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AGRICULTURAL AND ENVIRONMENTAL CONSULTANTS

Offices in
Santa Barbara
Mammoth Lakes

WRITTEN TESTIMONY OF ORRIN SAGE CONCERNING WATER RIGHTS APPLICATION #30166

EL SUR RANCH

PREPARED BY:

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SAGE Associates
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INTRODUCTION

In January of 2011, I was retained by Ms. Janet Goldsmith, an Attorney at Law with Kronick Moskovitz Tiedemann & Girard, Attorneys, to provide written testimony and opinion regarding Water Rights Application #30166 involving the El Sur Ranch.

Qualifications

My name is Dr. Orrin Sage. I am a Principal and co-owner of Sage Associates, an Agricultural and Environmental Consulting practice located in Santa Barbara, and Mammoth Lakes, California.

I have been an agricultural and environmental consultant for over 40 years and have conducted agricultural studies on over 2,500,000 acres in California and western Nevada, of which conservation easement related projects include over 300,000 acres.

Academically, I received a BA, MA, and PhD in Geological Sciences from the University of California at Santa Barbara including post-graduate studies in soils, hydrology, sedimentology, economics, and resource management. I instituted and taught courses in Environmental Impact Analysis, and California Agriculture for 15 years in the Environmental Studies Program at the University of California, Santa Barbara.

Professional registrations include a California Board of Forestry Certified Rangeland Manager (CRM); and an American Registry of Certified Professionals Soil Erosion and Sedimentation Control Specialist (CPSEC). Professional affiliations include a six-year term as a Director for the Society of Range Management Cal-Pac Section and a six-year term as a Director for the Eastern Sierra Land Trust.

My clients include government agencies, conservation organizations, educational entities, and private ranchers and farmers. My work products have included agricultural viability and suitability studies, ranch and farm management plans, natural resource studies, environmental impact reports and statements, conservation easements, conservation easement baseline conditions reports, and conservation easement management plans.

Pertinent coastal agricultural and environmental management assessments that I have conducted for California ranches within coastal watersheds include the following:

Las Varas Ranch – 1,800 acres of cropland and rangeland in Santa Barbara County.

Rancho Tajiguas – 4,600 acres of cropland, irrigated pasture, and rangeland in Santa Barbara County.

Hollister Ranch – 14,500 acres of cropland and rangeland in Santa Barbara County.

Bixby Ranch – 24,500 acres of cropland and rangeland in Santa Barbara County.

Vandenberg Air Force Base – 98,000 acres including cropland and rangeland areas in Santa Barbara County.

Hearst Ranch – 82,000 acres of cropland, irrigated pasture, and rangeland in San Luis Obispo County.

Rancho San Carlos – 19,000 acres of rangeland and irrigated pasture paddocks in Monterey County.

Coastal Santa Cruz County and San Mateo County ranch and farm assessments for the University of California at Santa Cruz, the Peninsula Open Space Trust, and the Midpeninsula Open Space District.

Additional pertinent agricultural management studies include the 72,000-acre Jack Ranch in Monterey and San Luis Obispo Counties with approximately 1,000 acres of irrigated pasture and alfalfa.

I was also an agricultural consultant to Monterey County and prepared agricultural viability reports for ranches and farms totaling 3,825 acres.

These studies have provided valuable experience in evaluating the agricultural viability and operations on the 7,000-acre El Sur Ranch along with the ranch's 246 acres of irrigated pasture.

Testimony and Opinion

My testimony is based on discussions with El Sur Ranch owner - Mr. Jim Hill, El Sur Ranch Foreman – Mr. Jim Gray; review of published and unpublished reports, testimonies, and surveys; and a site assessment of the ranch on April 5, 2011.

Interviews with Mr. Hill and Mr. Gray provided information on historic and current ranch operations.

Review of published and unpublished reports, testimonies, and surveys provided information on ranch operations, irrigation practices and water

demand, soil conditions, beef cattle nutrient requirements, alfalfa hay costs, erosion control, and tailwater runoff.

A site assessment of the agricultural operations of the El Sur Ranch was conducted on April 5, 2011 with Mr. Hill, Mr. Gray, and Ms. Janet Goldsmith, Attorney at Law. At no time during the site assessment was information withheld regarding ranch operations and uses and no area of the ranch was restricted from my entry. The day was sunny with temperatures of 55F, high humidity, and a persistent 20 miles per hour north-northwesterly wind.

Numerous photos were taken during the site assessment of the ranch and are included in this report. Both the dryland rangeland, and the cultivated irrigated pasture field areas were in excellent condition with favorable nutritious plant species and abundant continuous ground cover. No irrigation water-related erosion was observed.

Based on my information analysis and site assessment, it is my opinion that:

- The irrigated pastureland is cultivated forage cropland as evidenced by the planted forage species that are different from the adjacent non-cultivated dryland rangeland forage species. The irrigated pasture is maintained in excellent condition.

- The El Sur Ranch is a viable agricultural operation in its existing configuration that utilizes both irrigated pasture and non-irrigated rangeland forage optimally for a commercial Hereford cattle operation.

- Substitution of alfalfa hay, or other fed hay or silage, in lieu of irrigated pasture forage for the cattle would destroy the agricultural viability of the ranch by creating unreasonable costs, severe operational effects, and unavoidable significant environmental impacts.

EL SUR RANCH AGRICULTURAL USES

The El Sur Ranch comprises approximately 7,000 acres located north of the community of Big Sur within the Monterey County coastal area (Figure 1). State Highway 1 provides access to the coastal portion of the ranch and separates the 246 acres of irrigated pasture from the rangeland portion of the ranch to the east.

The irrigated pasture is utilized as an integral part of the overall ranch grazing operation. The 246 acres of irrigated pasture are divided into 11 fields that provide an effective managed grazing operation for cattle and forage management (Figure 2).

Photos that were taken during the site assessment show the following ranch features.

Photo 1: Regional view of the southern portion of the irrigated pasture and rangeland.

Photo 2: Regional view of the northern portion of the irrigated pasture and rangeland.

Photo 3: Rangeland areas east of State Highway 1.

Photo 4: Rangeland areas east of State Highway 1.

Photo 5: Rangeland areas east of State Highway 1.

Photo 6: Irrigated South Pasture, Pastures 4 and 5 and Pumphouse Pasture with excellent ground cover.

Photo 7: Irrigated North Pasture in relation to State Highway 1.

Photo 8: Irrigated South Pasture in relation to State Highway 1.

Photo 9: Irrigated Pumphouse Field and Pastures 6 and 3 with excellent ground cover.

Photo 10: Tailwater pond with rainwater runoff. Note windsock.

Photo 11: Irrigated Pasture 7 with excellent ground cover.

Photo 12 Irrigated Pasture 8 with excellent ground cover and outfall depression.

The rangeland and irrigated pasture field areas were in excellent condition with high quality forage species present and with excellent ground cover.

The rangeland contained varying proportions of wild oats, plantain, wild barley, filaree, brome, poppies, bur clover, and good concentrations of native perennial purple needlegrass.

The irrigated pasture fields contained varying proportions of cultivated orchardgrass, and clovers. These pastures contain different forage species than the adjacent non-cultivated rangeland.

