FallingVineWinery

Taylors Falls, Mn

Falling Vine Winery

An Undergraduate Thesis Submitted to the
Department of Architecture & Landscape Architecture
North Dakota State University

by

Corey Allan Peterson

In Partial Fulfillment for the Requirements for the
Degree of Bachelor of Architecture

[redacted]
Ganapathy Mahalingam, Ph.D. – Primary Critic
Associate Professor of Architecture

[redacted]
Steve Martens – Secondary Critic
Associate Professor of Architecture

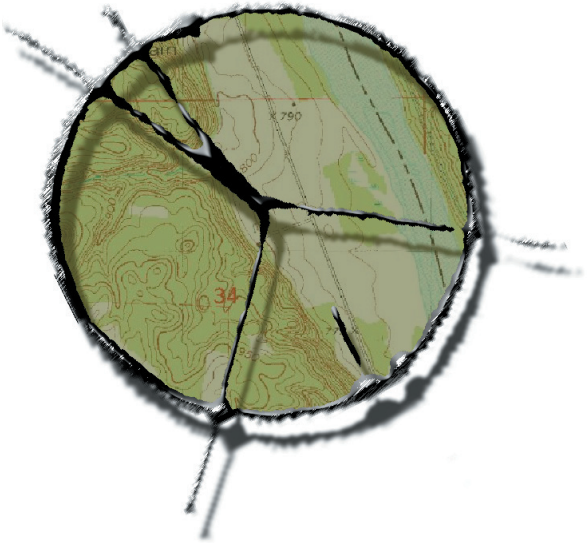
[redacted]
Blind Critic

[redacted]
Don Faulkner – Thesis Committee chair
Associate Professor of Architecture

[redacted]
Mark Barnhouse – Program Director
Assistant Professor of Architecture

[redacted]
Paul Gleye – Department Chair
Associate Professor of Architecture

Table of Contents




User/Client

The primary users of the restaurant and wine bar will be people that live near by and tourists. The Tailor's Falls area is a great place to go hiking, canoeing, and a lot of other outdoor activities, which will bring weekenders in. It is also only 45 minutes away from Minneapolis, which should bring people in.

The primary users of the winery, research facility, and vineyard will be the employees. The secondary users of the winery and vineyard will be tourists. People will be able to walk around the vineyard and explore the different aspects of The winery itself will be experienced by these secondary users only during guided tours.

The client for this project will be Hal Gershman, owner of four Happy Harry's bottle shops in Fargo and Grand Forks. Hal is also the president of the North American Wine Guild.

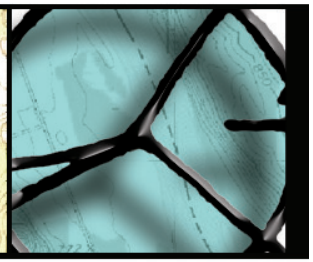
Harry "Happy" Gershman opened Happy Harry's in 1944; his son, Hal, took it over 1976 and took a chance - at size, quality and dedicated employees to expand the original business to four stores, averaging 10,000 square feet each. The company currently operates two bottle shops in Grand Forks and two bottles shops in Fargo.

Happy Harry's was the first in the area to offer cigars and cigar accessories, fine wines and liquors. By hosting wine tastings and sending direct mailings to preferred customers, Happy Harry's Bottle Shops has built a faithful clientele.

Happy Harry's has received numerous national honors for leadership and retail excellence in the alcohol beverage industry, including an invitation for membership in the prestigious Wine alcohol beverage industry, including an invitation for membership in the prestigious Wine & Spirits Guild of America, an organization of 40 of this nation's finest beverage retailers.

In 1987, Liquor Store Magazine (now Beverage Dynamics) named Happy Harry's one of the top ten retail liquor stores in the United States. They renamed Happy Harry's Bottle Shops "One of America's Top Ten" again in 1995. In 1990 Market Watch Magazine honored the company with its Market Watch Leader award for excellence and leadership in the alcohol beverage retailing industry.

Program



Vineyard

Total Area: 80 acres

Users: Hired hands, tourists

Function: The vineyard's main function is to produce the grapes for wine. The secondary function is research area for the laboratories. And the final purpose for the vineyard is for tourists to explore the process of growing grapes.

Equipment: Tractors, tillers, terrace, Fence, and Irrigation

Activities: Planting vines, harvesting grapes, maintaining vines, trimming, and cultivating

Outdoor Spaces

Total Area: 7 acres

Users: Tourists, Customers, visitors, and workers

Function: The outdoor spaces create a place for people to interact out side. These spaces need to welcome people to the winery and invite them to relax.

Equipment: Mowers, weed trimmers, leaf blowers

Activities: Walking, sitting, eating, drinking,

Other Spaces

Total Area: 50 acres

Users: Everyone

Function: This is the area around the buildings and the wood land area surrounding the edge of the site including parking.

Equipment: none

Activities: Circulation and viewing nature

Total Area: 137 acres

Winery

Wine Portico

Total Area: 100 SF

Users: Employees, tourists, costumers

Function: Entrance into the winery and seating area for waiting. People may have to wait for tours to begin.

