hummingbird - USFW bird of conservation concern
Charadrius nivosus, Snowy Plover – Near threatened (population decreasing)

FISH:
Oncorhynchus mykiss irideus, Steelhead Trout – Federal threatened

MAMMALS:
Neotoma fuscipes annectens, San Francisco dusky-footed woodrat – CA species of special concern
Taxidea taxus, American badger – CA species of special concern

INSECTS:
Bombus occidentalis*, Western bumble bee – Active petition to list as State endangered*

CULTURAL RESOURCES:

The Muwekma Ohlone Tribe of the San Francisco Bay Area historically occupied the region, including the Lobitos 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 [3]. Remnant artifacts from the Muwekma Ohlone Tribe can be found throughout the region including decorative shells, milling slabs, hand stones, awls, mortars, and pestles. A cultural resource assessment has not been conducted on the property. Sensitive cultural resources, including Native American artifacts, are known to occur at sites near the South Cowell Ranch property, so there is a likelihood of cultural resources being present on the site.

VEGETATIVE COMPOSITION:

A combination of annual grassland and coastal scrub habitat covers approximately 70-75 percent of the pasture expansion area, comprised of diverse vegetation, 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 bay laurels, willows, and coyote brush dominate the steep drainages. Non-native invasive vegetation is found sporadically throughout the pasture expansion area. Italian thistle, milk thistle, and bull thistle are found throughout the site with many localized small stands. Fennel, poison hemlock, and spiny cocklebur were noted in relatively low densities and a few isolated occurrences of Jubata grass were noted. Coyote brush encroachment has impacted grasslands throughout the property.

SOILS:

Soil composition on the site is primarily dominated by Lobitos loam and Tierra loam with small areas of Cayucos clay loam, Colma loam, and Gazos and Lobitos soils. These soils tend to be deep, well drained soils but are often prone to erosion and gullying, particularly on steeper slopes. In order to minimize the risk of erosion, manage livestock grazing to leave adequate forage on the soil surface to act as ground cover to stabilize soils.

IV. GRAZING MANAGEMENT PRESCRIPTIONS & RECOMMENDATIONS

The South Cowell Ranch is primarily annual grasslands and coastal scrub. The continued use of cattle grazing to manage vegetation on 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 conservation grazing 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. District natural resources staff may advise changes to the pasture rotation schedule to protect or enhance natural resources such as native perennial grass stands that occur within the three units. 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 Forage Production Year:
  336.0 AUMs = Approximately 28 cows year-round or 56 cows for 6 months.
- Average Forage Production Year:
  288.0 AUMs = Approximately 24 cows year-round or 48 cows for 6 months.
- Unfavorable Forage Production Year:
  216.0 AUMs = Approximately 18 cows year-round or 36 cows for 6 months.

SEASON OF USE:

As a stand-alone parcel, a light to moderate year-round grazing regime is best suited for the site. The South Cowell Ranch is currently incorporated into a 3-pasture grazing rotation in conjunction with the UC Elkus Uplands and Lobitos Ridge properties, all of which are leased to and grazed by the same livestock operator. The 3-pasture grazing rotation allows for 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.

As part of the current 3-pasture grazing rotation, the South Cowell Ranch is best suited for summer and fall grazing as the property boasts the most reliable source of livestock water, including two stockponds and a developed spring with multiple troughs. If more reliable stock water is developed on the adjoining grazing parcels, the South Cowell property can be grazed at various times throughout the season, based on operational needs, provided that forage conditions remain within or above the prescribed forage standard.

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 [5].
- 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 [5].

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 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. The majority of the property contains pasture fence in fair condition, composed of barbed wire and a combination of steel and wood posts. Portions of the perimeter fence along the western, southern and northern property boundaries were recently replaced with new barbed wire fencing. There are no interior pasture fences located on the South Cowell Ranch property except for a small holding field, approximately 2.0-acres, that was recently installed just east of and adjacent to the livestock corral. The holding field services the corral and acts a place to hold cattle for processing and shipping/receiving.

A section of new fence will be installed across the southeast corner of the adjacent Purisima Upland property. The section of fence will provide a cattle barrier to the remainder of the Purisima Upland property while providing access for cattle along the dirt road connecting the South Cowell Ranch and UC Elkus Uplands property. This connection is an important access route which allows the grazing operator to move cattle between the two properties.

