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Honorary Mention

**Benziger Family Winery:
EMS Development and Implementation**

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Benziger Family Winery: EMS Development and Implementation*

Matt Atkinson, Ranch Manager at Benziger Family Winery, was overseeing the development of the winery's environmental management system (EMS). Matt was working with Chris Benziger, Partner and National Sales Manager to ensure that development of the EMS was consistent with Benziger's operational and strategic direction. It was February, 2003 and Matt and Chris had already invested countless hours in the EMS, which was being developed with assistance from the California Environmental Protection Agency (Cal/EPA). Through their EMS Winery Pilot Project, Cal/EPA hoped to design an EMS template that eventually could be made available to other wineries. Furthermore, Cal/EPA was attempting to develop a template that was consistent with ISO 14001, an internationally recognized standard for environmental management systems. Cal/EPA had selected Benziger Family Winery in June, 2000 as one of two pilot wineries, because of their established commitment to environmental pro-action and the significant environmental advances they had already made.

Matt believed that considerable progress had been made on Benziger's EMS. Benziger Family Winery, with Cal/EPA's assistance, had developed a formal environmental policy, identified and prioritized their environmental impacts and established objectives and targets. However, there were still many steps to be carried out in establishing a full-fledged EMS. Further development would require time consuming efforts in writing standardized operating procedures and in establishing document control and record keeping procedures. Also, because Matt and Chris had been the primary participants developing the system, the rest of the organization would have to become involved, and staff training would be required. In light of the financial investments and time that would be required from management and

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employees, Matt and Chris had to decide whether to aggressively pursue ISO 14001 certification. The alternative was to continue to develop an EMS as time and resources permitted, leaving open the possibility of eventually pursuing ISO 14001.

Benziger Family Winery's History

Mike Benziger, general partner and founder of Benziger Family Winery, grew up working in his father's wine import business in New York City. His dream was to grow his own grapes and make his own wine. Mike is the eldest of Helen and Bruno Benziger's seven children. Bruno worked for 23 years in the wine import business; starting out with his father Joseph who founded Park-Benziger Import Company in 1933 in New York City. Mike and his siblings worked in the family business, selling and delivering wine throughout the city's five boroughs. After graduating college in 1973, Mike and his wife Mary relocated to Europe, working in vineyards and cellars as they moved from region to region. In 1975, Mike took a cellar position with Stony Ridge Winery in California, where as assistant winemaker – he took a giant leap forward in appreciating the craft end of the business, sparking his continuing passion for the creation of truly great wine.

As their desire to start their own winery grew more insistent, Mike and Mary spent their free time searching for the ideal site. While driving through the charming little northern California town of Glen Ellen, on a sudden impulse, Mike turned into a narrow road winding up the mountain. One particular plot of land, the 85 acre Sonoma Mountain Ranch, a hanging volcanic valley spread across the side of the mountain, was the site he had been seeking. In October of 1981, Mike convinced the reluctant owner to sell, and borrowing a substantial loan from his father, initiated an all-consuming adventure for three generations of the Benziger family. Soon after, his father sold his share of Park-Benziger and moved to the Sonoma Mountain Ranch. Mike's younger brothers, Bob and Joe, soon sold their successful wine shop in upscale Scarsdale, New York, and followed closely behind their parents. Joe studied enology and viticulture at Santa Rosa Junior College and the university of California at Davis. As winemaker, Joe supervised every aspect of the production of all Benziger wines from fermentation to bottling. Bob helped build the wine distribution network, and had been in charge of business development since 1993. Brother Jerry, arrived in 1981, and settled into winemaking. The three youngest Benzigers were also involved in the family business. Mike's sister Patsy developed and ran the Benziger Family Winery Apprenticeship Program, perpetuating the family tradition by arranging for the Benziger children and the children of employees to spend six weeks working in each of the winery's departments during their high

school and college years. Chris earned a degree in marketing from the University of San Francisco and was the national sales manager. Kathy, the youngest of Bruno and Helen's seven children, earned a degree in management from Sonoma State University. She was in charge of sales in the eastern region of the U.S. Tim Wallace, Patsy's husband, a Harvard Business School graduate, was President and Chief Operating Officer. He was in charge of all aspects of sales and marketing, finance and administration, and the hospitality and wine tasting function. Mike Benziger supervised the vineyard and wine production. The winery employed 49 people full time and 29 people were either part time or seasonal workers.

The Benziger Family Winery was a medium sized winery producing 180,000 cases of ultra-premium wine per year, with annual revenues of about \$15 million. Super-premium wines (\$8-14) accounted for 60% of case volume, ultra-premium (\$15-25) account for 30% and luxury (over \$25) for the remaining 10%. Benziger was about to launch a new brand, Tribute, that would be an estate wine (grown from grapes in their own vineyards) selling in the \$50-60 range. Eventually, they hoped to sell 4000 cases per year of Tribute. Currently, Benziger exports 10% of their total case volume, and they are targeting 20% as a long term goal. Most of their exports are to Canada and Europe. European markets express significantly more interest in biodynamic and organic wines and Benziger therefore plans to target Tribute exports to the European market.