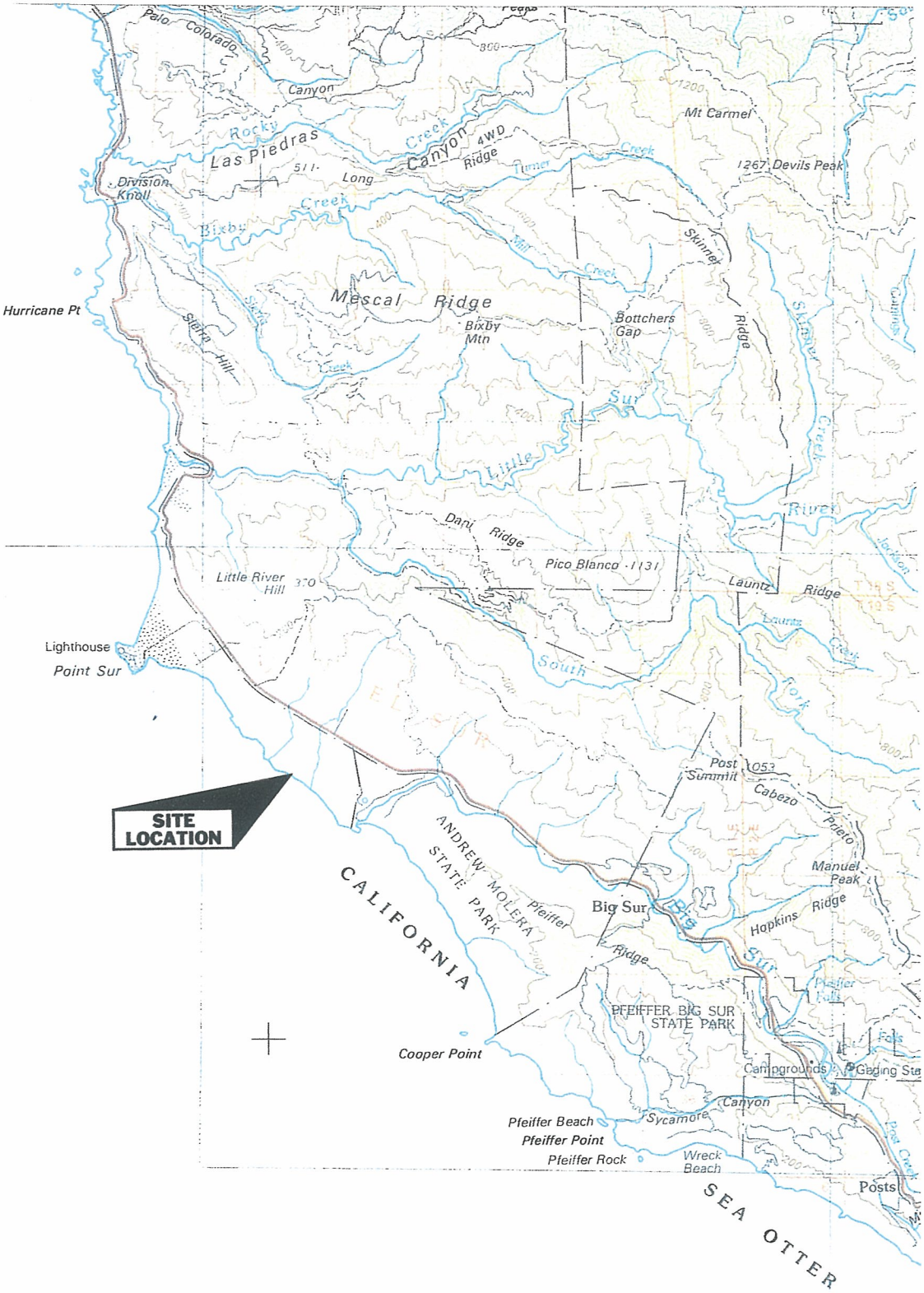

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Figure 1: **Vicinity Map**

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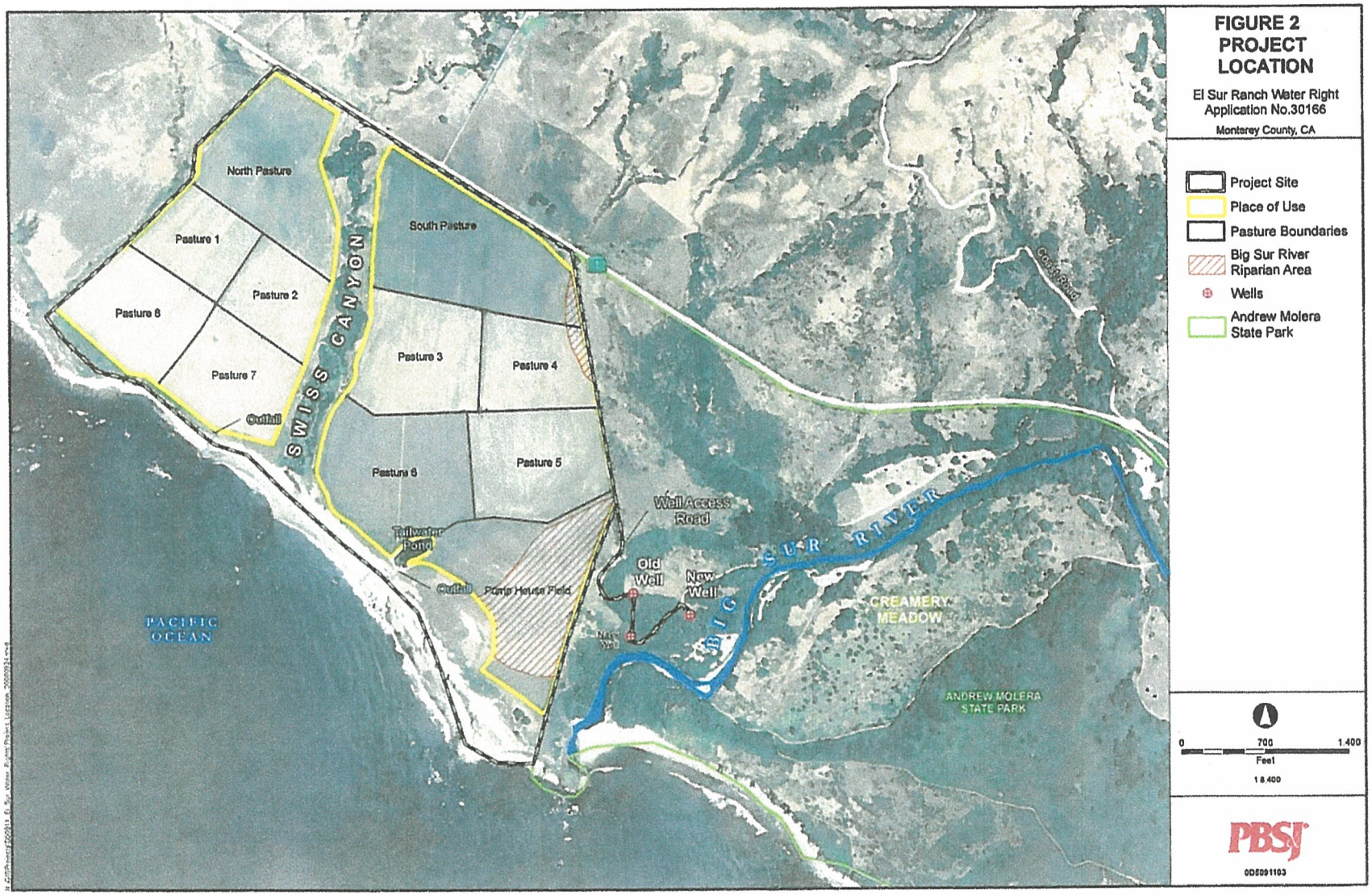
North Pasture
South Pasture
Pasture 1
Pasture 2
Pasture 3
Pasture 4
Pasture 5
Pasture 6
Pasture 7
Pasture 8
SWISS CANYON
Outfall
Outfall
Tailwater Pond
Pump House Field
Well Access Road
Old Well
New Well
BIG SUR RIVER
CREAMERY MEADOW
ANDREW MOLERA STATE PARK
PACIFIC OCEAN
Coast Ridge Road
FIGURE 2
PROJECT LOCATION
El Sur Ranch Water Right Application No.30166
Monterey County, CA
Project Site
Place of Use
Pasture Boundaries
Big Sur River Riparian Area
Wells
Andrew Molera State Park
0
700
1,400
Feet
1:8,400
PBSJ
0DS091103

EL SUR RANCH PHOTOS

Photo 1: El Sur Ranch irrigated pasture upper right. Molera State Park and Big Sur River on left. Photo to southwest, April 5, 2011.

Photo 2: El Sur Ranch irrigated pasture in background, rangeland in foreground. Molera State Park to left. Photo to northwest, April 5, 2011.

EL SUR RANCH PHOTOS

Photo 3: El Sur Ranch rangeland on east side of State Highway 1. Photo to northwest, April 5, 2011.

Photo 4: El Sur Ranch rangeland further east of State Highway 1. Photo to north, April 5, 2011.

EL SUR RANCH PHOTOS

Photo 5: El Sur Ranch rangeland in foreground and midground with irrigated pasture in background. Photo to west, April 5, 2011.

Photo 6: Irrigated South Pasture, with Pastures 4 and 5, and Pump House Field in background. Photo to southwest, April 5, 2011.

EL SUR RANCH PHOTOS

Photo 7: Irrigated North Pasture on right of State Highway 1. Photo to southeast, April 5, 2011.

Photo 8: Irrigated South Pasture on left side of State Highway 1. Photo to northwest, April 5, 2011.

EL SUR RANCH PHOTOS

Photo 9: Irrigated Pump House Field foreground, Pastures 6 and 3 in midground. Rangeland in background. Photo to northeast, April 5, 2011.

Photo 10: Tailwater Pond. Persistent north-northwest wind shown by windsock. Photo to northeast, April 5, 2011.

EL SUR RANCH PHOTOS

Photo 11: Irrigated Pasture 7. Rangeland in background. Photo to northeast, April 5, 2011.

Photo 12: Irrigated Pasture 8 with rangeland in background. Photo to North, April 5, 2011. Outfall depression is in foreground.

The following agricultural uses of the ranch are summarized below. Irrigated pasture usage and irrigation management may necessarily vary from year to year depending on climatic conditions.

• The ranch is run as a commercial cow/calf operation with registered Hereford bulls and Hereford cows. The approximate carrying capacity of the ranch is 450 cow/calf pairs (900 head), 30 to 35 bulls, and 30 to 80 replacement heifers.

• The irrigated pasture has a carrying capacity of approximately 246 animal units per year based on forage production estimates. An animal unit is 1,000 pounds of grazing animal(s) such as a cow/calf pair. Larger numbers of cattle may be grazed for a shorter duration, such as 492 cow/calf pairs for six months. There are 11 irrigated pasture fields that are adequately fenced with cattle water troughs. Cattle utilize these pasture fields based on forage availability and the irrigation schedule.

• The irrigated pasture fields are irrigated from two ranch wells which pumps typically from April/May into October. Water is delivered from the wells via pipes to adjustable valves. The water flow is adjusted through the use of the valves and flows by gravity across the various pastures. Earthen borders and bermed access roads help to control the lateral spread of the water. Any excess irrigation water flow is captured in the tailwater pond or in two other outfall depressions. Pond tailwater can be recycled for irrigation and can be utilized for cattle water. The borders, bermed roads, and vegetated filter buffer strips are designed to separate or capture surface irrigation water runoff from entering Swiss Canyon, Molera State Park, the Big Sur River, and the Pacific Ocean.

• The ranch irrigated pasture average annual irrigation diversion water requirement has been estimated at 4.4 acre-feet per acre using a border/flood irrigation water delivery system. Border/flood systems in other areas of California utilize the following similar irrigated pasture water demand in acre-feet per acre. Delta – 5, Sacramento Valley – 4.6, North San Joaquin – 4.8, San Joaquin Basin – 5.3, Westside San Joaquin – 5, South Coast (alfalfa) 4.9.

• The border and valve irrigation procedure is most effective for the coastal terrace area of the ranch. Sprinklers are infeasible due to persistent winds that would reduce water application and distribution effectiveness. Hand moving of sprinkler pipes is very difficult in windy conditions. Pasture fencing precludes the use of wheel line or center pivots.

• The irrigated pasture is an integral part of the El Sur Ranch cattle grazing operation and is optimally utilized along with the dryland rangeland as follows:

- March/April/May into July for weaned calves;
- Irrigated pasture rest July into August;

- August into February for bred cows, calving, and breeding;
- Pasture rest from February into March/April when green rangeland is grazed.

• Cattle are managed through the 11 fields either before or after irrigation once the ground is dry enough to avoid grass spoilage and soil compaction.

• Spot application of herbicides is used for milk thistle control.