Equipment: Reception desk, chairs, rest rooms

Activities: Information, sitting, beginning of tours

Crush Pad

Total Area: 800 SF

Users: Employees

Function: This is the area where the grapes are crushed and de-stemmed.

Equipment: Crusher, De-stemmer, and large vats

Activities: Wine production

Fermentation

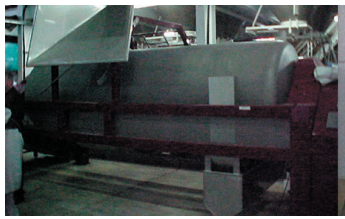
Total Area: 800 SF

Users: Employees

Function: This area is used to ferment the grape juice.

Equipment: Centrifuge, large vats

Activities: Wine production




Barrel Room

Total Area: 2,500 SF

Users: Employees

Function: Storage of wine in oak barrels for the purpose of aging.

Equipment: Oak barrels

Activities: Wine production

Bottling Line

Total Area: 800 SF

Users: Employees

Function: Bottling of finished wines and labeling the bottles.

Equipment: Bottling line

Activities: Wine production

Shipping Area

Total Area: 400 SF

Users: Employees

Function: Packaging and shipping product.

Equipment: Tables, pallets

Activities: Wine production

Retail Shop

Total Area: 300 SF

Users: Employees, tourists, costumers

Function: Sale of wine, accessories, and other items.

Equipment: Counter, displays

Activities: Purchasing

Tasting Room

Total Area: 300 SF

Users: Employees, tourists, costumers

Function: This is the area is a relaxed space for tasting wines and learning about the winery.

Equipment: Tables and chairs

Activities: Tasting, meetings

Total Area: 6,000 SF

Restaurant

Seating

Total Area: 1,500 SF

Users: Employees, costumers

Function: Dinning

Equipment: Tables and chairs

Activities: Dinning

Kitchen

Total Area: 500 SF

Users: Employees

Function: Preparing food for restaurant.

Equipment: Stoves, counters, dish washer

Activities: Cooking

Wine bar

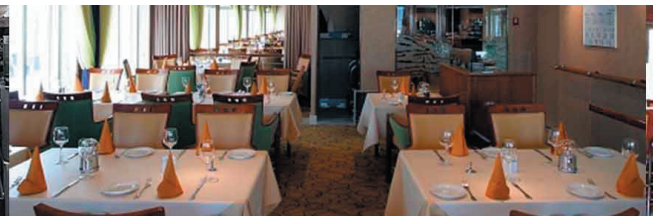
Total Area: 500 SF

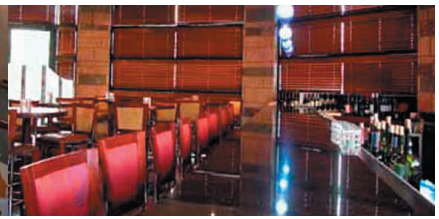
Users: Employees, costumers

Function: This area will create a unique place for people to relax and enjoy a bottle of their favorite wine.

Equipment: Tables and chairs

Activities: Drinking wine





Storage

Total Area: 150 SF

Users: Employees

Function: Storage of food, drinks, and supplies.

Equipment: Shelving

Activities: Unloading supplies and storage

Cooler

Total Area: 60 SF

Users: Employees

Function: Store food that needs to maintain low temperatures.

Equipment: Cooler

Activities: Unloading and storage

Wine Cellar

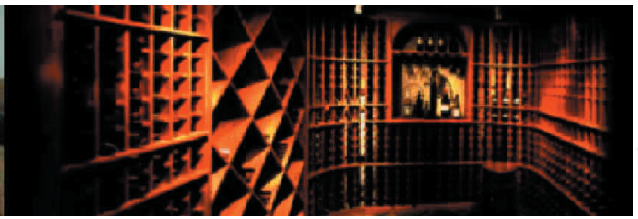
Total Area: 150 SF

Users: Employees

Function: Storage of fine wines.

Equipment: Wine racks

Activities: Unloading and storage



Reception Area

Total Area: 100 SF

Users: Employees, costumers

Function: This is area serves as a welcoming area, waiting area, and seating area.

Equipment: Desk and chairs

Activities: Reception and waiting

Rest rooms

Total Area: 300 SF

Users: Costumers

Function: Provide rest rooms for people at the restaurant.

Equipment: Toilets and sinks

Activities:

Total Area: 3,260 SF

Research

Offices

Total Area: 100 SF(x4)

Users: Employees

Function: Space for paper work and research facilities for each researcher.

Equipment: Desk and computer equipment

Activities: Research

Laboratories

Total Area: 1,000 SF(x2)

Users: Employees

Function: Space for research of hybrid grape varietals, and new products.