Benziger's Environmental Initiatives

Benziger Family Winery was a recognized leader in environmentally responsible wine making. Their environmental practices extended to both their vineyards and wine production. In 1999, Benziger was one of the initial wineries certified by the Sonoma County Green Business Program (SCGBP), based on their proactive environmental programs within their winery operations. In April, 2000, Benziger won Cal/EPA's Department of Pesticide Regulation's Integrated Pest Management Innovators Award.

The Sonoma Mountain Ranch site held a remarkable diversity of soils. Twenty-one distinct types of soil were identified and grouped by the Benzigers into 'flavor blocks'. The variety of soil types related to one of the key elements of Benziger's philosophy – farming for flavors – a method of carefully tailoring viticultural techniques to soil type, exposure and climate in order to produce fruit of optimal complexity, concentration and intensity. Sixty-five acres of vines were planted at the ranch and another twenty-acre parcel was planted with vines in nearby Sonoma Valley.

At the root of the Benziger Family's environmental stewardship was a goal to "produce world class wines that have a sense of place." That is, wines that contain the unique personality and character of the place the grapes are grown. Their approach was to farm in concert with nature and not in opposition to it. According to Mike Benziger, chemical pesticides and fertilizers reduce the unique and natural characteristics of a vineyard and its grapes. Restoring the biologic capital of a vineyard (the ability of nature to provide services such as pest control, fertilizing, and moisture retention) enhances the unique qualities of the wine. In order to achieve the natural conditions they seek in their vineyards, the Benziger Family practiced Biodynamic farming. While similar to organic agriculture in that chemicals were eliminated, Biodynamic farming goes further in that it attempts to respond to the earth's natural energies and cycles. The Benziger Family's two Sonoma county vineyards were certified in 2000 by the Demeter Association, the international organization that monitors and approves Biodynamic practices. Chris Benziger estimated that Biodynamic farming increased grape growing costs by about 10%. According to Benziger's web-site (www.Benziger.com) the principles of biodynamic farming include:

- Promoting the unique environment of a given site by minimizing outside influences and by utilizing only farm produced composts and manure for soil preparation. At BFW, compost, developed by combining waste from the winery with manure from a local dairy, is spread over the vineyard increasing both soil fertility and vitality. The resulting increase in the diversity of soil organisms eliminates the need for soil fumigants. Soil water-holding capacity is also increased, reducing irrigation needs.
- Using no chemically synthesized fertilizers, pesticides, herbicides, fungicides, or fumigants, no hormones, anti-biotics, growth regulators, or GMO's. Reliance on these synthetics reduces the vine's natural ability to absorb nutrients from the soil, leaving it susceptible to disease.
- Employing a series of eight herbal-based preparations that are applied to the soil in order to promote soil vitality through increased micro-biologic activity and diversity (think of these as vitamins for the plant and soil). The more nutrient-rich and biologically diverse the soils, the more character imparted to the wine.
- Using cover crops and companion plants to maximize the health of the vineyard environment. Benziger's cover crops, planted between vineyard rows, serve to reduce soil

erosion, fertilize soil through nitrogen fixation and attract beneficial insects. Also, Benziger's has set aside areas in the vineyard for plants that attract beneficial insects (insectaries).

Benziger's vineyards supply only a small proportion of the winery's grapes; they buy the balance of their grapes from more than sixty growers. In order to improve quality and so that they might learn the techniques, costs and benefits associated with sustainable agricultural practices, Benziger educates their growers in the farming methods employed in their own vineyards. They conduct a quarterly series of 'hot topic' seminars demonstrating their approach to practices such as canopy management, irrigation, weed control, etc. According to Matt Atkinson, the message is "the quality of your grapes will improve if you follow our practices".

Environmental practices at Benziger also extended into the winery, as reflected by Benziger being certified by the Sonoma County Green Business Program (SCGBP). The SCGBP provided technical assistance to businesses in the areas of compliance, resource conservation and pollution prevention. The SCGBP certified that a business was in full environmental compliance, and met the Green Business standard for beyond compliance environmental practices in the areas of energy and water conservation, solid waste reduction and pollution prevention. As part of the Green Business certification process, Benziger demonstrated a 2 million gallon per year water savings through recycling all wastewater generated by the winery. Their wastewater was biologically treated in a series of ponds and wetlands and supplies 75 percent of their vineyard irrigation needs. Significant reductions in solid waste were also shown. Forty-one percent of the winery's waste stream was recycled. In order to reduce energy costs associated with wine storage, Benziger's constructed wine caves in their vineyard hillside. This 22,000 square foot facility maintained a natural temperature of 63 degrees Fahrenheit, significantly reducing the energy requirements for storing their wines.