• Urea fertilizer is broadcasted prior to irrigation in mid to late summer. A filter strip buffer area around the tailwater pond is not fertilized.

• Irrigation tailwater is collected in the tailwater pond and can be utilized for cattle water, and can also be recycled for irrigation water, if necessary.

• Rainfall sheet flow from the pasture fields is collected in the tailwater pond or percolates into the ground and filter strip buffer areas along the perimeter of the ranch. North of Swiss Canyon, excess rainfall runoff can be discharged to the ocean through one of two outfalls designed to avoid erosion.

• Supplemental hay may be fed at the shipping corrals during shipping, for bulls prior to breeding time, and for sick or injured animals. No confined feeding or pasture feeding of hay is necessary.

Ranch agricultural uses within the critical viewshed areas of scenic State Highway 1, including all of the irrigated pastureland, are governed by a Deed Of Conservation Easement dated June 4, 1997 between Mr. Hill and the County of Monterey. These lands are required to remain as scenic open space in perpetuity. Covenants of the easement include:

• Continuation of the uses of the property associated with ranching and grazing of existing and historic grazing land.

• Removal of invasive plant species.

• Management of annual and perennial grasses in conjunction with grazing consistent with the requirements described in University of California Cooperative Extension Division of Agricultural Sciences Guidelines for Residue Management on Annual Range Leaflet 21327.

• Grazing is permitted by the Deed of Conservation and Scenic Easement but must be conducted so as to preclude overgrazing resulting in soil erosion.

• No use of the property which alters the landscape or other attractive scenic features of the property shall be done or suffered.

- Restrictions on the placement of new structures on the property are also detailed in the easement deed.

ANALYSIS OF SOILS AND AGRICULTURAL VIABILITY

The 246 acres of irrigated pasture are comprised of three soil series (soil types)(USDA, 1978). The Lockwood, Pfieffer, and Santa Ynez soils vary in texture from shaly loam to fine sandy loam. Table 1 summarizes the irrigated pasture soil agricultural characteristics.

If not irrigated, the livestock carrying capacity of these soils is estimated to be 35 animal units per year as dryland rangeland; and 246 animal units per year as irrigated pasture.

These soils have the following prime designations per the following definitions:

United States Department of Agriculture Natural Resources Conservation Service:

The Lockwood soil has a Capability Classification of II, which is considered to be a prime soil, by federal classification.

State of California Land Conservation Act:

Based on an irrigated pasture carrying capacity of one animal unit (a cow-calf pair) per acre, all of the irrigated pasture qualifies as prime agricultural land based on the State Land Conservation Act definitions.

Important Farmlands Mapping Program California Department of Conservation:

The irrigated pastureland has been classified by the California Department of Conservation as Prime Farmland and Farmland of Statewide Importance since the program's inception in 1986.

Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

The Lockwood soil qualifies as Prime Farmland per the California Department of Conservation definition.

Farmland of Statewide Importance is similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

TABLE 1: EL SUR RANCH IRRIGATED PASTURE SOIL AGRICULTURAL CHARACTERISTICS

SOIL MAP SYM.	SOIL SERIES NAME	SOIL TEXTURE	USDA AVERAGE SLOPE % and LANDFORM	CAPABILITY CLASS Irrigated/ Non-Irrigated STORIE INDEX PRIME	SOIL ACRES	RANGE SITE	GRAZINGLAND FORAGE PRODUCTIVITY Average Year Nonirrigated Irrigated Pasture (pounds/acre)	REQUIRED RESIDUAL FORAGE Per USDA AVERAGE SLOPE (pounds/acre)	ESTIMATED AVAILABLE FORAGE/ Average Year (pounds/acre) CARRYING CAPACITY*	EROSION HAZARD/ SURFACE RUNOFF	REGIONAL AGRICULTURAL SOIL USAGE (USDA) IMPORTANT FARMLANDS (DOC)	SITE AG USAGE	HIGHEST and BEST USE
LeC	Lockwood	shaly loam	2 to 9% Terraces	II/III 65 Prime if Irrigated	20 acres	Loamy	2,400 12,000	400 1,000	2,000/1 au/6 acres 11,000/1 au/acre	slight-moderate/ slow-medium	range, irrigated pasture Prime	irrigated pasture grazing	Irrigated Pasture/ Grazing
PdC	Pfieffer	fine sandy loam	2 to 9% Terraces	III 68 Prime if Irrigated	14 acres	Coarse Loamy	1,800 12,000	400 1,000	1,400/1 au/8 acres 11,000/1 au/acre	slight/ slow-medium	range, irigated pasture Statewide Importance	irrigated pasture grazing	Irrigated Pasture/ Grazing
ShC	Santa Ynez	fine sandy loam	2 to 9% Terraces	IV/IV 54 Prime if Irrigated	212 acres	Claypan	1,950 12,000	400 1,000	1,550/7 acres 11,000/1 au/acre	slight-moderate/ slow-medium	range, irrigated pasture Prime/ Statewide Importance	irrigated pasture grazing	Irrigated Pasture/ Grazing
TOTALS/SUMMARY					246 acres				Carrying Capacity Nonirrigated Rangeland 35 au/year Irrigated Pasture 246 au/year $35,000 water cost versus Alfalfa Hay $160,000 to $328,000 hay cost FOB source plus labor and transport costs				Rangeland does not provide summer forage nutrients for cattle/calves

*At a sustainable moderate grazing level in order to prevent erosion and provide adequate ground cover to allow natural reseeding. At a minimum, 400 to 800 pounds per acre of residual dry matter is required depending on slope and soil characteristics. One Animal Unit (au) equates to 1,000 pound of grazing animal(s).

Sources: U. S. Department of Agriculture Soil Survey of Monterey County, 1978; California Department of Conservation Important Farmlands Map Monterey County, 1986; and University of California Cooperative Extension Leaflet 21327 Guidelines for Residue Management on Annual Range, 1982 and 2002; and Balancing Beef Cow Requirements and Seasonal Forage Quality on Annual Rangeland, 2001.

The Pfieffer and the Santa Ynez soils qualify as Farmland of Statewide Importance per California Department of Conservation Definitions.

The highest and best use of these prime land soils is for irrigated pasture.

The agricultural viability of the El Sur Ranch is directly related to the existing use of the irrigated pasture.

The nutritional value of the irrigated pasture is shown in Table 2 and is based on the University of California research.

The ranch utilizes a fall calving schedule, which is typical for the region. The top graph on Table 2 illustrates the available protein content of annual rangeland forage species versus the protein requirements for fall-calving cows superimposed. The graph also gives a normal rainfall year and long dry season scenarios. The available rangeland forage protein requirements for a beef cow is generally deficient for 5 to 8 months, from May into December depending on rainfall amounts, rainfall distribution, wind, and temperatures.

The lower graph shows protein forage availability for irrigated pasture with cow protein requirements. No protein deficit exists. This is why the El Sur Ranch irrigated pasture is so important to the agricultural viability of the ranch operation.

The ranch utilizes the irrigated pasture during the 5 to 8 months of rangeland deficit protein for growing calves, for pregnant and lactating cows, for newborn mother cows, for breeding, and for calving. The irrigated pasture provides a safe haven where management can easily check cows during calving, first-calve heifers, and newborn calves-all of which are very important to the agricultural viability of the ranch operation and the wellbeing of the herd.

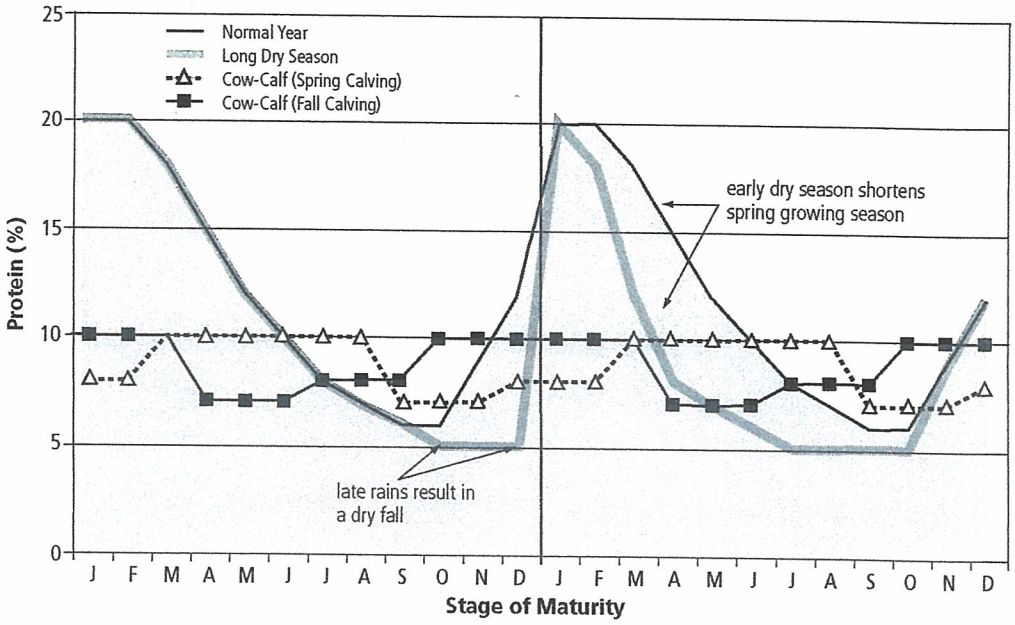

Figure 2.
Examples of annual rangeland forage protein for a normal year, a year with a dry fall, and a year with an early dry season, with cow protein requirements for fall- or spring-calving cows superimposed.