STOCK WATER:

Stock water on the South Cowell Ranch is provided through two (2) stockponds and a developed spring. The northern stockpond is perennial while the south pond above Lobitos Creek Road is seasonal and tends to dry up by August each year [1]. The developed spring is located adjacent to the gravel access road on the western slope of the property. The spring water is collected in a springbox which is piped to two (2) nearby troughs. Excess water from the spring flows into a nearby drainage.

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 holding field/corral and the third in the grazing pasture. The existing spring development should be improved to be more reliable and further distribute water. Installation

of a 2,500-gallon water storage tank is recommended near the spring. Replace the older existing troughs with a new 500-gallon concrete water trough. Extend the water line from the existing trough site to the holding field and corral and install a new 500-gallon concrete water trough in the holding field and a new concrete water trough in the corral.

A low-profile water tank partially buried in the ground is recommended to minimize aesthetic impacts in the Preserve. Installation of approximately 950 feet of pipe is required to supply water to the new troughs and tank. Pipe should be trenched or plowed into the ground at a depth of 18 to 24 inches. Reference Figure-4, 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**:**

A new livestock corral was recently installed along the western property boundary. The corral is comprised of galvanized steel panels and steel support pipes and includes a lead-up and squeeze chute for processing as well as a loading chute to load cattle on semi-trucks. A large turn around area is designed to allow semi-trucks to access the site to transport cattle. A short gravel access road provides all season access from Verde Road to the corral site.

VI. BEST MANAGEMENT PRACTICES

WATER QUALITY PROTECTION**:**

Stormwater runoff from the South Cowell Ranch drains into Lobitos Creek and a number of unnamed tributaries, all of which flow into the Pacific Ocean approximately 1-mile west of the property. Lobitos Creek has historically hosted a salmonid population with reported occurrences of steelhead trout. 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:

- Control runoff and leaching from stockpiled manure, confined livestock, and corral facilities. Maintain a 30-foot vegetative buffer between corrals/confined livestock pens and perennial streams. The corral is situated in a flat area near a small unnamed tributary. Maintain a vegetative buffer between the corral and stream channel.
- 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 South Cowell Ranch expansion 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, CRLF, and other special status species have been documented within the Lobitos Creek and Purisima Creek watersheds, though a comprehensive biological assessment has not been performed on the South Cowell Ranch property.

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 area. Creating a mosaic of microhabitats and breaking up the thatch layer 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 special status species. 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). Adhere to county, state, and federal permitting requirements when performing work on the property.

CULTURAL RESOURCES**:**

While cultural resources were not observed on the site, Native American artifacts from the Muwekma Ohlone tribe are found on similar sites throughout the coast. Continue to monitor the site for the presence of cultural artifacts, particularly during construction of grazing infrastructure. If 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.

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 can 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 be included in the District's Annual IPM Plan and 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 to 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 thistles that occur on site, 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.
- 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.