Environmental Practices in the Wine Industry

The US wine industry ranks fourth in the world in terms of volume of wine produced. The US wine market in 1999 had retail sales of \$18 billion, growing from \$11.7 billion in 1990. The US wine industry is comprised of approximately 1500 wineries. The industry, however, is highly concentrated with the top 10 wineries accounting for 70% (by volume) of

US production. Wine is grown and produced in every state except Alaska. California dominates the US wine industry in many ways. California has over 800 wineries and accounts for more than 90% of the wine produced and exported by US wineries. The Pacific Northwest (Washington, Oregon and Idaho) includes over 200 wineries that are developing an excellent reputation for quality wines. The supply chain for the wine industry starts with wine-grape growers and proceeds to wineries where the grapes are crushed, fermented, clarified, stabilized and aged. Eventually, the wines are bottled and shipped through the distribution channels to wholesalers, then to retailers who sell to the end consumer. A very small proportion of the wine circumvents the traditional distribution channels and is sold directly from the winery to the end consumer. While some smaller wineries grow all their own wine-grapes, most wineries purchase some of their grapes from independent growers. There are a large number of independent wine-grape growers who sell their grapes under contract to specific wineries or on the open market.

Exhibit 1 portrays many of the environmental impacts associated with a typical winery. Environmental impacts associated with growing wine grapes are agricultural in nature, while those in the winery are related to food processing. A comprehensive listing of all the potential environmental impacts associated with vineyard and winery operations would be too extensive to be listed here. A summary of significant issues and impacts follows.

Vineyard inputs include fertilizers (both synthetic and natural), pesticides, water for irrigation and energy to power equipment in the field. There are natural pesticides and pest control approaches; however, a majority of vineyards use synthetic chemical pesticides in the form of insecticides, herbicides and fungicides. According to the California 1998 Annual Pesticide Use Report, there were over 34 million pounds of pesticides applied to wine grapes, using 298 different chemicals. These chemicals, while varying in terms of level of toxicity, are detrimental to air, water and soil quality. They also have harmful impacts on vineyard workers and neighbors and animals sharing the local habitat. A major issue with synthetic fertilizers is the potential to contaminate local water supplies due to inappropriate or excessive application. Water shortages can also be an issue in many geographic areas. Energy issues associated with the use of fossil fuels relate to greenhouse gas emissions, depletion of natural resources and air quality impacts. There is also significant consumption of energy in producing the commonly utilized synthetic nitrogen fertilizers.

Winery inputs include energy (cooling during the fermentation process, maintaining storage temperature, pumping, running equipment, etc.), water (barrels and vats need to be

constantly cleaned and rinsed as does all the equipment, to ensure a minimum level of bacteria that might interfere with the controlled processes in the winery), chemicals (to clean surfaces, floors and equipment; diatomaceous earth, sulfur gas, refrigerants, etc.) and packaging materials (including glass, corks, wood pallets, glues, cardboard, metal and plastic foil). Winery operational water issues relate to the treatment of waste water containing organic matter, nitrates and phosphorous. Chemical issues vary depending on the chemical, and can include spills and various air, soil and water quality impacts. Packaging materials impact natural resource stocks and pose landfill issues.

Wineries vary considerably in their efforts and effectiveness in dealing with their environmental impacts. A small percentage of wineries and growers have certified some or all of their vineyards as organic. To be organically certified, no synthetic fertilizers and pesticides can be used. A vineyard can be certified organic following a three-year transition period. In 2002, approximately 10,000 acres of wine grapes in California were certified organic, out of a total of 434,000 acres. In the early 1980's Frey Winery became the first winery to produce organic wines. By 2000 they were selling 40,000 cases a year of organic wine. Fetzer Winery was also an early industry leader in attempting to mitigate its environmental impacts. They certified the vineyards they owned as organic in 1986 and since then have also engaged in a series of practices that reduced their environmental impacts in winery operations and administration. These practices included energy efficiency initiatives (building an energy efficient administration building with thick rammed-earth walls), installing photovoltaic panels to supplement electricity requirements, and building earthen berms around their warehouse to reduce energy requirements for cooling), winery waste water treatment using reed-bed ponds and recycling the cleansed water for irrigation, eliminating the use of chlorine, establishing a comprehensive, company wide recycling program, and establishing an in-house barrel restoration program.

Wine industry associations are playing an important role in moving the industry to become more environmentally sustainable. A number of regional associations have been supporting a pesticide reduction approach called IPM (integrated pest management). If pesticides are used they are selectively applied based on data from close monitoring of pest infestations. Preemptive applications of broad-spectrum pesticides throughout the vineyard are discouraged. IPM practitioners limit pesticide use to applications that are economically rational. In 1998, the industry created a national initiative called WineVision whose agenda included a Sustainability Task Force. A Wine Vision goal is to be a wine industry leader internationally in sustainable practices. One task force development was a joint effort by the

California Association of Winegrape Growers (CAWG) and the Wine Institute creating a Code of Sustainable Practices for the industry. The purpose of the code is to “establish voluntary high standards of sustainable practices to be followed and maintained by the entire wine community” and to “promote farming and winemaking practices that are sensitive to the environment, responsive to the needs and interests of society-at-large, and are economically feasible in practice”.