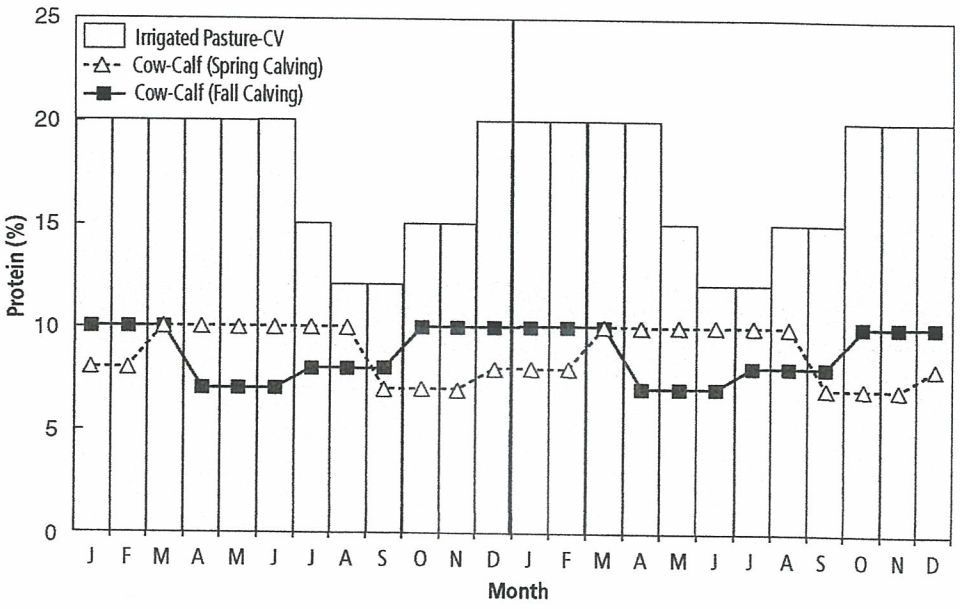

Figure 5.
Example protein content for a Central Valley cool-season irrigated pasture, with cow protein requirements for fall- or spring-calving cows superimposed.

IMPACTS OF SUBSTITUTING HAY FOR IRRIGATED PASTURE

The following negative effects on the agricultural viability of the ranch would occur if the feeding of alfalfa hay or other hay or silage were substituted for the irrigated pasture.

Unreasonable Costs

Irrigation water costs provided by Mr. Hill were estimated to be about $35,000 for the irrigation season. Alfalfa hay costs provided by the Monterey County Crop Reports would range from $160,000 to $328,000 excluding delivery and feeding labor costs as a substitute for the irrigated pasture carrying capacity.

Termination of the irrigated pasture would reduce the ranch carrying capacity in those 11 pastures from 246 animal units to 35 animals units, which is a major reduction in ranch agricultural viability.

Operational Effects

Substituting alfalfa hay or other fed forage for the irrigated pasture would materially change the operations of the El Sur Ranch.

- No feed facilities exist in the pastures adjacent to the State Highway 1 access points as shown in the photos. Feed facilities would need to be constructed in order to avoid trampling and destroying ground-fed hay. Ground-fed hay for large numbers of animals creates potential health problems from ingesting manure and dirt.

- Field feeding is infeasible in the winter due to muddy conditions that would destroy the soil structure by trampling and would preclude vehicle access.

- Possible State Highway 1 road closures, such as have occurred this winter and spring (2011) would preclude hay deliveries creating undue operational problems.

- Unlike inland ranch locations in Monterey County, the growing of dryland oat or barley hay on the irrigated pasture terraces is infeasible. While rainfall would be adequate, the fog, high humidity, and persistent wind severely curtails the growing, harvesting, and storage of a dryland hay crop. Hay grown in a coastal terrace environment is typically very stemy which reduces palatability and protein content. High humidity and fog does not allow cut hay to adequately dry, creating mold and fire combustion threats once the hay is baled. Moldy hay can increase abortion in pregnant cows. Windrowing the hay in the field is also problematic because high winds will scatter the windrows.

- The irrigated pasture also provides a nursery for newborn calves, and a low-stress haven for pregnant cows. Feeding hay to large animal numbers creates a large degree of animal stress and safety problems for small calves. Jostling, trampling, separation of pairs all can reduce animal health, increase injury, bloat, create lower pregnancy rates, reduce weight gains, and increase death loss.

Significant Unavoidable Environmental Impacts

Feeding of hay as a substitute for irrigated pasture would create the following significant unavoidable environmental impacts to agricultural resources.

- The California Environmental Quality Act (CEQA) Guidelines recognize the importance of the conversion of Prime Farmland and Farmland of Statewide Importance and the potential conflicts with existing agricultural use. Without irrigation water, the land would no longer qualify as irrigated Prime Farmland or Farmland of Statewide Importance, and existing agricultural use as irrigated pasture would no longer be possible.

- The California Department of Conservation has established the Land Evaluation and Assessment Model (LESA) that is designed to make determinations of the potential agricultural resource significance of land as part of the CEQA process. The 246 acres of irrigated pasture is considered to be a significant agricultural resource according to the LESA evaluation and assessment methodology.

- The 246 acres of irrigated pasture are comprised of Prime Farmland and Farmland of Statewide Importance, if irrigated. Removing the ability to irrigate would remove this land from irrigated agricultural production creating a significant unavoidable impact to agricultural resources.

- Carrying capacity would also be reduced from 246 animal units to 35 animal units (86% reduction) per year-a significant reduction from prime irrigated grazing land to non-prime rangeland thus constituting an additional significant impact to the state's agricultural resources.

- The El Sur Ranch owner has committed to a conservation easement held by Monterey County on portions of the ranch that recognizes the scenic value of the ranch as viewed from public areas such as State Highway 1. Construction of a long linear feed trough parallel to State Highway 1, and the feeding of large numbers of animals would create a definite significant unavoidable visual impact that is counter to the intent of the conservation easement. The conservation easement allows for the continuation of historic and existing grazing operations with management guidelines regarding forage stubble height, erosion control, invasive plant removal, and annual and perennial grassland management. Creation of a feed facility along State Highway 1 along with the

cessation of the irrigated pasture operation would significantly impact many of the Deed of Conservation required Covenants mentioned above.

• The irrigated pasture operationally allows for a drought cushion, which reduces possible overutilization impacts to the dryland rangeland on the El Sur Ranch. The irrigated pastures also allows for a rest-rotation management whereby there is a lower summer stocking rate on the rangeland, which encourages the survivability and growth of the native perennial purple needlegrass. Significant impacts to rangeland forage resources could occur without the irrigated pasture.

• Confined feeding of large animal numbers would probably create a point source for pollution along with the following related significant unavoidable impacts:

- odors
- manure
- mud
- blowing dust across State Highway 1
- polluted rainfall sheet water runoff/degraded water quality
- soil compaction, trampling, and runoff related erosion

Basically, what is productive cultivated irrigated pasture adjacent to State Highway 1 in the North Pasture and South Pasture, and possibly in the other eight fields as well, would become a dryland feed area with bare ground, dust, and winter-spring mud. Rainfall runoff from these fields would be difficult to control and could result in impacts to Molera State Park and the Big Sur River.

• Hay truck traffic along State Highway 1 to transport about 1,420 tons of hay per feeding season plus related road surface degradation, possible road weight restrictions, possible road closures (such as has occurred in the spring of 2011), and added fuel consumption would all create environmental impacts.

• Any attempts to grow a yearly dryland hay crop would result in bare ground at the onset of the rainy season each year and the potential for uncontrolled runoff and erosion impacts both on and adjacent to the ranch. These impacts do not occur with cultivated irrigated pasture that is selectively replanted, and grazed on a limited managed basis as is currently practiced by the El Sur Ranch.

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Resume: *Dr. Orrin Sage*

EDUCATION

Ph.D., Geological Sciences with emphases in Environmental Geology and Sedimentology, University of California, Santa Barbara, 1973. Curriculum included extensive additional post-graduate classes in geography, soils, economics, planning, and resource management.

M.A., Geological Sciences, University of California, Santa Barbara, 1971.

California State Community College Teaching Credential; Geology, Geography, and Geophysics, 1971.

B.A., Geological Sciences, University of California, Santa Barbara, 1969.

GENERAL

Dr. Sage has participated in the project management and technical preparation of environmental impact reports and statements, general plan studies, land-use feasibility assessments, visual analysis, recreational trail siting, agricultural viability and suitability determinations, and environmental monitoring projects in numerous regions of California and the United States for private clients and public agencies. Responsibilities have included the selection and coordination of study team members and subcontractors, scheduling, scope of work determination, budgeting, technical report preparation, and public hearing participation as well as expert witness testimony in land development and agricultural suitability related litigation. As a University of California faculty member he designed and taught courses in environmental impact analysis, regional resource management land-use inventories, and agricultural management and practices. He has also actively managed a variety of ranching operations in California.

PROFESSIONAL EXPERIENCE

Environmental and Agricultural Land-Use Consultant (1974-Present). Principal in Sage Associates. Specialization in management and technical preparation of agricultural and rangeland management plans and assessments, environmental impact, land-use feasibility, environmental monitoring, and geo-archeology studies for public agencies and private clients.

Faculty Member (1970-1981, 1985-1988). Environmental Studies Program, University of California, Santa Barbara. Developed and taught specialized courses in environmental impact analysis of the California Environmental Quality Act and the National

Environmental Policy Act; and on California agriculture including land use trends, economic changes, technological inputs and environmental effects. As a University of California Extension faculty member he developed and taught courses in wilderness survival, winter mountaineering, and natural history of Yosemite, Big Sur and portions of Alaska, and British Columbia.

Project Manager/Environmental Specialist (1972-1974): Henningson, Durham & Richardson, Ecological and Safety Science Department, Santa Barbara, California.

Project Manager/Environmental Specialist (1971-1972): Multran America Corporation, Santa Barbara, California.

UNIVERSITY RESEARCH AND COMMITTEES

Recipient of National Science Foundation Fellowships for the study of tectonic, sedimentological, and seismic evolution of western California. Study of geologic hazards as related to land-use planning and environmental impact assessment and analysis of sedimentological features for the determination of depositional environments and origins of sedimentary rock units. Served on the University of California Santa Barbara Environmental Studies Program Executive Committee and the Valentine Reserve and Sierra Nevada Aquatic Research Laboratory Management Committee.

REGISTRATIONS AND CERTIFICATIONS

State of California Board of Forestry Registration: Certified Rangeland Manager #64.

American Registry of Certified Professionals in Agronomy, Crops, and Soils: Soil Erosion and Sedimentation Control Specialist #692.