Equipment: Counters, sinks, and additional equipment

Activities: Research

Rest rooms

Total Area: 300 SF

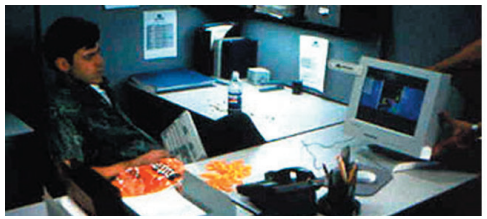
Users: Employees

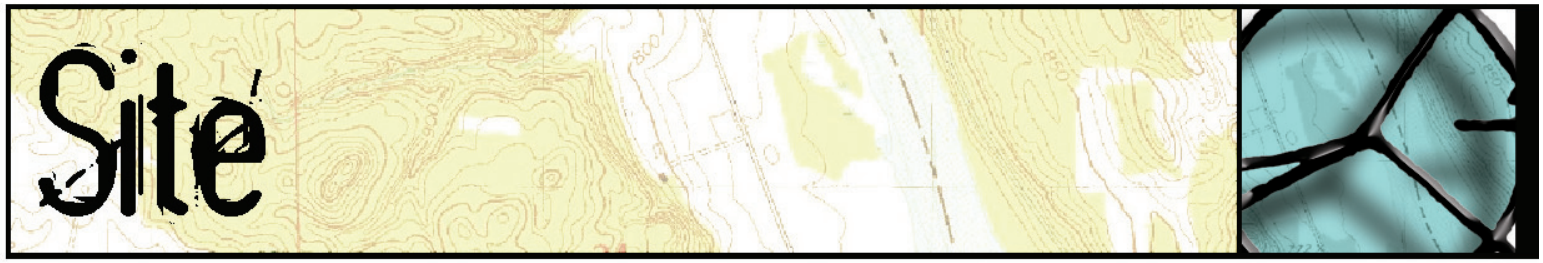
Function: Provide rest rooms for researchers.

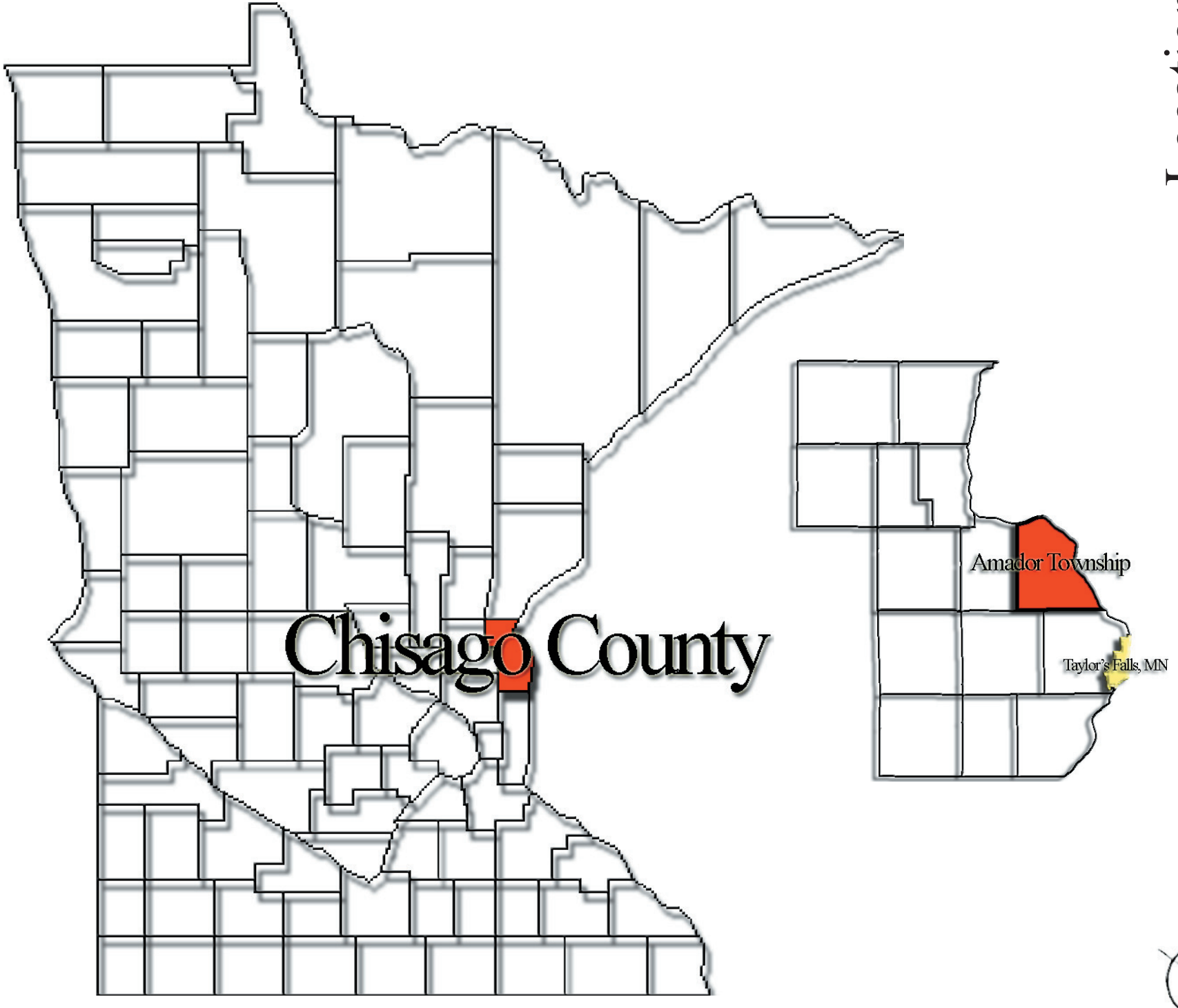
Equipment: Toilets and sinks

Activities:

Total Area: 2,700 SF



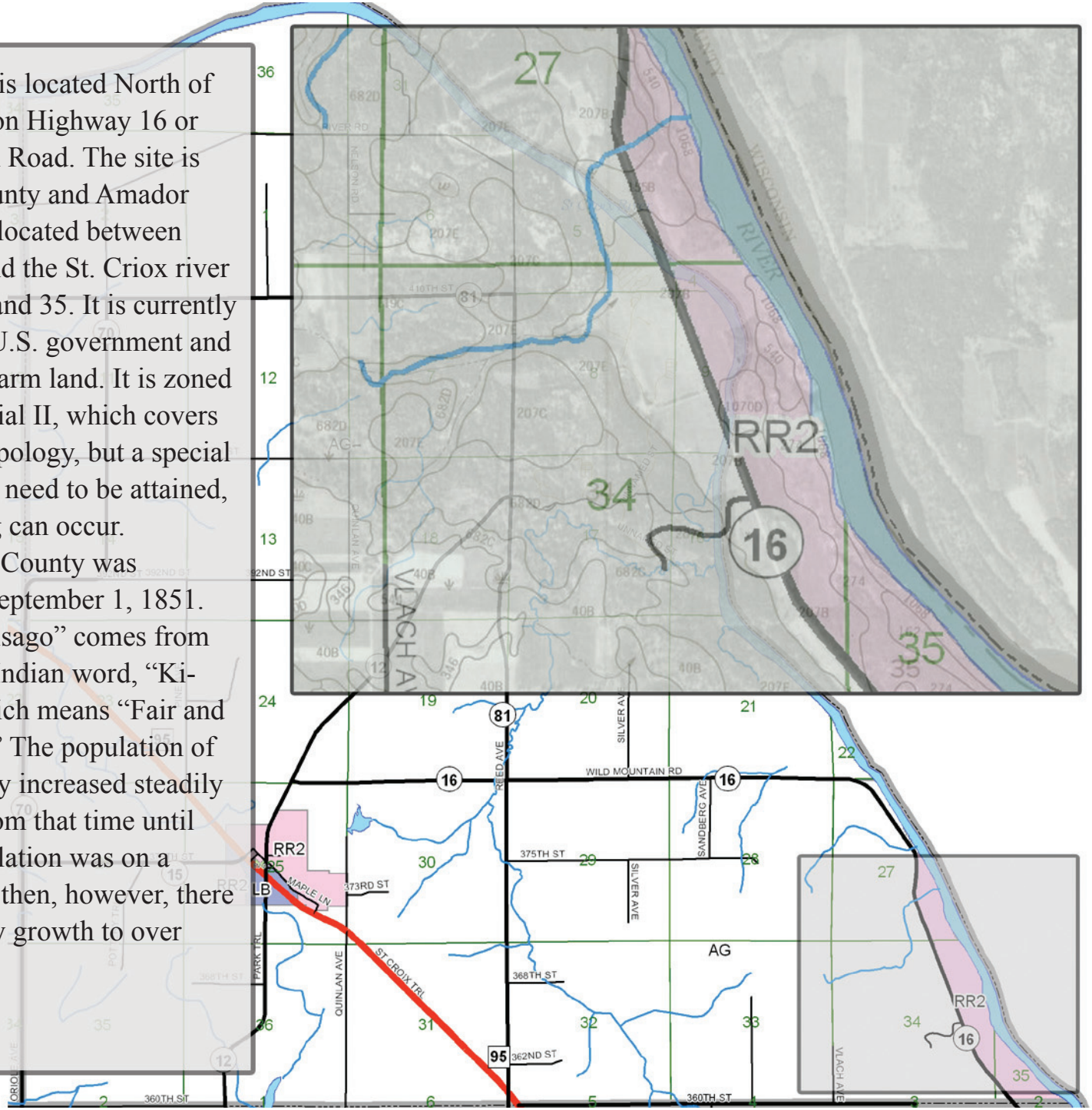

Site

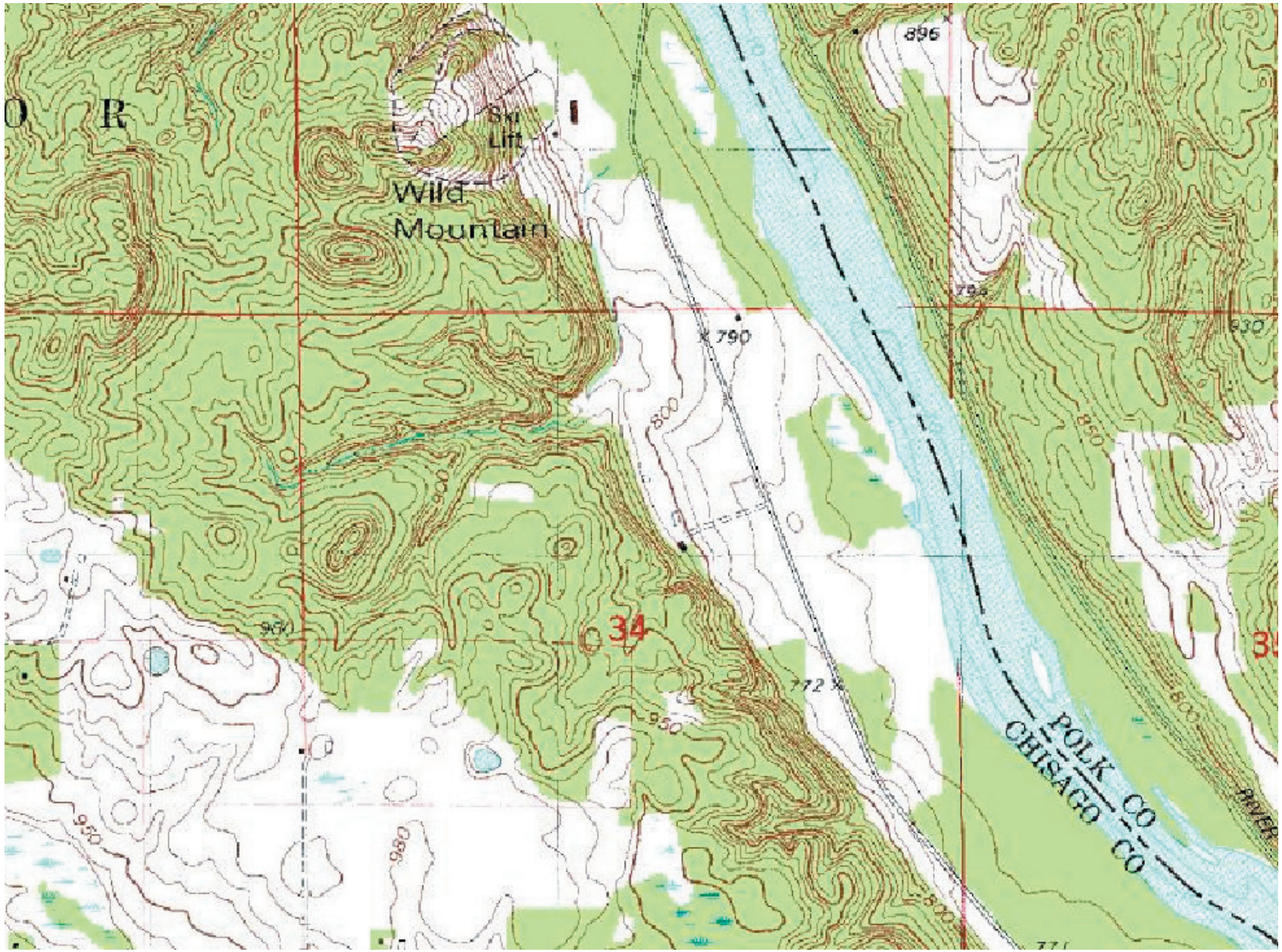

Chisago County
Amador Township
Taylor's Falls, MN

Location

The site is located North of Taylor's Falls on Highway 16 or Wild Mountain Road. The site is in Chisago County and Amador township. It is located between Highway 16 and the St. Criox river in sections 34 and 35. It is currently owned by the U.S. government and being used as farm land. It is zoned Rural Residential II, which covers some of this typology, but a special use permit will need to be attained, before building can occur.