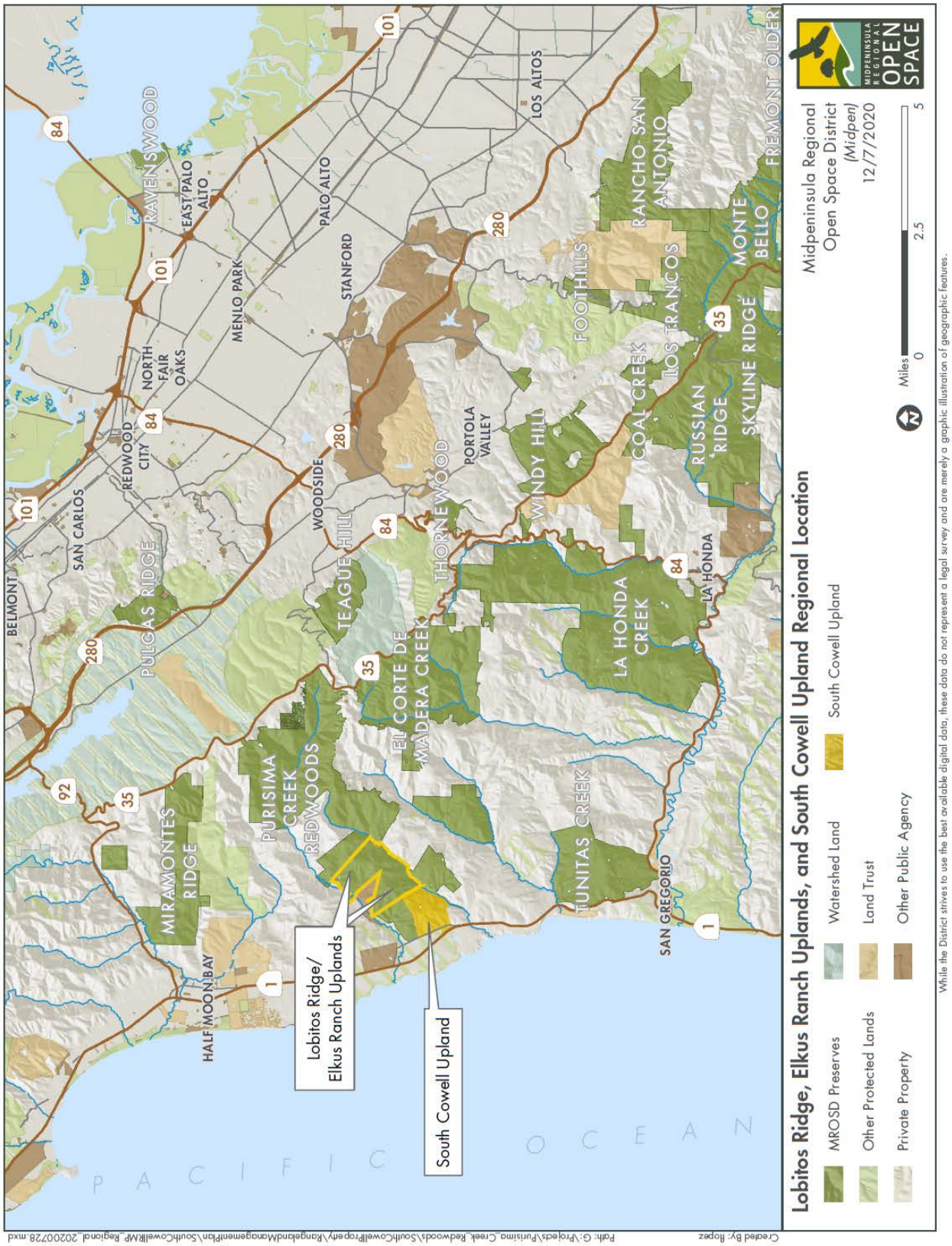
Implement an integrated approach described above to early detection, identifying and treating invasive plants within the site that are impacting forage production and grassland health including but not limited to coyote brush, yellow starthistle, jubata grass, poison hemlock, Italian thistle, bull thistle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