NRCS, BLM, USFS Stream Proper Functioning Evaluation Certification.

Certified by Cal/OSHA for Hazardous Materials Health and Safety Operations and Emergency Response. Secorp Hydrogen Sulfide Gas Safety Training Session.

American Red Cross Community First Aid, Safety and CPR certified.

PROFESSIONAL AFFILIATIONS

Santa Barbara South Coast Fire Safe Council
Charter Member Association of Environmental Professionals
Land Trust for Santa Barbara County Advisory Council
Trustee, Santa Barbara Museum of Natural History 1990-1996
Chair, Collections and Research Committee
Montecito Emergency Response and Recovery Action Group
Eastern Sierra Land Trust Board Vice President
Lands Committee

Society for Range Management
Board Member 2004-2006
Explorers Club Fellow 1978-
Geological Society of America
American Society of Agronomy
California Rangeland Trust
Technical Advisory Group

SAGE ASSOCIATES AGRICULTURE QUALIFICATIONS

Sage Associates offers professional agricultural and watershed consulting services to public agencies, private landowners, corporations and land preservation organizations. Our work products are unique since they take into account agricultural, recreational and resource management protection and enhancement measures that result from extensive landuse policy and impact assessment experience and from "hands-on" ranch operations management. Based on evaluation of these factors, we can provide the following expertise:

- **State of California, Board of Forestry Registration: Certified Rangeland Manager #64. American Registry of Certified Professionals: Soil Erosion and Sedimentation Control Specialist #692. Post-graduate studies in soils, hydrology, sedimentology, economics, and resource management.**

- **Preparation and review of agricultural suitability and viability studies, grazing plans, restoration and fuel modification plans, erosion control plans, and soil testing and evaluation. Plan implementation and interim ranch management. Formulation and review of grazing leases.**

- **Conservation organization/land trust related baseline condition reports, ranch resource and watershed management plans; and liaison with landowner ranchers, public agencies and funding organizations for the establishment of conservation easements.**

- **Watershed studies with emphasis on agricultural management/ enhancement and sensitive resource protection and enhancement.**

- **Determination of agricultural preservation policies and their specific implementations such as project clustering, land trusts, transfer of development rights, mitigation funding and purchases, CC&R's.**

- **Participation at public opportunity meetings and mediations with ranchers/farmers, public agencies, special interest groups and the public regarding agriculture and development issues and potential incompatibilities.**

- **Litigation support services and expert witness testimony for eminent domain "takings" of agricultural land for transmission line, right of ways, oil/gas and water pipeline corridors, reservoir sites and other trespass and land use issues.**

- **Preparation and review of environmental impact reports and statements with emphasis on the determination of project impacts both to and from agriculture and the formulation of feasible mitigation measures; and preparation and review of plan Agricultural Elements.**

Ahmanson Ranch, Calabasas
ALIMAR, Mammoth Lakes
American Land Conservancy, San Francisco
Arroyo Pasajero Coordinated Resource Planning Group, Coalinga
Aspen Environmental, Agoura Hills
Atlantic Richfield Company, Bakersfield
Atlantic Richfield Company, Los Angeles
Catellus Corporation, Fremont
City of Bakersfield
Bell Canyon Association, Bell Canyon, Ventura County
Bixby Ranch Company, Santa Barbara and Seal Beach
Andy Busch, Folded Hills Ranch, Solvang
California Department of Food and Agriculture, Sacramento
California Local Agency Formation Commission
California Public Utilities Commission
California Rangeland Trust, Sacramento
Camp Dresser McGee, Walnut Creek
City of Camarillo
Chimineas Ranch, Cuyama
Citizen's Planning Association, Santa Barbara
Clear Creek Tahoe, Minden, Nevada
Clifford & Brown, Attorneys, Bakersfield
Crawford Multari & Starr, San Luis Obispo
Daley Corporation Rancho Jamul, San Diego
Dancing Star Foundation, Cayucos and Paso Robles
Deep Springs College, Dyer, Nevada
DMB El Rancho San Benito/O'Connell Ranch, Hollister
Dolle & Dolle, Attorneys, Los Angeles
Donovan, Leisure & Irvine, Attorneys, Los Angeles
Double D Farms, Coalinga
Dudek Corporation, Santa Barbara & Encinitas
East West Ranch, Cambria
Eastern Sierra Land Trust, Bishop
Echeverria Cattle Company
Ecke Ranch, Encinitas
City of Encinitas
Envicom Corporation, Calabasas
Environmental Science Associates, Inc., San Francisco
Finegan & Cling, Salinas
Stuart Gildred, Buellton
City of Gilroy
Sid Goldstien-Civil Engineer, Inc., Solvang
Harris Ranch, Coalinga
Hearst Ranch/Hearst Corporation, San Simeon and San Francisco
Hewitt, Sullivan & Marshall, Attorneys, San Diego

Hoge, Fenton, Jones & Appel, Attorneys, Monterey
Hollister Ranch Owners Association, Gaviota
Home Savings of America, Irwindale
Hopkins, Mitchell & Carley, Attorneys, San Jose
Irvine Company, Irvine
Jarvis Trust, Salinas
The Land Conservancy San Luis Obispo County
Lieff Global, San Francisco
Limoneira Company, Santa Paula
Los Angeles Pierce College Animal Sciences Department
Lucasfilm, Ltd., San Rafael
MHA Environmental, San Mateo
Midland School, Los Olivos
Mid Peninsular Regional Open Space District, San Mateo
Miller & Walter, Attorneys, San Luis Obispo
MNS Engineers, Inc., Buellton
Monser Land Use Planning, Santa Barbara
Monterey County
Moreland Development Company, Anaheim
Mullen & Henzell L.L.P., Attorneys, Santa Barbara
Pacific Acres Ranch, Pescadero
Pacific Union Company, Carmel and San Francisco
Pillsbury, Madison & Sutro, Attorneys, San Francisco
Peninsula Open Space Trust (Post), San Mateo County
City of Pleasanton
Procopio, Cory, Hargreaves & Savitch, Attorneys, San Diego
Quintana Petroleum, Houston, Texas
Rancho San Carlos, Carmel
Rancho Santa Margarita Ranch LLC
Rancho Sierra Grande, Santa Ynez
Thomas Reid Associates
Rincon Consultants, Inc., Ventura
Robert Lamb Hart/Hart Howerton, San Francisco
RRM Design Group, San Luis Obispo
Sacramento County
San Francisco Public Utilities Commission Natural Resources Division
San Luis Obispo County
City of Santa Barbara
Santa Barbara Capital
Santa Barbara County
Santa Barbara County Association of Governments
Santa Barbara County Cattleman's Association
Santa Barbara County Farm Bureau
Santa Clara County
Santa Clara County Water District

Santa Cruz Island Company, Santa Barbara
Santa Lucia Preserve, Carmel
Santa Margarita Ranch, San Luis Obispo County
Science Applications International Corporation, Santa Barbara
Selbert Hilltop Farm, Carpinteria
Sid Goldstien-Civil Engineer, Solvang
Skytt Farming and Ranching, Buellton
Smith-Hobson, Ventura/Santa Barbara/Monterey Counties
Strelow Consulting, Santa Cruz
Studio Design Group, San Luis Obispo
Tag Huer/Maz Properties/Rancho Tajiguas, Gaviota
The Nature Conservancy, Santa Barbara
The Nature Conservancy, California Regional Office, San Francisco
The Nature Conservancy Nevada
Tomsic & Peck LLC/David Bastian, Salt Lake County Utah
Trust for Public Land, San Francisco
United States National Park Service, Santa Monica Mountains
University of California Natural Lands Reserve System
University of California, Santa Cruz
Vandenberg Air Force Base Environmental Flight Group 30 CES/CEVR
Ventura County
City of Watsonville
URS, Santa Barbara
Wells Fargo Bank
Westside Resource Conservation District, Five Points
Wetlands Research Associates, Inc., San Rafael
Wilma Pacific Company, Arroyo Grande
Dave Wood Livestock, Coalinga
Woodward-Clyde Consultants, Santa Barbara

AGRICULTURAL RELATED REGISTRATIONS AND CERTIFICATIONS

State of California Board of Forestry Registration: Certified Rangeland Manager #64. Special expertise including rangeland vegetation management, rangeland animal management, rangeland ecology, rangeland policy and planning, rangeland measurements, and economics of sustainable rangeland productivity.

Soil Erosion and Sediment Control Specialist #692. American Registry of Certified Professionals in Agronomy, Crops, and Soils by The American Society of Agronomy.

Cooperative Riparian Restoration Certificate. Completion of training in the Proper Functioning Condition (PFC) methodology for assessing the health of riparian-wetland areas/USFS/NRCS/BLM.

A special note: An important milestone was passed for us in the year 2009. We have now completed detailed agricultural studies on over 2,500,000 acres of rangeland and cropland in the States of California and Nevada of which over 500,000 acres are conservation easement lands.

CALIFORNIA

California Department of Food and Agriculture, Programmatic EIR on Pesticide Usage in Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, San Diego, Imperial, Riverside, San Bernardino, Inyo, Mono and Tuolumne Counties. Tasks included preparation of extensive countywide agricultural inventories and working with county Cooperative Extension Farm Advisors and Agricultural Commissioners.

University of California Santa Barbara classes taught by Dr. Orrin Sage in California Agriculture for 12 years. Topics included agricultural suitability, economic viability, regional crop history, range management, pesticides, land use trends, Land Conservation Act analysis, and agricultural land management.

Invited Presentation at the California Native Grass Association/Society for Range Management Annual Meeting on Statewide Policies and Trends in the Management and Restoration of Native Vegetation. The panel session was titled Private Landowner Perspectives in Native Vegetation Restoration and Management and the invited presentation focused on Cattle Grazing Suitability: A Function of Environmental Impacts/Policy Consistency and Resource Enhancement.

Invited Presentation on innovative approaches to agricultural land preservation for the Resource Landowners Coalition, and California state agency representatives including the Director of the Department of Conservation, the Director of the Department of Forestry, the Director of Natural Resource and Environmental Planning for the Department of Food and Agriculture and senior staff members in Sacramento, California.