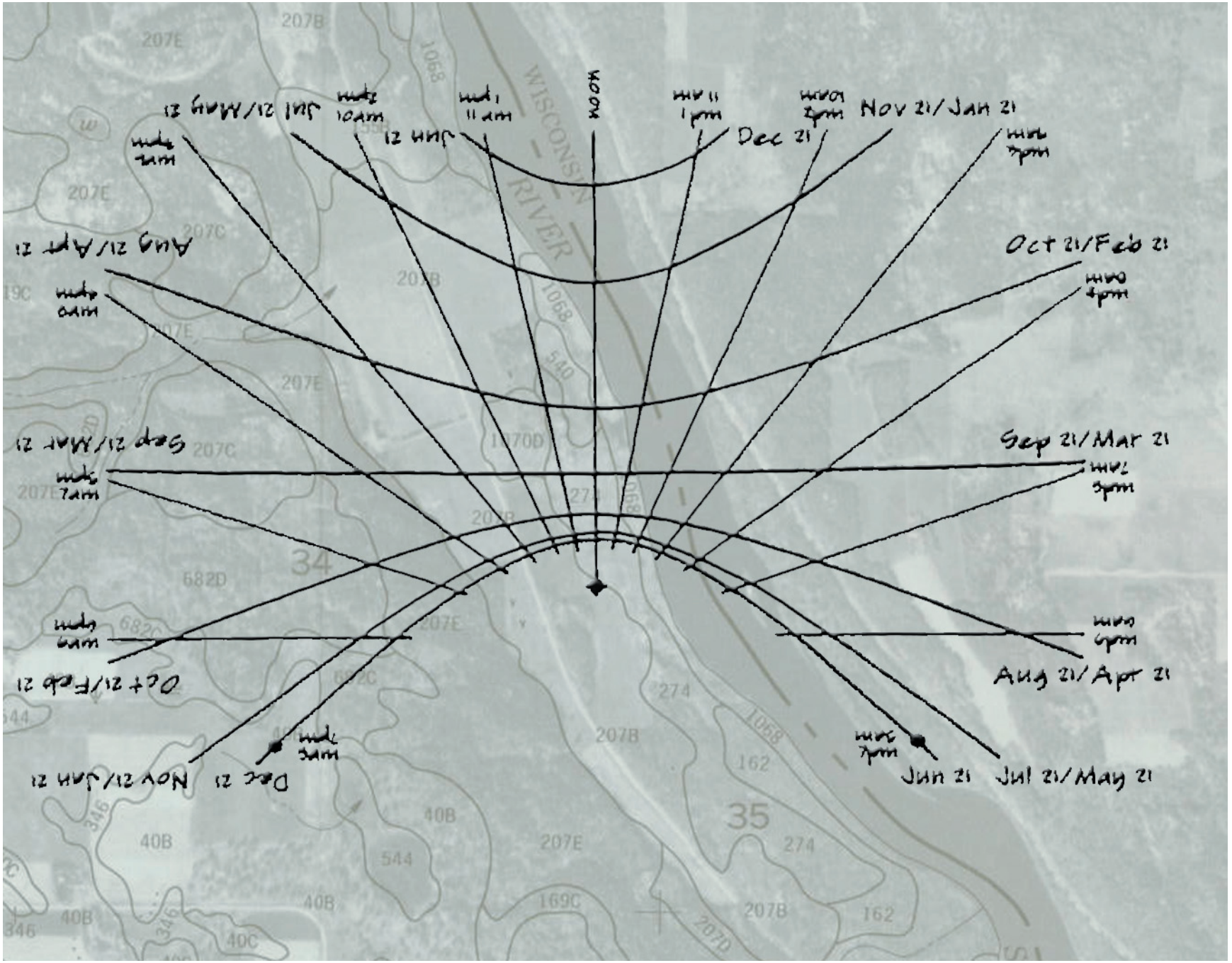
Chisago County was organized on September 1, 1851. The name "Chisago" comes from the Chippewa Indian word, "Ki-Chi-Saga", which means "Fair and Lovely Lakes." The population of Chisago County increased steadily until 1920. From that time until 1960, the population was on a decline. Since then, however, there has been steady growth to over 41,000 people.