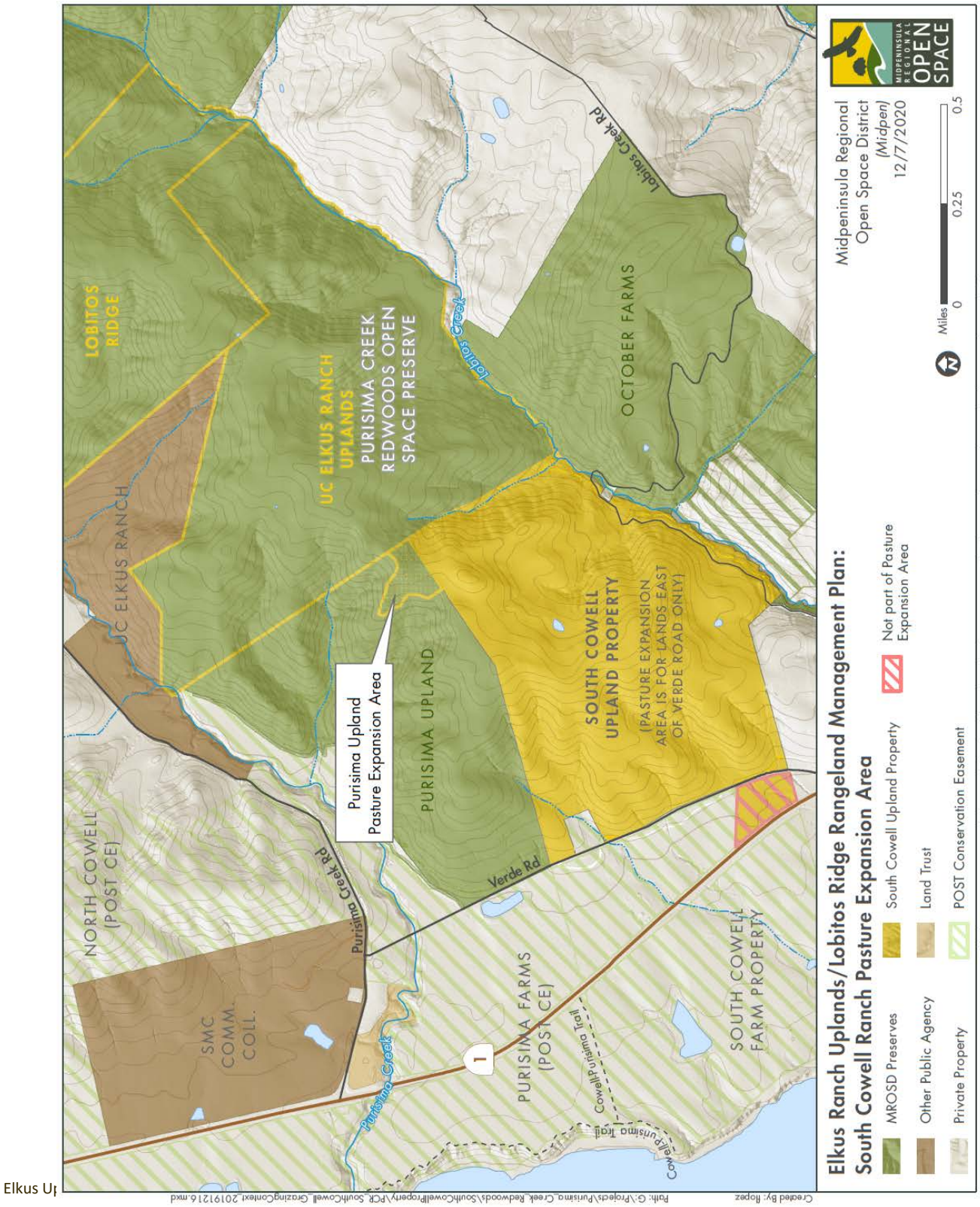
VII. MONITORING

The monitoring program for the grazed rangeland pastures on the South Cowell Ranch portion of the properties is designed to ensure that the specific rangeland uses are in compliance with the Elkus Uplands and Lobitos Ridge RMP and the land stewardship goals and objectives. Utilize the monitoring protocols recommended in the Elkus Uplands & Lobitos Ridge RMP to monitor the pasture expansion area. Eight (8) photo point locations within the pasture expansion area were strategically selected to capture overall rangeland health, grazing infrastructure, and invasive vegetation. These eight photo points should be added to the annual Elkus Uplands and Lobitos Ridge rangeland monitoring and data collection, including residual dry matter data. Figure-5 is a map showing photo point locations within the pasture expansion area and Exhibit-1 shows the stock photo for each of the eight selected monitoring points with corresponding coordinates.