Winery Environmental Practices and Marketplace Advantage

There are many opportunities for wineries to attain marketplace recognition and advantage from their environmental practices. These advantages are typically second level considerations for the U.S. wine consumer. A wine’s quality, price point and reputation are primary considerations, and thus, the environmental attributes can play a role in choosing among comparable offerings. Wineries can promote specific environmental aspects of their grape growing practices, such as organic or biodynamic certification. Or, they may have water, energy or other initiatives in their winery operations that they can publicize. These practices and initiatives can become a point of differentiation in the tasting room selling process, in sales calls and during wine tasting events. The label on the wine bottle can extol environmental aspects or certifications. The winery’s literature and web site can promote the environmental dimension. Most importantly, wineries are always seeking PR through articles in industry magazines and other publications. New environmental initiatives can often generate this free PR.

In 2001, wines made from organic grapes and labeled as such, constituted 1% of the U.S. wine market, representing a retail value of \$190 million. That segment of the industry was growing 20% annually. In California, approximately one-third of the wineries farm their own vineyards organically. They do so because they believed the quality of their wine is enhanced. However, only one in four of those wineries are certified organic and among those that are certified, only a few claim credit for being certified on their label. There are a number of reasons why most wineries avoid promoting their organic practices. First, the initial organic wines that came on the market in the 1980’s were not considered comparable to traditional wines at similar price points and the reputation of organic wines has suffered ever since. Part of the problem with these wines was that sulfur dioxide was not added to the wine. Sulfur dioxide is added as a preservative in the winemaking process, and unless the wine is bottled according to certain procedures and maintained within a certain temperature range during distribution and subsequent storage, too low a sulfite level can result in a

significant deterioration in quality. Also, there has been confusion in the U.S. market regarding the definition of organic wine. Until 2002, wines could not be called organic as there was no official standard that defined organic wine. The USDA recently defined a standard for organic wine. The standard includes a requirement that there be no added sulfites. Because of this requirement, most wineries will not produce organic wines. According to the standard they may label their wines as “made with organic grapes” so long as the grapes were certified organic and sulfite levels did not exceed 100 ppm (parts per million). Most wineries that were certified organic had not been labeling their grapes as being organic. They believed that confusion among consumers regarding what it meant to be an organic wine, and because organic wine’s reputation had suffered in the past, the promotion of their wine-grapes as organic could be detrimental in U.S. markets.

While organic certification did not seem to provide much in the way of competitive advantage in U.S. markets, export markets were a different matter. Wine consumers throughout the EU sought organic foods in general and valued organic wines. The considerable success of Fetzer’s Bonterra brand in the U.K. could be attributed in part to the organic grapes used in making the wine. Similarly, Japanese distributors importing wines made from certified organic grapes promoted that aspect in their highly environmentally sensitive country.

Benziger did not explicitly advertise or label the biodynamic or environmental aspects of their wines. However, there was a small but growing number of distributors and retailers interested in Benziger’s environmental accomplishments, and Chris Benziger did not hesitate to use those selling points in his sales calls when the opportunity presented itself. According to Chris one of their primary distributors frequently emphasized Benziger’s Biodynamic practices as a selling point, and Chris was seeing more wine consumers at tastings and auctions buying Benziger wines based on the winery’s environmental practices. Benziger’s brochures and web site (www.benziger.com) feature their environmental practices. Their tasting room personnel are trained to explain Benziger’s environmental practices and their winery tours highlight those practices.

California EPA’s EMS Pilot Program

The years following the formation of the U.S. EPA in 1970 were characterized primarily by a ‘command and control’ approach to regulating business organizations. The 1990’s witnessed federal and state agencies experimenting with a range of more flexible options to reduce environmental risks, including market incentives and voluntary programs.

In 1998, the California Environmental Protection Agency (Cal/EPA) established an *Innovation Initiative* and joined with U.S. EPA, non- governmental organizations (NGOs), business, academia and other states as a member of the Multi-State Working Group (MSWG) to study the environmental benefits of environmental management systems (EMS) as a tool for enhancing environmental protection and achieving sustainable development. The MSWG participants and observers presently include all 50 states, several of which are actively engaged in approximately 50 EMS pilot projects. The EMS Pilot Project goal is to evaluate the potential of EMS to achieve environmental results within and beyond the limitations of the existing regulatory system.

An environmental management system (EMS) is a managerial process designed to help an organization meet environmental objectives and demonstrate improved environmental performance. An EMS provides a systems framework for a process that includes a continuous cycle of planning, implementing, reviewing, and improving (see Exhibit 2). An EMS can be informal, with minimal documentation; this is a common approach in small companies. Or it can be formal and fully documented, an approach often taken by larger organizations that have many high-risk issues to manage. Many organizations have an EMS whose primary intention is to stay in compliance with regulations. However, an EMS can be designed to take an organization well beyond compliance, allowing it to proactively minimize its significant environmental aspects. This type of proactive EMS is what the regulators and a wide range of other stakeholders are seeking. However, prior to the development of the ISO 14000 series standards, outside stakeholders could not assess the adequacy of an organization's EMS. ISO 14000 is an attempt to develop a widely accepted, uniform approach to certifying that a company's or facility's EMS is a beyond compliance, organizationally integrated system to continually improve environmental performance.