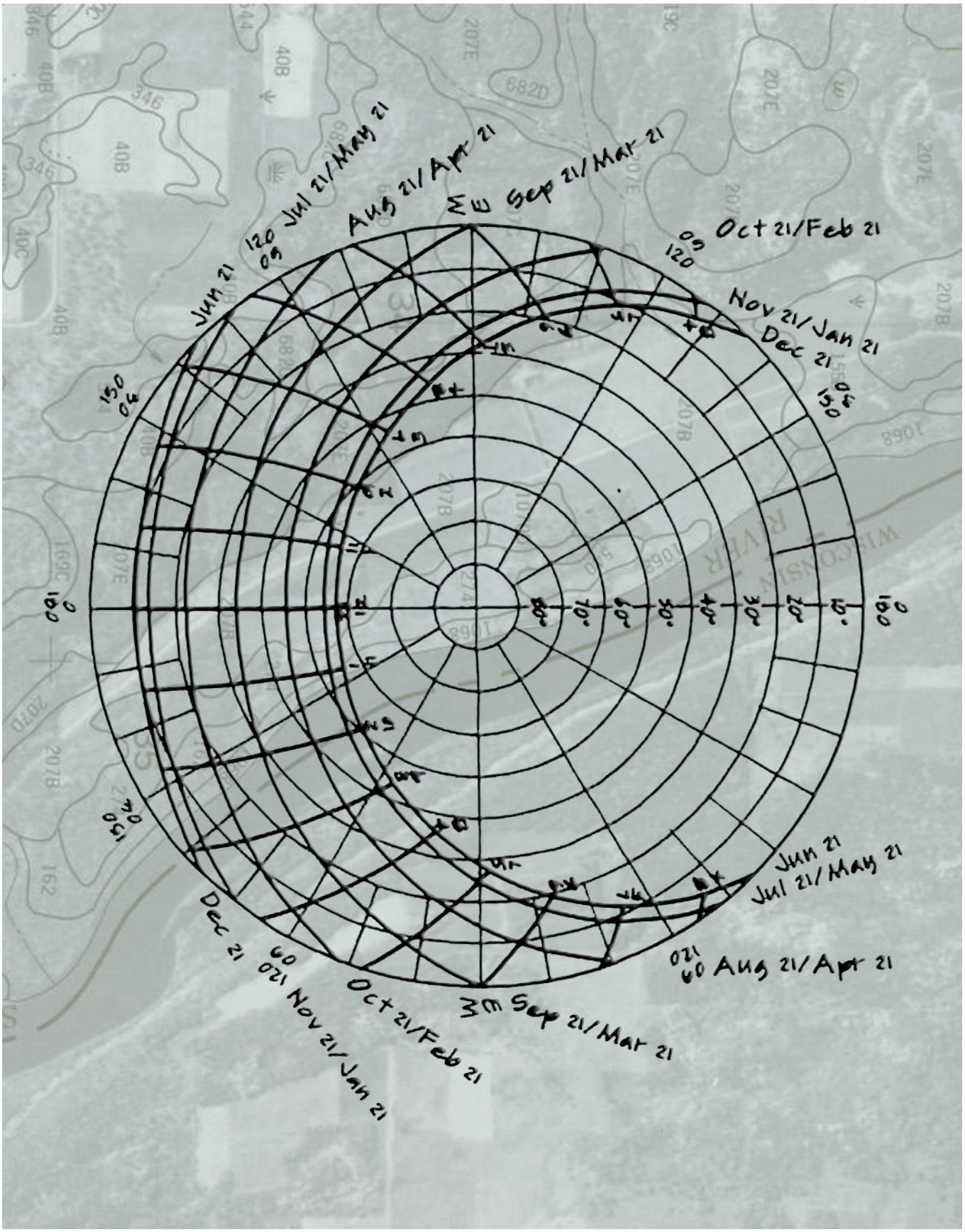



Ski
Lift
Wild
Mountain
896
790
800
850
930
900
34
772
950
POLK CO
CHISAGO CO
RIVER

Soil Types Present

Soil Discriptions; Appendix C.


Dec 21
Nov 21/Jan 21