Invited Presentation on rangeland management and habitat conservation plans for San Benito County, the California Department of Fish and Game, And the U. S. Fish and Wildlife Service.

Invited Presentation to the University of California Santa Barbara Donald Bren School of Environmental Science and Policy on watershed grazing management and agricultural conservation easement policies.

Invited Presentation to the Society for Range Management Annual Meeting in Kona, Hawaii, on the 537 square mile Arroyo Pasajero Watershed Management project.

California Rangeland Trust Technical Advisory Committee Member involved with formulating grazing land preservation policies and preparation of agricultural conservation easement technical background studies including Present Conditions Reports and ranch management plans in California.

Society For Range Management Cal-Pac Section elected Board of Directors 2004-2006.

Eastern Sierra Land Trust Board of Directors Vice President 2007-.

Invited Presentation to the Society for Range Management Cal-Pac Spring meeting on Hearst Ranch Conservation Easement Resource Management.

Invited presentation to the Central Coast Resource Conservation Districts and NRCS on water quality monitoring.

Hearst Ranch field trip leader for the 25th Annual University of California Natural Reserve System Management Workshop.

SANTA BARBARA COUNTY

Preparation of an agricultural suitability study on 1,520-acres of farmland as a part of the 326-acre Cuyama Solar Project for First Solar.

Preparation of a Rangeland and Cropland Watershed Management Plan for the 4,000-acre Rancho Tajiguas for Maz Properties.

Preparation of a Rangeland Assessment on the 1,800-acre Las Varas Ranch for the County of Santa Barbara Planning & Development Department.

Consultation with the 14,000-acre Hollister Ranch Owner's Association for watershed and agricultural management planning and implementation. Preparation of the Hollister Ranch Watershed Management Plan.

River Oaks Ranch Agricultural Viability Study on 205 acres of dryland cropland and grazing land for Mr. Stuart Gildred.

Rancho La Laguna Agricultural Viability Study and Rangeland Assessment on the 3,934-acre ranch and on 13 proposed parcels for MNS Engineers, Inc. Buellton.

Bell Canyon Ranch Rangeland Assessment on the 3,000-acre ranch and four proposed parcels for MNS Engineers, Inc. Buellton.

San Lucas Ranch Windmill Breeding Facility and Armour Hill areas Rangeland Assessment on the 1,533-acre ranch and four parcels for Mullen & Henzell L.L.P. Santa Barbara.

Agricultural Experience

Estelle Vineyard Estates Agricultural Viability Study and Rangeland Assessment for the 517-acre ranch and six existing and 12 proposed parcels for MNS Engineers, Inc. Buellton.

Los Alamos Ranch Agricultural Viability Study on the 114-acre ranch and proposed subdivision for UPC Urban Planning Concepts, Inc. Santa Maria.

Preparation of a Grazing Management Plan on 23,000 acres and a Cropland Management Plan on 1,200 acres of the 98,000-acre Vandenberg Air Force Base for the Environmental Flight Group 30 CES/CEVR as a part of their Integrated Natural Resource Management Plan.

Agricultural Viability Report on 350-acre Rancho Encantado crop production.

Agricultural suitability and management analysis for the Folded Hills Ranch.

Rangeland Assessment for the 1,000-acre Jalama Canon Ranch.

Rangeland Assessment and Grazing Management Plan for 3,000 acres of U.S. Bureau of Reclamation land within the Santa Barbara County Cachuma Recreation Area prepared for URS Corporation as part of a master planning process.

Rangeland Assessment for the 860-acre Skytt Ranch located north of Highway 246 in Buellton.

Agricultural Viability Study and Rangeland Assessment for the 620-acre Marcelino Springs Ranch located north of Highway 246 in Buellton.

Rangeland Assessment of the 1,134-acre Thomson Ranch and Santa Barbara County Land Trust easement for the County of Santa Barbara Planning and Development Department.

Rangeland Assessment of the 4,652-acre Figueroa Canyon Ranch to determine the sustainable cattle grazing carrying capacity of five proposed parcels of 806 acres, 703 acres, 568 acres, 1,343 acres, and 1,234 acres for the County of Santa Barbara Planning & Development Department.

Rangeland Assessment to determine the sustainable cattle grazing carrying capacity of an existing 628 acre parcel and two proposed parcels of 403 acres and 225 acres west of Los Alamos for the County of Santa Barbara Planning & Development Department.

Evaluation of erosion and sedimentation control measures on an 800-acre vineyard development project in the Los Alamos area.

Agricultural Viability Report for Hilltop Farm avocado, irrigated pasture, and polo field complex.

Evaluation of potential agricultural/land use impacts of proposed lot splits on lemon orchard land in Toro Canyon and on vineyard/row cropland in the Santa Ynez Valley.

Rangeland Assessment to determine the environmental impacts to cattle grazing from the Santa Barbara County Association of Governments proposed U.S. Highway 101/State Highway 154 interchange project.

Citizens Planning Association of Santa Barbara County volunteer committee member to prepare an Agricultural Planned Development Ordinance for the Santa Barbara County Planning & Development Department.

Rangeland Assessment for 52 proposed parcels for the 24,500-acre Bixby Ranch at Point Conception including cattle grazing carrying capacity and cattle grazing suitability determinations prepared for the Bixby Ranch Company.

Agricultural Suitability Study, Technical Background Report and Agricultural Management and Enhancement Program for cattle grazing and dryland farming on the Bixby Ranch Company Cojo-Jalama Ranch, 24,500 acres.

Rangeland Assessment of the Brown lot line adjustment project in the northern Santa Ynez Valley. Cattle carrying capacity determinations were made on one 360+ acre lot and on one 460+ acre lot in order to determine whether the existing and proposed lots were within the Santa Barbara County Thresholds of Significance of operational viability for cattle grazing. The Rangeland Assessment was requested by the Santa Barbara County Planning & Development Department.

Rangeland Assessment for the 416-acre Mendez property east of Lompoc prepared for the County of Santa Barbara Planning and Development Department.

Rangeland Assessment of the 918-acre Refugio Ranch and four proposed parcels south of Santa Ynez for the property owner.

Preparation of a detailed Cattle Grazing Plan for the 2,800-acre Midland School property in the Santa Ynez Valley; and interim ranch management, implementation of the Grazing Plan, formulation of a cattle grazing lease and obtainment of Farm Services Agency cost share and EQIP funding for water development and fencing.

Preparation of Agricultural Resources section of Bridle Ridge residential development EIR for Santa Barbara County and Rincon Consultants. Analysis included determination of cattle grazing carrying capacity and cattle grazing suitability of the 377-acre site, assessment of proposed horsekeeping impacts, and determination of agricultural land conversion impacts.

Preparation of Agricultural Resources section of the Santa Barbara County Jail Facility EIR for Rincon Consultants. Impact assessment included analysis of conversion of strawberries, row crops, field crops, and cattle grazing land impacts and pesticides use impacts on the proposed project site and on eight alternative sites west of Orcutt.

Preparation of cattle grazing vegetation monitoring programs on the 5,100-acre Sedgwick Ranch for the University of California Santa Barbara Natural Lands Reserve System.

City of Santa Barbara Agricultural Uses: General Plan and Municipal Code Amendments EIR including preparation of an agricultural suitability evaluation matrix.

Solvang 594 Subsequent Draft Environmental Impact Report for the Santa Barbara County Planning & Development Department. The SEIR focused on review of an applicant's Common Agricultural Management Plan and the potential impacts of a four-parcel 594-acre subdivision on agricultural and biological resources. Revisions to the Plan were proposed as feasible mitigation measures.

Agricultural Land Use Element Evaluation for the Comprehensive Plan EIR, 1980 for the County of Santa Barbara Comprehensive Plan.

Santa Ynez Valley Agricultural Rezone EIR technical agricultural and agricultural economic sections covering 470,000 acres of crop and grazing land for the County of Santa Barbara.

Agricultural Suitability Study for 202 acres of coastal terrace land for ARCO Dos Pueblos Golf Links Project. Review of project EIR and Coastal Commission staff reports, policy consistency evaluation, testimony at county planning commission and board of supervisor's hearings and at coastal commission hearing. Formulation of soil protection and enhancement measures as part of Golf Links conditions of approval.

Agricultural Suitability Study for 116 acres of row crop, orchard, and grazing land west of Goleta for the ARCO Land Department, Los Angeles.

Lompoc Agricultural Rezone EIR technical agricultural and agricultural economic sections covering 160,000 acres of crop and grazing land for the County of Santa Barbara.

Preparation of fifteen Focused EIRs or Agricultural sections of EIRs evaluating Santa Barbara County Agricultural Land Conversion Impacts on vineyards, row crops, field crops, orchard and grazing land.

Preparation of technical agriculture section and consistency analysis for the Agricultural Planned Development Ordinance EIR for the County of Santa Barbara.

Double J Ranch Agricultural Suitability and Viability Studies for 2,800 acres of field crops and grazing land.

Santa Cruz Island Company (The Nature Conservancy) interim Ranch Management and Livestock Reduction Program of over 2,000 Hereford cattle on the Santa Cruz Island Preserve (56,000 acres).

Review and Comments on General Plan Agricultural Element EIR for Agricultural Element Committee, Farm Bureau, Bixby Ranch Company, and Cattleman's Association, 1990.

Review of the Agricultural Resources section of the Buellflats Annexation EIR for Rincon Consultants and the City of Solvang.

Review of the Agricultural Resources section of the Carpinteria Creekwood residential project EIR for Rincon Consultants and the City of Carpinteria.

SAN LUIS OBISPO COUNTY

Preparation of Baseline Documentation Report agriculture and natural resources sections for the 1,747-acre Alamo Creek Ranch Conservation Easement for The Land Conservancy of San Luis Obispo County.

Eagle Ranch agricultural and planning studies for Smith-Hobson on the 4,600-acre ranch.

Preparation of the Agricultural Resources section for the 14,000-acre Rancho Santa Margarita EIR for the County of San Luis Obispo and Rincon Consultants.