The International Organization for Standardization (ISO) is widely recognized and accepted in the global business community. Facilities certified to ISO 9001 could assure their customers that their quality management systems met the standards and guidelines established by ISO. While pursuing certification is voluntary, more and more business customers are requiring that their suppliers be ISO 9001 certified. Following the success of the ISO 9000 standards, ISO began to develop the ISO 14000 series of guidelines and standards to aid companies dealing with environmental issues. In order to be ISO 14001 certified, a company/facility needs to have an EMS that meets the ISO guidelines.

ISO 14001 is the basic EMS standard within ISO 14000 to which firms certify. Meeting ISO 14001 standards can be time consuming and costly. The initial costs include

both system development costs and ISO registration fees. If an external consultant is used, the cash outlay can easily exceed \$100,000. If the system is developed internally, staff time requirements would be substantial, but costs would be reduced. Other costs would include ongoing system maintenance costs. These costs would be in the form of staff time to oversee the system, to plan and monitor, to enter data, training, etc. There are many potential benefits that can be realized from an ISO14001 certified EMS system. These benefits might include: (a) enhanced public image among external stakeholders, (b) systematization of existing environmental activities, (c) competitive advantage in markets where consumers are sensitive to environmental product attributes, (d) cost savings due to waste reduction and avoidance of environmental liabilities, (e) relaxed regulatory oversight and (f) improved environmental performance.

The number of ISO certified companies in the fifteen countries with the most registrations is shown in Exhibit 3. By June 1999 there were 480 companies in the U.S. with ISO 14001 certifications, none of which were wineries. A number of wineries outside the U.S. had been certified. In 1998, a New Zealand winery was the first winery to be ISO 14001 certified. By 2001, Allied Domecq, with global wine holdings and among the 20 largest U.S. wineries, had been actively pursuing ISO 14001 certification for its production facilities. Their wines include Clos du Bois, Callaway Coastal, Atlas Peak, William Hill, and Buena Vista from California, Balbi and Graffigna from Argentina, Marques de Arienzo, Siglo, Campo Viejo, Tarsus and Aura from Spain and Montana from New Zealand. They had achieved ISO 14001 certification at 28 sites globally, representing more than 80% of their production volume, but had not yet certified a U.S. facility.

The Cal/EPA EMS Winery Pilot Project involves two wineries in Sonoma County, Benziger Family Winery and Davis Bynum Winery. Cal/EPA selected Davis Bynum and Benziger Family Wineries in June 2000 as pilot wineries after receiving stakeholder suggestions to include agriculture in the EMS project. Wineries were considered because of their importance in California's economy, their environmental impacts, especially in the areas of water quality and availability, pesticide use, habitat loss and urban encroachment. Another consideration was the effort of the wine industry to become environmentally responsible. Both the grape growing and wine making operations are included in the pilot project. The Cal/EPA project manager was Tom Lanphar, Senior Hazardous Substances Scientist for the Department of Toxic Substances Control. The pilot project with the Sonoma wineries had as its objectives to determine (1) whether and how the use of an environmental management system (EMS) by a regulated entity increases public health and environmental protection over

current requirements; and (2) whether and how the use of an EMS provides the public greater information on the nature and extent of public health and environmental effects than information provided by current regulatory requirements. Tom Lanphar believed that Benziger and Davis Bynum were the only smaller wineries actively developing an EMS that was consistent with ISO 14001 certifications.

Development and Implementation of Benziger's EMS

Chris Benziger and Matt Atkinson had several motivations for participating in the pilot project and developing an EMS. Prior to the pilot program, their environmental initiatives were not part of a systematic planning process. Thus, they saw an EMS as a logical next step in organizing their existing environmental programs into a comprehensive system that would provide (a) better understanding of their environmental impacts, (b) systematic planning for meeting their environmental responsibilities, and (c) monitoring and follow-up. The potential for cost saving initiatives and improvements in wine quality further motivated them. And they hoped to use the EMS as an educational tool for their employees and suppliers. Lastly, they viewed this as an opportunity to be among the first U.S. wineries to be ISO 14001 certified, enhancing their reputation as an environmental leader in the wine industry.

The technical assistance being provided by Cal/EPA through their EMS Winery Pilot Program was substantial. The pilot project extended through December of 2001. During the one and a half year period of the project, there were meetings every two weeks that included Tom Lanphar from the EPA, Matt Atkinson from Benziger, and representatives from Davis Bynum Winery. Also, Chris Benziger attended many of these meetings. The purpose of these meetings was to 'walk through' the process of developing each winery's EMS. In addition, Cal/EPA and U.S. EPA sponsored five all-day workshops that were open to the businesses in all of the EMS pilot projects. The first of these workshops was an overview of environmental management systems. Another was designed to assist in the development of an environmental policy statement consistent with ISO 14000. In addition to the workshops, Cal/EPA organized a series of stakeholder meetings that included the winery representatives, local industry associations, activists and other wineries.

Based on their experiences in working with the two pilot wineries, Cal/EPA was developing a template in the form of a manual that any winery could use in developing an EMS. One part of this template was a Gap Analysis form. This Gap Analysis was an EMS checklist consistent with ISO 14000 requirements. The Gap Analysis form is included as

Exhibit 4. Other sections of the template would include procedures and examples to assist wineries in completing the various steps listed in the Gap Analysis.