ATTACHMENT 4

Figure-1: Regional Location Map





Elkus Up

Figure-2: South Cowell Ranch Pasture Expansion Area

Figure-3: South Cowell Ranch Soils Map

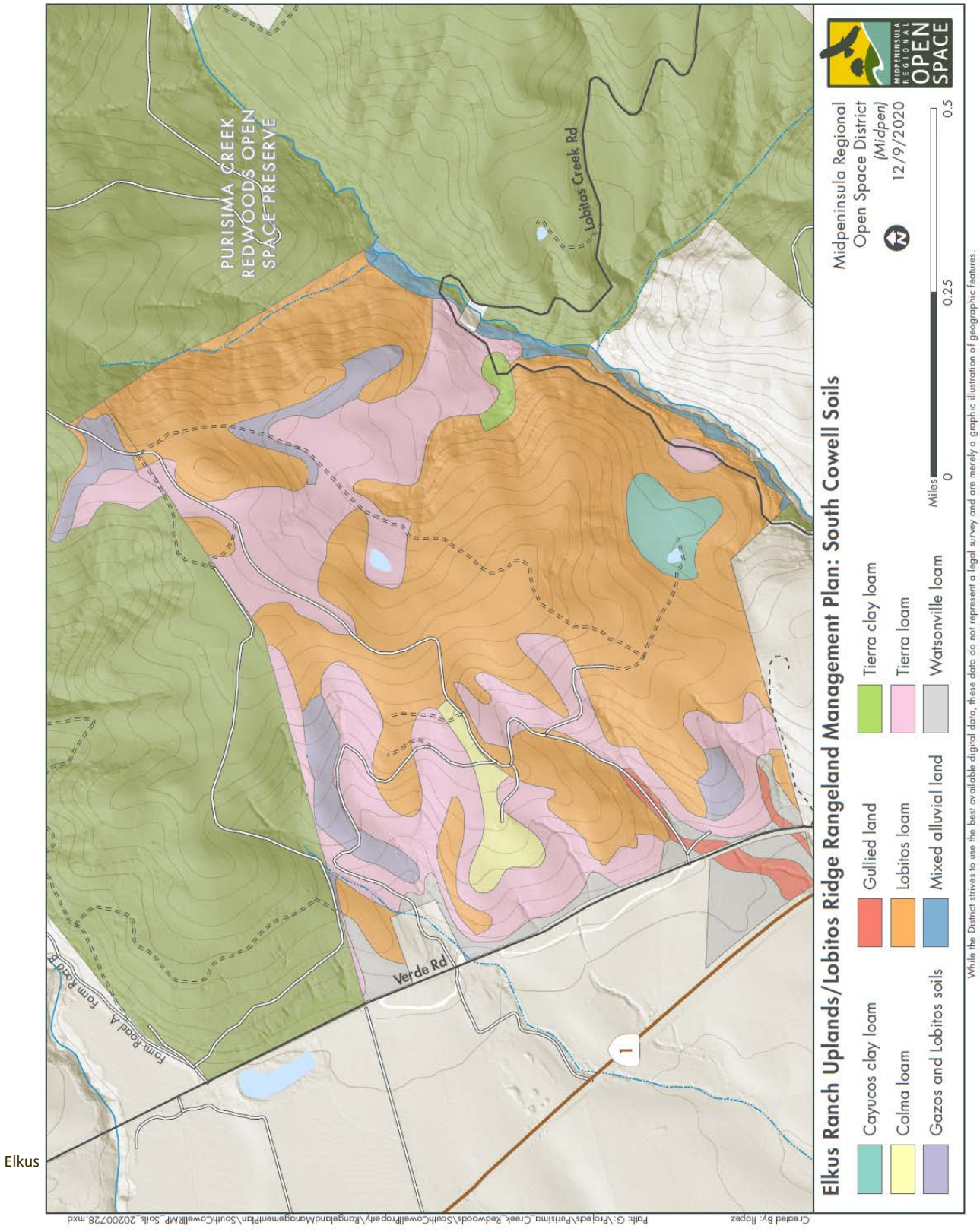
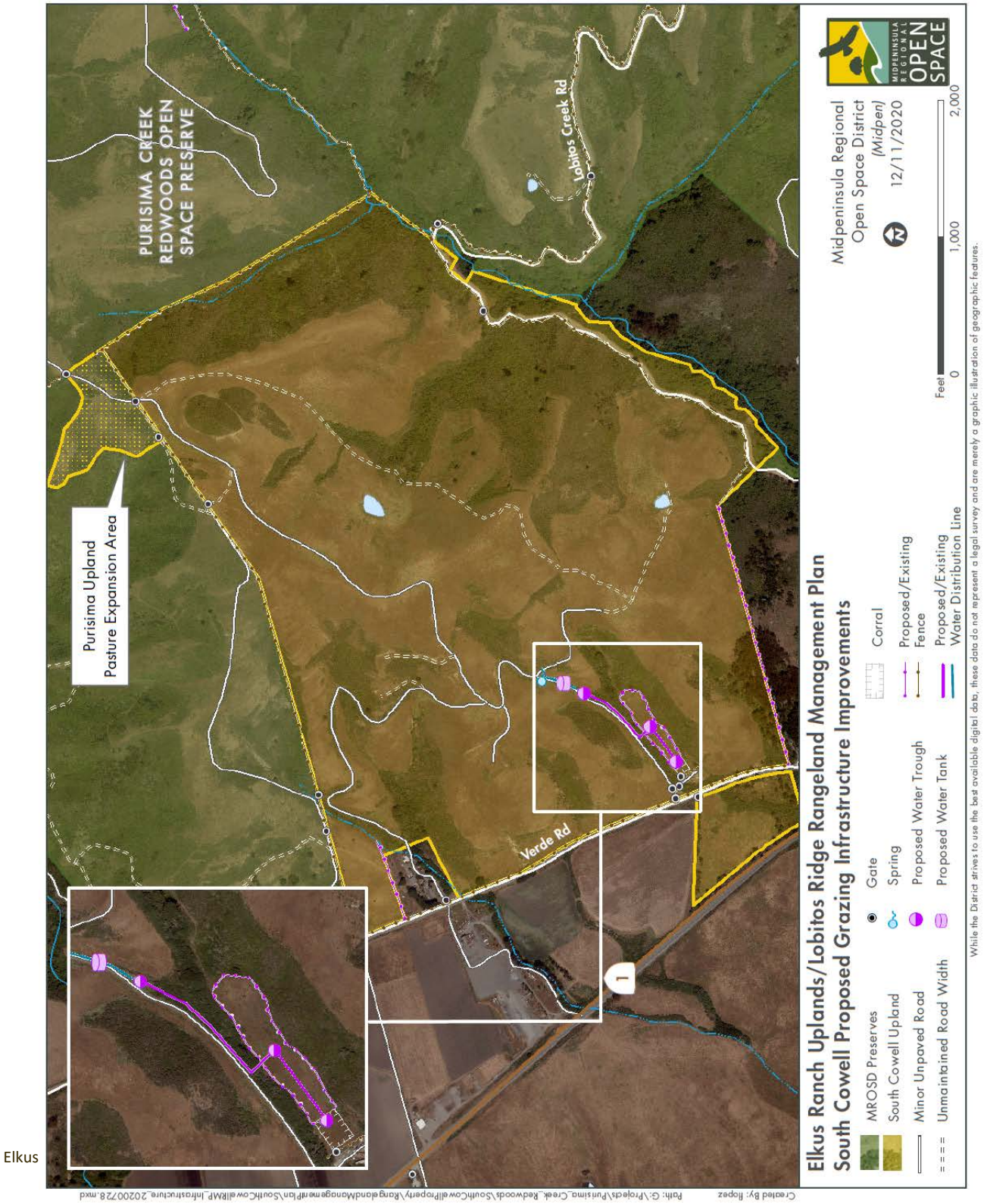
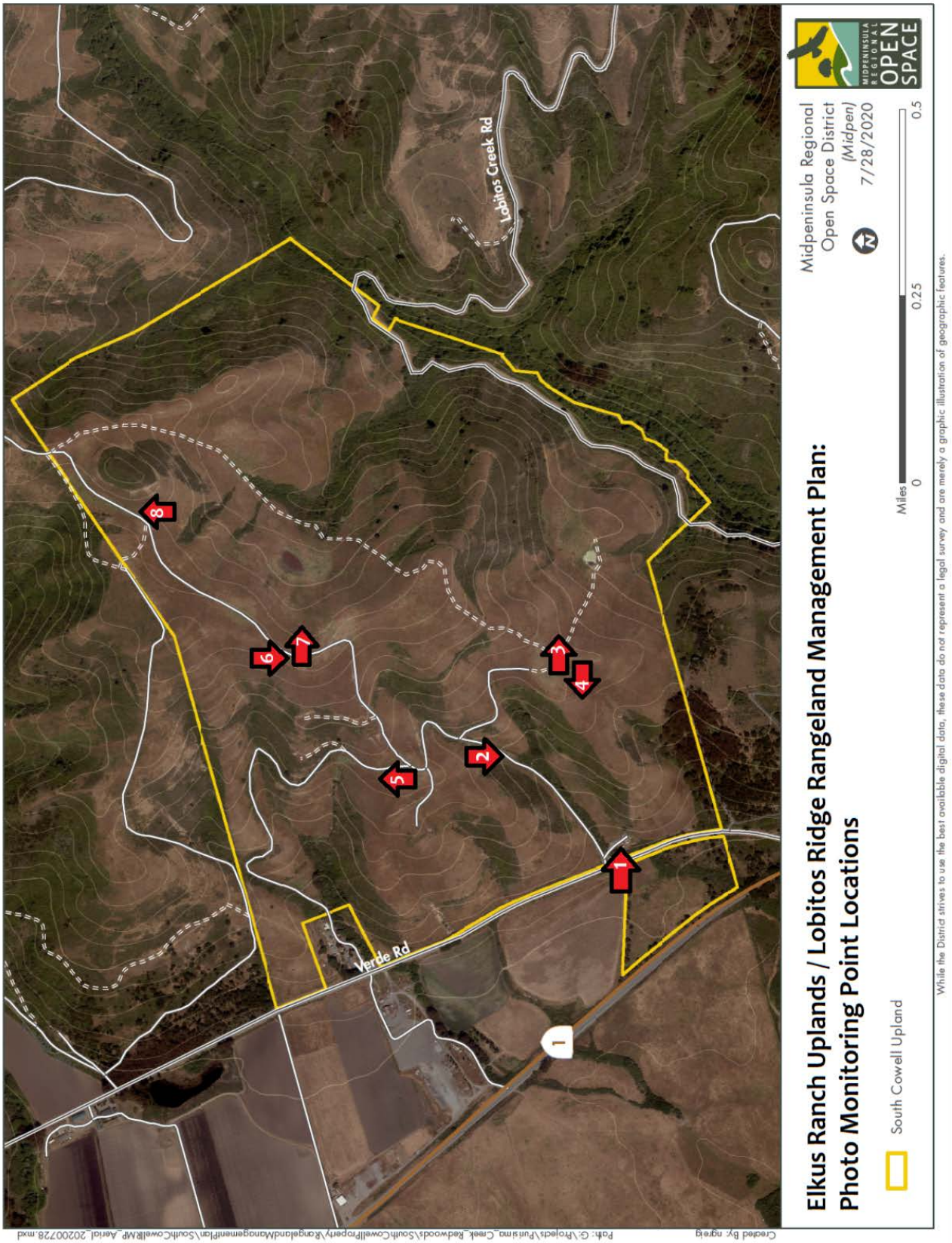