Oct 21/Feb 21
Sep 21/Mar 21
Aug 21/Apr 21
Jul 21/May 21
Jun 21
WISCONSIN RIVER

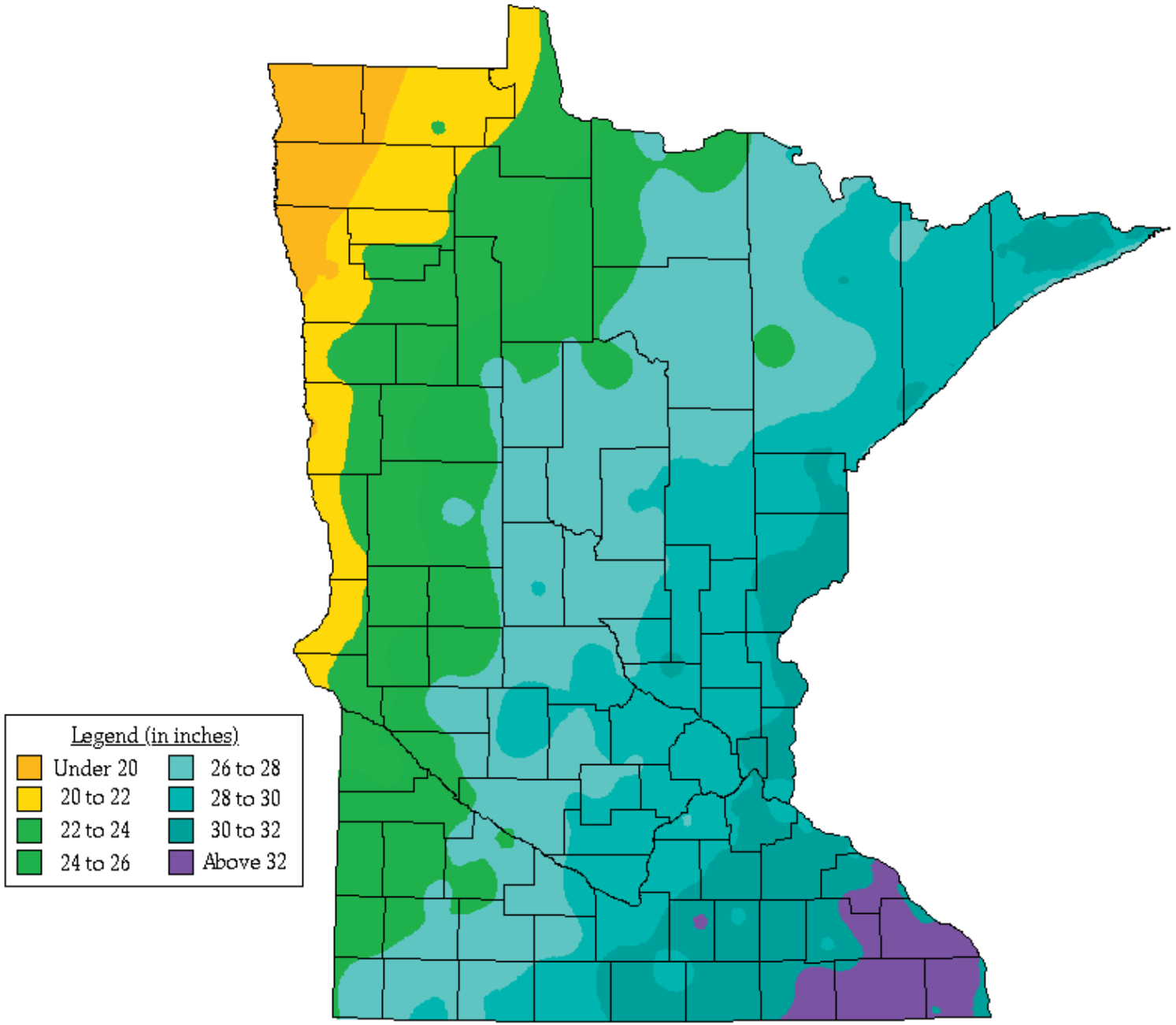

Jun 21
Jul 21/May 21
Aug 21/Apr 21
Sep 21/Mar 21
Oct 21/Feb 21
Nov 21/Jan 21
Dec 21