One of the first steps involved in developing an EMS was to write or update the organization's environmental policy. Prior to the pilot project, Benziger did not have a formal environmental policy. Matt attended a Cal/EPA and U.S. EPA workshop that focused in large part on environmental policies. Following the workshop, he and Chris drafted an environmental policy. They shared the draft and received helpful feedback at a Cal/EPA sponsored stakeholder meeting. The final environmental policy statement (Exhibit 5) was then shared with Benziger employees at a staff meeting. Benziger planned to post the statement on their website.

In order to assist with identifying significant environmental impacts, Cal/EPA developed (a) the Vineyard Operations and Winery Operations Aspect Register, a comprehensive description of possible environmental impacts in a winery's vineyard and winemaking operations and (b) a Procedure for Identifying and Evaluating Environmental Aspects and Impacts. The procedure had the winery first identify its environmental impacts using the Aspects Register, then it provided a method of assigning points to each impact based on whether the impact was regulated (0=not regulated or 2=regulated), the level of environmental harm the winery experiences in relation to that impact (0=low, 1=moderate and 2=high), and whether it was covered in the winery's environmental policy (0=not covered, 2=covered) and one additional point if there were other environmental concerns. Using this procedure Matt and Chris developed a list of Benziger's significant environmental vineyard and winery impacts (Exhibit 6). They circulated this list of Benziger's significant aspects to other managers in the winery asking for validation and input on what they might have missed. Managers from winery operations, sales and marketing, administration and hospitality/wine tasting reviewed and approved the list without any additions or suggested changes. Benziger's most significant impacts in the vineyard were storm water containment, preventing spillage and leakage, and fuel consumption. In the winery, the most significant impacts included fuel consumption, spillage/leakage, mercury containing lights and ballast, and use of refrigerants. Storm water was an issue because of the potential for erosion and the washing of sediment into local streams. Spillage and leakage were issues, especially in relation to diesel oil, glycol refrigerants and cleaning agents. Fuel consumption was an issue not only because it generated pollution, but also because the Benziger environmental policy specifically called for "managing our natural resources" and "using energy efficiently".

Following prioritization of significant environmental impacts, objectives and targets were developed at the end of 2001 (Exhibit 7). Cal/EPA provided an Objectives and Targets Procedure along with technical assistance. In setting objectives, Cal/EPA suggested considering the winery's environmental policy, impacts, applicable legal requirements, stakeholder views, technological options and financial, operational and other business requirements. Targets were to be quantitative, realistic, measurable and linked to environmental aspects. Matt and Chris felt that Benziger already had an adequate approach to storm water containment. They thought that their objectives should advance their progress in developing a full fledged EMS. Thus, a number of formal objectives (see Exhibit 7) were developed in terms of completing Standard Operating Procedures. In terms of energy efficiency, Mike Benziger wanted to see significant reduction in energy use and pushed for a 20% reduction in electrical consumption by the end of 2002.

Issues in Developing Benziger's EMS

By the beginning of 2002, Cal/EPA's pilot program had officially ended, although Tom Lanphar continued to provide assistance on an informal basis. During 2002, progress was made on many of the Objectives and Targets in Table 7. Water use was monitored in 2002, creating a baseline for future reduction targets. Proposals were being reviewed for a photovoltaic system that would partially reduce dependence on the electrical grid. Standard operating procedures for the safe handling and use of diatomaceous earth were developed. (Diatomaceous earth was used in the wine making process and presented a respiratory risk to employees.)

In February of 2003, Tom and Matt met and filled out the Gap Analysis, indicating what had been accomplished and what steps would be required to complete the EMS. There were many steps remaining in the development of an EMS that was in conformance with ISO 14001 certification. These steps included training of personnel, developing and implementing a plan to communicate and inform employees about the EMS, documentation and record keeping requirements, procedure development and establishing measurement and monitoring capabilities. Approximately 150 hours of time would be required to complete development of the EMS. At least 100 hours of Matt's time would be required, and because other demands on his time were significant and hard to predict, completion of his EMS tasks could take six to nine months. However, the time required could be longer depending on the level of cooperation and support forthcoming from the managers and employees who needed to be involved in the development of the EMS.