City of Paso Robles Purple Belt formulation for agricultural land use preservation policies for EPS Economic & Planning Systems, Inc., Berkeley.

Hearst Ranch Agricultural Suitability Study at San Simeon for an 83,000-acre cattle grazing program and the delineation of potential cropland areas (1976-7).

Hearst Ranch Agricultural impacts and mitigation study and California Coastal Commission testimony regarding agricultural impacts of the Hearst Ranch Visitor Serving Facilities Master Plan and the San Luis Obispo County Local Coastal Program (1986-7).

Hearst Ranch agricultural suitability and viability study of modified proposed visitor serving facility areas. Analysis included determination of cattle grazing carrying capacity, range conditions, land use incompatibilities, and bull pasturage areas (1997-8).

Hearst Ranch agricultural and livestock grazing range management and conservation easement studies on 82,000 acres (2001-present) including conservation easement terms, water resources, reserved cropland areas, coastal trail siting, reserved homesite delineation, Land Acquisition Assessment (LAE), pasture and grazing management, easement presentation to the Wildlife Conservation Board, and preparation of an Agricultural Conservation Easement Management Plan and ongoing monitoring.

Jack Ranch agricultural planning and mapping, Chalome Creek restoration, and monitoring studies for the 72,000-acre ranch in San Luis Obispo and Monterey Counties. Preparation of Operational Management Plan Maps and assessment of the ranch water resources, water distribution infrastructure, solar energy potential, and soils for The Hearst Corporation.

Dancing Star Foundation agricultural and range management studies and master planning for livestock usage at the Cayucos and Paso Robles sanctuaries.

Preparation of the agricultural resources section for the 100-acre prime agricultural land Dalidio property for Rincon Consultants and the County of San Luis Obispo.

East West Ranch agricultural suitability and viability study of 407 acres of cattle grazing land within the urban area of Cambria.

Review of the San Luis Obispo County Agriculture and Open Space Element, Negative Declaration, and Grading Ordinance for the San Luis Obispo County Planning Department.

Santa Margarita Ranch agricultural suitability study and preparation of an Agricultural Management and Enhancement Plan for 14,000 acres of cattle grazing, vineyards, and dryland farming.

Chimineas Ranch agricultural land-use/easement and trespass litigation support, map preparation and expert witness testimony for 100 square mile cattle and dryland grain ranching operation.

Chorro Valley Ranch agricultural suitability study for 570 acres of row crop and grazing land for RRM Design Group.

Filipponi Ranch Subdivision EIR Agricultural Impacts Study on the conversion of grazing and dryland farming for the County of San Luis Obispo.

Bjerre Ranch Subdivision EIR Agricultural Impacts Study on the conversion of a dairy facility for the County of San Luis Obispo.

Valley View property agricultural suitability study of 71 acres of grazing land in the City of Arroyo Grande for Wilma Pacific Company.

Agricultural Viability Study on 13 acres of row cropland within the City of Arroyo Grande for Studio Design Group.

MONTEREY COUNTY

Santa Lucia Preserve implementation of rotational cattle grazing plan on portions of the 19,000-acre preserve for the Santa Lucia Conservancy. Long-term annual grazing monitoring for Monterey County.

Preparation of a LESA analysis for 200 acres of the Smith-Hobson properties north of King City.

Preparation of a Present Conditions Report and ranch management plan for an agricultural conservation easement on the 17,500 acre Kester Ranch in the Diablo Range of Monterey and Fresno Counties for the California Rangeland Trust.

Preparation of a Present Conditions Report and ranch management plan for an agricultural conservation easement on the 17,000-acre Varian V6 Ranch in the Parkfield area of the Diablo Range in Monterey and Fresno Counties for the Trust for Public Land.

Expert witness testimony and litigation support for the Jarvis Trust and Finegan & Cling regarding erosion damage to strawberry cropland from a watershed drainage diversion project north of Salinas.

Rancho San Carlos/Santa Lucia Preserve preparation of Agricultural Suitability Study (19,927 acres) and Rotational Cattle Grazing Plan, analysis of horsekeeping feasibility, review of project-related EIRs, public hearing testimony and policy consistency analysis for the Pacific Union Company, San Francisco.

Agostini Ranch Agricultural Suitability Study/Expert Witness Testimony and preparation of courtroom graphics in the State of California Appellate Court (2,700 acres).

Vineyard Investors Minor Subdivision Agricultural Viability Study for 213 acres of vineyards for Monterey County.

Camany Agricultural Viability Study for 170 acres of row crops and strawberries for Monterey County.

Doud Agricultural Viability Study for 1,416 acres of row crop and grazing land for Monterey County.

Dowling Agricultural Viability Study for 137 acres of dryland grain and grazing land for Monterey County.

Holt Agricultural Viability Study for 929 acres of irrigated hay and grazing land for Monterey County.

Ronald Stoney Minor Subdivision Agricultural Viability Study (960 acres) for Monterey County.

Sage Ranches past Operations Manager on 6,000 acres in southern Monterey County for the raising of beef cattle, Holstein dairy replacement heifers and dryland grain hay.

SAN BENITO COUNTY

O'Connell Ranch 5,600-acre management assessment and carrying capacity determination for DMB El Rancho San Benito, Hollister.

VENTURA COUNTY

Aliso Ranch Ranchland Management Assessment on the 6,500-acre ranch for Smith-Hobson, Ventura.

Preparation of an agricultural suitability study on the 463-acre Teague-McKevett property for the Limoneira Company, Santa Paula. The study included analysis of farming constraints on the production of avocados, lemons, and Valencia oranges.

Tierra Rejada Valley cropland Agricultural Suitability Study for Ventura County.

Donlon Plaza EIR Agricultural Impact Evaluation of row cropland for Ventura County.

Foster/Barclay EIR Agricultural Impact Evaluation for Ventura County.

Hilltop Subdivision EIR Agricultural Impact Evaluation of orchard land for Ventura County.

Wittenberg Livingston Inc. Subdivision EIR Agricultural Production and Compatibility Study with adjacent cattle grazing for Ventura County.

Bell Canyon Homeowners Association Equestrian Trails Master Plan.

McKevett Subdivision EIR Agricultural Impact Evaluation for Ventura County.

Thille Community EIR evaluation of converting prime agricultural lemon orchards to urban use for Ventura County.

Agricultural Land Use Assessment encompassing all agricultural areas of Ventura County for Home Savings and Loan.

Santa Monica Mountains National Park Service Proposed Land Exchange Cheeseboro/Palo Comado Canyons EIS Agricultural Land Assessment of grazing land for the National Park Service.

Pacific Pipeline EIR existing conditions agricultural and soils assessment including the Santa Clara River Valley, Oxnard Plain, Las Posas Valley and the coastal plain from Ventura to the Rincon for the California Public Utilities Commission.

Sage Ranches past Operations Manager on 15,000 acres in the Simi Hills and Santa Susana Mountains of eastern Ventura County for the raising of beef cattle, Holstein dairy replacement heifers, dryland grain hay, avocados and Valencia oranges. Ranch representative for Pierce College Animal Sciences Department range management class field excursions.

ORANGE COUNTY

Preparation of a California Agricultural Land Evaluation and Site Assessment (LESA) study for The Irvine Company for ten Irvine Ranch sites encompassing 7,996 acres.

SAN DIEGO COUNTY

Agricultural Land Evaluation and Site Assessment (LESA) of 185 acres for the Ecke Ranch and for ten selected agricultural parcels within the City of Encinitas for Dudek Corporation and the City of Encinitas.

Rancho Jamul Agricultural Suitability Study for 10,000 acres of row crop and cattle grazing land for the Daley Corporation.

De La Fuente Ranch Agricultural Assessment for expert witness testimony, on the State of California Farmland Mapping and Monitoring Program, Identification of Important Farmlands.

KERN COUNTY

Declared defendant expert on range and livestock management in the Wheeler Ridge Farms v The Wildlands Conservancy case in Kern County Superior Court for Echeverria Cattle Company on eastern portion of a 98,000-acre land holding. Clifford & Brown Attorneys, Bakersfield.

City of Bakersfield Agricultural Policy Development and delineation of agricultural policy implementation procedures for the Bakersfield 2010 Comprehensive Plan.

LOS ANGELES COUNTY

Warner Ranch, Las Virgenes Canyon, Equestrian Trails Master Plan and agricultural land use compatibility evaluation for Los Angeles County.

Hart Ranch Specific Plan equestrian trails planning and implementation in the Puente Hills.

Review and Comments on the Warner Center Residential Development EIR and determination of the project compatibility with the adjacent Pierce College livestock operation for Pierce College Agricultural Department, Woodland Hills.

Pacific Pipeline EIR existing conditions agricultural and soils assessment including portions of the Santa Clara River Valley and the Newhall/Saugus area, for the California Public Utilities Commission.

SAN MATEO COUNTY

Preparation of a Rangeland Assessment and grazing suitability for 1,200 acres of the Cloverdale Ranch, Pescadero for the Peninsula Open Space Trust (POST).

Ranchland monitoring seminar and field trip for Peninsular Open Space Trust staff and volunteers at Half Moon Bay.

On-going agricultural consulting, monitoring, and staff training on selected properties within the 50,000+ acres for the Mid Peninsular Regional Open Space District including grazing management and grazing infrastructure implementation and monitoring for the Silva Ranch, Big Dipper Ranch, Driscoll Ranch, Mindego Hill Ranch, La Honda Ranch, and Tunitas Ranch.

Pacific Acres Ranch, Pescadero area 1,500-acre ranch management plan and studies.

SANTA CLARA COUNTY

Preparation of an Agricultural Management and Enhancement Plan on the 5,000-acre Sargent Ranch for Thomas Reid Associates. Plan emphasis included continuation of cattle grazing as a management tool for native grassland and riparian habitat enhancement.

Preparation of Rangeland Assessments for a 1,756-acre Kammerer Ranch and a 3,500-acre Blue Oak Ranch in the Diablo Range east of San Jose for The Nature Conservancy, California Regional Office in San Francisco. Specific tasks included an evaluation of soil types, Range Sites, forage production capability, rangeland condition assessment, overall cattle grazing suitability analyses, carrying capacity determination, and proposing feasible range management improvement mitigation measures for habitat enhancement and protection.