Figure-4: Proposed Grazing Infrastructure Improvements



Elkus

Figure-5: Rangeland Monitoring Photo Point Locations



Elkus

EXHIBIT-1

Rangeland Monitoring Stock Photos

Photo Point 1: (37.391136, -122.405384)

Gravel driveway looking east toward corral and holding field location.

Photo Point 2: (37.393262, -122.403198)

Two old water troughs fed via the boxed spring located just up the hill.

Photo Point 3: (37.391967, -122.400040)

Ridgetop looking east toward stockpond and the Lobitos Creek drainage. Note the seasonal stockpond and a variety of invasive thistle as well as scattered coyote brush which may become more widespread in the future and impact grassland habitat.

Photo Point 4: (37.391951, -122.399992)

Ridgetop looking west toward the southwest property boundary and the Pacific Ocean in the background. This area is exemplary of annual grasslands on the upland portion of the property.

Photo Point 5: (37.395045, -122.405124)

Looking northwest from the large pad where a historic oil well was located. Annual grasslands with sparse coyote brush and dense willows in the riparian drainage. Note the contrast of coyote brush on South Cowell (below fence) and Purisima Upland (above fence).

Photo Point 6: (37.397434, -122.400937)

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

Photo Point 7: (37.397434, -122.400937)

Looking southeast from the ridgetop road toward the perennial pond near the northern property boundary. This pond provides aquatic habitat as well as a valuable source for stockwater. Note the start of coyote brush encroachment. Efforts should be made to control coyote brush in this area to protect aquatic and grassland habitat for wildlife.

Photo Point 8: (37.400276, -122.397833)

Looking northeast toward the property corner and the 6.0-acre portion of Purisima Upland that will be added to the South Cowell lease area (brushy hill top center of photo). This site tends to host non-native invasive plants and should be monitored and treated as necessary.

REFEERENCES

1. PERSONAL COMMUNICATION: Fontana, Vince. Grazing tenant, South Cowell Ranch. July 2020.
2. PERSONAL COMMUNICATION: Williams, Mike. Real Property Manager, Midpeninsula Regional Open Space District. July 2020.
3. Muwekma.org/tribalhistory/historicaloverview.html. Accessed August 2020.
4. PERSONAL OBSERVATION: Koopmann, Clayton. July 2020 site visit.
5. Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California. University of California Cooperative Extensions (UCCE). Publication 8092. 2002.
6. 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.
7. 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.
8. Elkus Uplands and Lobitos Ridge Rangeland Management Plan. Midpeninsula Regional Open Space District. November 2010.
9. California Natural Diversity database last accessed online August 2020.

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 — December 12, 2020

Clayton W. Koopmann — Date

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

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Rangeland Resource Management Services