In early 2003, Tom Lanphar met with Matt Atkinson and Chris Benziger to discuss Benziger's EMS. Chris stated that "pursuit of ISO 14001 certification was the right thing to do; that the winery was committed to its ultimate development". If Benziger was able to complete the required steps on the Gap Analysis, Tom estimated that the cost to then become certified would be approximately \$20,000. This would include pre-audit assistance from a consultant at \$1000 per day for five days, and certification costs of \$15,000. However, Matt and Chris identified a number of challenges facing them. Externally, the wine industry was facing an unprecedented economic squeeze due to a glut of wine grapes and increasing international competition. This meant that time and money for system development would be extremely tight. Tim Wallace, Benziger's President, was supportive of winery's environmental agenda, but wanted any decision regarding investments in EMS development to make "good business sense". Second, there were internal impediments. 'Buy-in' from all of the managers was not complete. It would not be easy to convince all of the managers that the payoff from an ISO 14000 system justified the investment in employee time that would be required to complete the EMS. The EMS was seen as 'Matt's thing'. As a result, it had been difficult for Chris and Matt to get participation in developing and implementing the system. There was an Environmental Committee composed of just Chris and Matt, but they knew they had to broaden the committee's membership and engender organizational support if the EMS was ultimately to be successful. Third, the marketability and PR value of a winery's environmental pedigrees was intangible. While there was certainly a strong demand for organic wines and eco-labels in Europe, it was unclear as to when this would translate into main-stream demand in the U.S. domestic market.

Exhibit #3**Top 15 Countries in Terms of Number of ISO 14001 Registrations***

COUNTRY	Number of ISO 14001 Certifications
Japan	12,392
Spain	3,960
Germany	3,820
USA	3,032
Sweden	2,961
UK	2,917
China	2,802
Italy	2,405
France	1,780
Taiwan	1,308
Korea	1,269
Netherlands	1,143
Canada	1,112
Switzerland	1,016
Brazil	900

* Source: Peglau, Reinhard: The number of ISO 14001/EMAS registrations of the world. July 2003. <http://www.ecology.or.jp/isoworld/english/analy14k.htm>

Exhibit 4: EMS Gap Analysis (February, 2003)

A Gap Analysis compares current methods for managing environmental responsibilities with the required elements of the ISO 14001 EMS standard. The purpose of the Gap Analysis is to help a firm understand the differences between their current system and the required elements of an ISO 14001 EMS. The following table outlines the main elements of an EMS consistent with ISO 14001 and the current status of Benziger's EMS.

Environmental Policy	Yes	No
Do you have an environmental policy? Benziger has developed an environmental policy that includes commitments to continual improvement, the prevention of pollution and staying in compliance with relevant environmental regulations.	X	
Environmental Aspects	Yes	No
Have you conducted an analysis of the environmental impacts of your activities, products or services? Using the Aspects Register developed by Cal/EPA, environmental impacts had been prioritized according to a systematic procedure.	X	
Legal and Other Requirements	Yes	No
Do you have a procedure to identify legal and other environmental requirements that are applicable to your activities, products or services. The Ranch Manager is responsible for identifying legal and other environmental requirements, no formal procedure is written. Ranch Manager will write one. Estimated time to complete: 2 hours.		X
Objectives and Targets	Yes	No
Do you have documented environmental objectives and targets? Objective and targets have been developed and documented based on significant environmental aspects and legal requirements.	X	
Environmental Management Programs: Action Plans	Yes	No
Have you established programs for achieving objectives and programs? Action plans (environmental management programs) have been written and identify responsibilities, resources needed and time frame for implementation and completion.	X	
Structure and Responsibility	Yes	No
Has top management appointed specific management representative(s) to have the responsibility for ensuring that the environmental management system is established, implemented and maintained? The ranch manager has been given the responsibility for ensuring the EMS is established, implemented and maintained. More specific responsibilities still must be defined.	X	
Are other personnel roles and responsibilities defined, documented and communicated in order to facilitate effective environmental management and are adequate resources (human, technical and financial) provided for implementation and control of the environmental management system? Responsibility matrix has been produced; however, specific names must still be defined. Ranch manager will complete. Estimated time: 4 hours.		X
Training, Awareness and Competence	Yes	No
Are all personnel, whose work may create a significant environmental impact, trained to minimize potential impacts? Training of personnel does occur on a regular basis to meet regulatory requirements; however,		X

additional training needs based on EMS aspects and impacts is still being planned based on training matrix in the EMS. Ranch manager and department managers and supervisors are responsible. Estimated time: Planning and writing training programs: 8 hours. Training given on continual basis.		
Communication	Yes	No
Do you have procedures for informing personnel about the elements of you EMS?		X
Communication plan is still in development. Environmental Committee (Department Managers) will complete procedure. Estimated time: 6 hours.		
EMS Documentation	Yes	No
Are the core elements of you EMS and their interaction documented in either paper or electronic form?		X
An EMS binder has been created to maintain relevant documents; however, binder does not contain all necessary documents for a completed EMS. Ranch manager is responsible. Estimated time: 40 hours.		
Document Control	Yes	No
Have you established document control procedures that ensure that documents are created and maintained in a proper and consistent manner?		X
Procedure is in the process of being developed. Ranch manager is responsible. Estimated time: 1 hour.		
Operational Control	Yes	No
Have you identified operations, activities, goods and services that are associated with significant environmental aspects and impacts of your organization?	X	
Procedure for identifying significant environmental aspects and impacts link these with operations, activities, goods or services.		
Do you have established documented procedures for operations and activities that cover situations which might result in adverse environmental impacts or deviations from your Environmental Policy or objectives and targets?		X
The need for developing standard operation procedures is included within objectives and targets. Some SOPs have been created. Three more SOPs need writing. Relevant department manager and ranch manager are responsible. Estimated time for completion. 24 hours per SOP for total of 72 hours.		
Emergency Preparedness and Response	Yes	No
Do procedures exist for identifying the potential for and response to accidents and emergency situations and for preventing and mitigation of the environmental impacts that may be associated with emergencies?	X	
Plan currently exists. An updated plan is in process of final approval. Company President, Ranch Manager and Executive Secretary are responsible. Estimated time for completion: 4 hours.		
Monitoring and Measurement	Yes	No
Do documented procedures exist to regularly monitor and measure the key characteristics of operations having a significant impact on the environment? Do these procedures require the recording of information to track performance and conformance with objectives and targets?		X
Draft procedure exists. Ranch Manager is responsible. Estimated time for completion: 2 hours.		
Nonconformance and Corrective and Preventative Action	Yes	No
Do you have procedures for defining responsibility and authority for handling		X