Agricultural Preservation Study for 15,600 acres of the southern Santa Clara County area including determinations of agricultural suitability and agricultural preservation policies for Crawford, Multari & Starr under contract to the County of Santa Clara and the City of Gilroy.

SANTA CRUZ COUNTY

Preparation of the agricultural resources section and LESA analysis for the Terrace Point – University of California Santa Cruz EIR for ESA and the University of California.

Preparation of the Agricultural Resources sections for the Franich and Bay Breeze II residential development EIR's for Denise Duffy & Associates and the City of Watsonville.

Preparation of an Agricultural Suitability Study for the Terrace Point Specific Plan Area for Strelow Consulting and the City of Santa Cruz and the University of California Santa Cruz. Primary agricultural suitability factors included soils, drainage, wetlands, mobile home park incompatibilities and Long Marine Lab sensitive resources.

FRESNO COUNTY

Long-term regional watershed analysis and preparation of ranch and farm plans in the 567 square mile Arroyo Pasajero and Domengine Watersheds in the Coalinga area of western Fresno and Kings Counties. Coordination and technical assistance for range management, erosion and sedimentation Best Management Practices and wildlife enhancement provided to the Stewards of the Arroyo Pasajero Coordinated Resource Management and Planning Group (CRMP) with the goal of improving cattle grazing economic viability and reducing erosion and sedimentation at the California Aqueduct through ranch and farm infrastructure funding. Contract with the Westside Resource Conservation District and special interface with the California Department of Water Resources, the Natural Resources Conservation Service, the U.S. Bureau of Reclamation, the U.S. Bureau of Land Management, the U.S. Department of the Navy, the U.S. Army Corps of Engineers, the California Department of Fish and Game, the California Regional Water Quality Control Board, the State Water Contractors, and private ranchers and farmers within the watershed area. Preparation of individual ranch plans on the Howell Ranch (4,000 acres), the Birdwell Ranch (30,000 acres), the Greg Varian Ranch (3,600 acres), the Varian V6 Ranch (6,800 acres), the Green Ranch (800 acres), the Brown Ranch (2,600 acres), the Mouren - Jacalitos Ranch (26,000 acres), the Kester - Jacalitos Ranch (9,000 acres), the Kreyenhagen Ranch (10,000 acres), the Den Hartog Ranch (5,000 acres), the Domengine Ranch (11,000 acres) Erro Coalinga Ranch (1,200 acres), and an individual Farm Plan for 640 acres of the Viets/Allen Farm. On-going preparation on ranch and farm specific-monitoring plans as infrastructure funding and implementation monies become available. Funding has been provided by the Westside RCD, NRCS, DWR, State Water Contractors, Westside Cattlemen's Association, The Packard Foundation, CAL-EPA 319 Grant, National Fish and Wildlife Foundation, Bureau of Reclamation, and BLM.

Federal Court expert witness testimony on 11,000-acre Domengine Ranch transmission line eminent domain taking.

STANISLAUS COUNTY

Preparation of a Rangeland Assessment study of the 32,000+ acre Simon-Newman Ranch in western Stanislaus and Merced Counties for The Nature Conservancy. Analysis included the determination of cattle grazing suitability and carrying capacity through an evaluation of soils, water, canopy cover, slope, ranch infrastructure, and historic grazing usage. Assisted in the determination of sensitive habitats to grazing and formulated conservation easement requirements and infrastructure improvements to allow for continued cattle grazing and sensitive habitat management. Special status species and sensitive habitats included sycamore alluvial woodland, riparian corridors, springs, western spadefoot toad, western pond turtle, foothill yellow-legged frog, California red-legged frog, Coast Range newt, California tiger salamander, San Joaquin kit fox, kangaroo rat, Swainson's hawk, and the burrowing owl.

MERCED COUNTY

Preparation of a Rangeland Assessment study of the 28,000+-acre Romero Ranch in western Merced, Stanislaus, and Santa Clara Counties for The Nature Conservancy. Analysis included the determination of cattle grazing suitability and carrying capacity through an evaluation of soils, water, canopy cover, slope, ranch infrastructure, and historic grazing usage. Assisted in the determination of sensitive habitats to grazing and formulated conservation easement requirements and infrastructure improvements to allow for continued cattle grazing and sensitive habitat management. Special status

species and sensitive habitats included cottonwood riparian corridors, springs, western spadefoot toad, western pond turtle, foothill yellow-legged frog, California red-legged frog, Coast Range newt, California tiger salamander, San Joaquin kit fox, kangaroo rat, Swainson's hawk, and the burrowing owl. Prepared special 12 mile riparian corridor fencing plan that detailed livestock use, fencing, and livestock water improvements that were acceptable to the purchaser, U.S. Fish and Wildlife Service, and TNC.

ALAMEDA COUNTY

Preparation of a Rangeland Monitoring Program and monitoring of 24,000 acres of rangeland watershed leases for the San Francisco Public Utilities Commission Natural Resources Division, Sunol.

Preparation of the Koopmann Ranch Conservation Easement Present Conditions Report on 107 acres adjoining the City of Pleasanton Happy Valley Golf Course. The report was prepared for the City of Pleasanton and the California Rangeland Trust.

Preparation of a cattle grazing management plan for the City of Pleasanton Happy Valley Golf Course Project 270-acre open space area. The plan was designed to protect butterfly, tiger salamander and red-legged frog habitat and to allow for continued cattle grazing.

Preparation of a grazing management plan for a 390 acre wetlands and vernal pool restoration project in the City of Fremont. The plan was prepared for Wetlands Research Associates, Inc. as a part of a management plan for the Pacific Commons Preserve owned by the Catellus Corporation.

MARIN COUNTY

Preparation of an Agricultural Management Plan for Lucasfilm, Ltd. on over 3,000 acres of grazing land northwest of San Rafael. Objectives of the plan were to meet Marin Agricultural Land Trust agricultural easement requirements and to improve range conditions and to provide for fencing and livestock water infrastructure improvements.

MONO /INYO COUNTIES

Deep Springs College preparation of a rangeland monitoring report and photopoints for the USFS White Mountains Crooked Creek grazing allotment. Participation in the TEAM stakeholder meeting with representatives from USFS, CDFG, BLM, ESLT, and NRCS focusing on allotment grazing requirements.

Deep Springs College ranch management planning seminar with representatives from the University of California, Berkeley and the University of Nevada, Reno presented to students and staff.

Benton Valley Hot Springs Conservation Easement preparation of the Baseline Documentation Report and Conservation Management Plan for the 900-acre ranch for the Eastern Sierra Land Trust.

Vice President of the Board and Lands Committee member providing on-going consultations with the Eastern Sierra Land Trust on ranchland conservation easement areas.

Preparation of the Baseline Conditions Report for the 818-acre Montgomery Creek Ranch Agricultural Conservation Easement for the Eastern Sierra Land Trust.

Preparation of rangeland and water resources sections of conservation easement baseline conditions report for the 1,800-acre Centennial Ranch Addition for the Eastern Sierra Land Trust.

Preparation of the Baseline Conditions Report of the Big Hot Springs property conservation easement for the Eastern Sierra Land Trust.

Consultations with ALIMAR (Andrea Lawrence Institute for Mountains and Rivers) regarding agricultural conservation easements and agricultural and watershed land use policies for the Eastern Sierra and Great Basin.

American Land Conservancy consultation for the preparation of a Land Acquisition Assessment (LAE) for the Cunningham property at Mono Lake.

Preparation of the Agricultural Resources section for the U.S. Filter water withdrawal project for MHA Environmental and the Tri-Valleys Water District between Bishop, California and the Nevada State Line. Baseline agricultural uses were determined for alfalfa, and vegetable crop production and rangeland water consumption. The study area included Chalfant Valley, Hamil Valley, Benton Valley, Antelope Valley, and Fish Slough. Various water application efficiencies were evaluated and water duty factors were determined for various irrigation methods.

Consultation with the Eastern Sierra Packers Association regarding best management practices and monitoring of USFS permitted uses in the John Muir Wilderness and Ansel Adams Wilderness.

Preparation of a water resources study regarding impacts of the Town of Mammoth Lakes water use on wet meadow, wetland, and riparian corridor areas along Mammoth Creek in the Valentine Reserve, for the Regents of the University of California, Santa Barbara.

SACRAMENTO COUNTY

Preparation of a Rangeland Assessment on 30,000+ acres of the East Sacramento County Open Space Plan area including a determination of the critical number of acres to support a commercial ranching operation, potential urban/agricultural land use incompatibilities, and the overall rangeland health of the study area for the Sacramento County Planning and Community Development Department.

BUTTE/COLUSA COUNTIES

Field evaluation of grazing potential, habitat management and erosion control of the Wilbur Springs conservation easement for the American Land Conservancy.

Preparation of the agricultural resources section of the 20-mile long Wild Goose gas pipeline and facilities development EIR for MHA Environmental and the California Public Utilities Commission.

DOUGLAS COUNTY, NEVADA

Preparation of the baseline documentation report for the 4,000-acre Fairfield Ranch conservation easement for Clear Creek Tahoe and the Nature Conservancy of Nevada.

Preparation of the Environmental Documentation Report on the 855-acre Clear Creek Ranch Conservation Easement for Clear Creek Tahoe and The Nature Conservancy of Nevada.

Preparation of Baseline Documentation Reports for the agricultural conservation easement on the 560 acre Hussman Land and Livestock Company Ranches in Minden and Gardnerville, Nevada. Reports prepared for the American Land Conservancy.

UTAH

Declared superior court expert witness and notarized affidavit pertaining to the restricted access and farming practices interference due to the proposed location of a 138KV transmission line project across portions of a 4,500-acre wheat farming operation in Salt Lake County, Utah. Application subsequently withdrawn by the project proponent.

Litigation support on transmission line eminent domain taking across several hundred acres of orchard and grazing land near Brigham City, Utah.