nonconformances and for taking action to mitigate any impacts?		
Draft procedure exists. Ranch Manager is responsible. Estimated time for completion: 2 hours.		
Records	Yes	No
Do you have procedures for the identification, maintenance, and disposition of environmental records, including training and audit results?		X
Draft procedure exists. Ranch Manager is responsible. Estimated time for completion: 2 hours.		

EMS Audit	Yes	No
Do you have a program and procedures for periodic EMS audits? Can the audits determine whether your EMS conforms to the ISO 14001 standard?		X
This topic is yet to be discussed by the environmental committee. Estimated time: unknown.		
Do you have procedures that establish the audit scope, frequency, methods, responsibilities, and requirements for conducting audits and reporting results?		X
Procedures will be written once the environmental committee makes decisions about audit protocols.		
Management Review	Yes	No
Does your top management regularly review the EMS to ensure its suitability, adequacy, and effectiveness?		X
EMS estimated completion date is fall of 2003 and first management review is scheduled for winter of 2003.		

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Exhibit 5

Benziger Family Winery Environmental Policy

Benziger Family Winery is committed to identifying and promoting the most environmentally safe and sustainable business and farming practices.

We believe that sound environmental policy will lead to an increase in product quality as well as the social well being of our employees and community.

We will:

- Continually monitor and improve environmental performance through an EMS.
- Appoint an environmental committee to propose annual targets and objectives for management approval.
- Integrate environmental consideration across all business functions, (vineyard, winemaking, purchasing, etc.).
- Comply fully with the letter and spirit of environmental laws and regulations.
- Seek to prevent pollution before it is produced and reduce the amount of waste at our facilities.
- Recycle whenever possible and use environmentally preferred materials.
- Communicate this policy throughout the company and provide appropriate training and educate employees to be environmentally responsible on the job and at home.
- Manage our natural resources in an environmentally sensitive manner and use energy efficiently throughout our operations.
- Continuously work to improve our adherence to these principals and report to our stakeholders.
- Make this policy available to our customers, community members and general public.

**Exhibit 6: Benziger Family Winery
Significant Vineyard Aspects**

Aspect	Score
Storm Water	7
Use of Electricity	5
Removing Water from Aquifer	5
Use of Plastic	2
Use of Water	5
Waste Plastic	2
Use of Sulphur	4
Use of Fences and Barriers	2
Spillage or Leakage (solvent, plastic, metal, construction materials)	7
Air Emissions	4
Fuel Consumption	7
Noise	2
Landfill disposal (wood, plastic, metal, construction materials)	2

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Exhibit 6: Benziger Family Winery (cont.)**Significant Winery Aspects**

Aspect	Score
Use of Electricity	5
Noise	2
Fuel Consumption	7
Use of Propylene Glycol	2
Use of Refrigerants	6
Generation of CO ₂	2
Air Emissions	4
Use of Wood	3
Use of Diatomaceous Earth	6
Use of Sulphur	4
Use of Glass	3
Use of Corks	3
Use of Glues	2
Use of Paper	3
Use of Cardboard	3
Use of Metal and Plastic Foil	3
Use of Plastic	3
Use of Water	5
Waste Electric Equipment	2
Use of Styrofoam	3
Mercury Containing Lights & Ballasts	6
Use of Paint	6
Spillage/Leakage	7
Hazard Waste Disposal	6

Exhibit 7: Objectives and Targets for Benziger Winery and Vineyard Operations

Objective	Target	Status	Regulated		Non-Regulated
			Meets	Beyond	
1. Reduce electrical consumption by 20 percent	20 percent by 12/02	In process			X
2. Monitor water use to establish 2002 baseline, set performance target in 2003	By 12/02	In process			X
3. Minimize dependency on non-renewable electrical energy sources by generating 5 percent of needs	Generate 5% of energy needs by 12/02	In process			X
4. Write Standard Operating Procedure for safe handling and disposal of hazardous materials	By 09/02	In process			X
5. Write SOP for safe handling and disposal of diatomaceous earth	By 12/02	In process			X
6. Develop Environmentally Preferred Purchasing policy and program for more efficient use of resources.	By 07/02	In process			X
7. Write SOP for refrigerant handling to prevent accidental discharge	By 12/02	In process			x