BIOCLIMATIC CHART

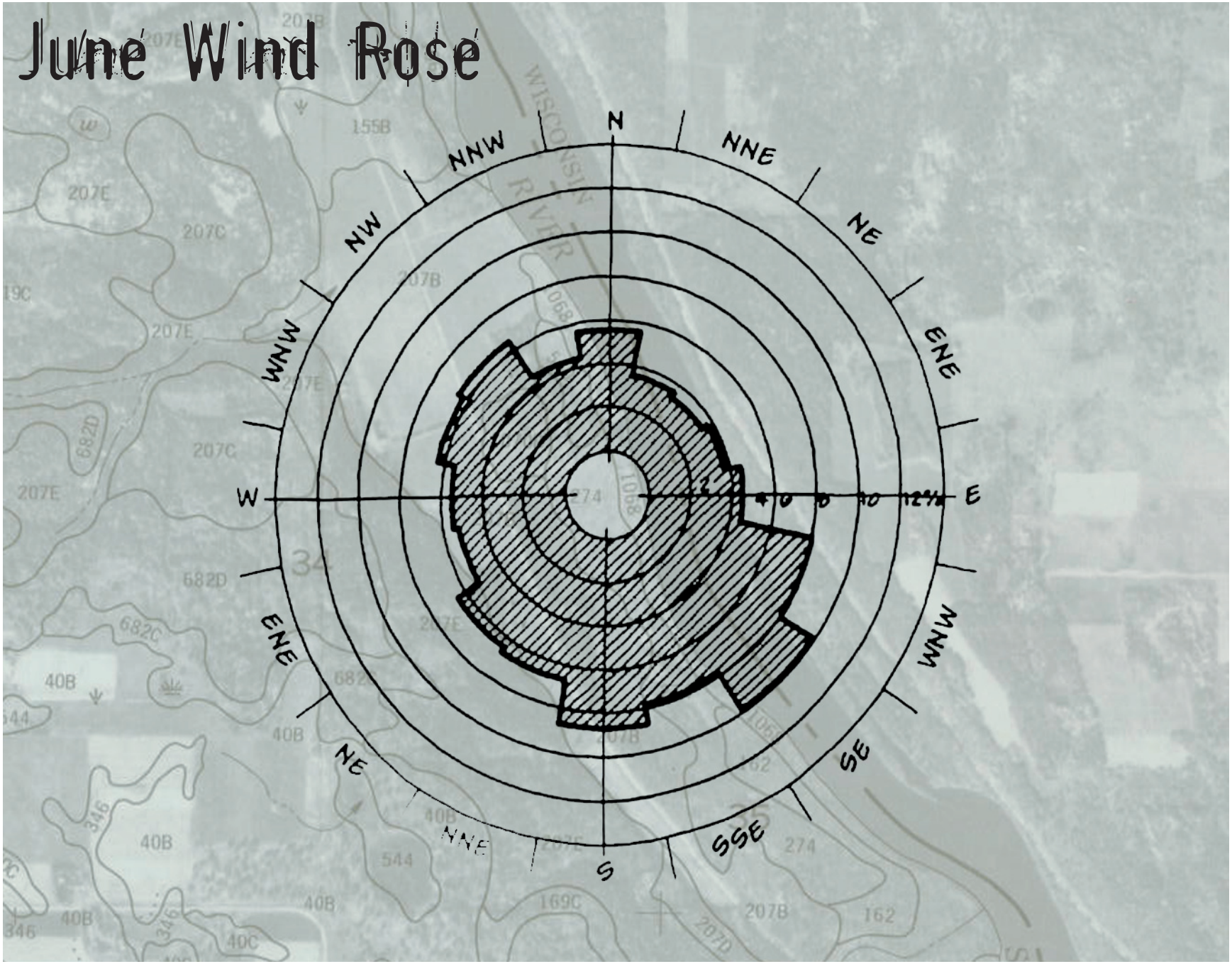
	Temperature (° F)					Rel Humidity		Wind (kts)			Sky	Mean # days w/ temp (° F)			
	means			extreme		(percent)		prevail		max	Cvr	max	max	min	min
	max	min	ave	max	min	6 am	3 pm	dir	spd	gst		90	70	32	10
Jan	21	4	13	57	-34	75	65	NW	12	58	OVR	0	0	31	17
Feb	27	9	18	60	-28	76	62	NW	12	48	OVR	0	0	27	12
Mar	39	22	31	83	-32	77	58	NW	11	52	OVR	0	1	25	3
Apr	56	36	46	95	2	75	48	NW	12	53	OVR	#	7	11	#
May	69	48	59	96	18	75	47	SE	9	58	OVR	1	20	1	0
Jun	78	58	68	102	34	79	50	SE	9	57	OVR	3	28	0	0
Jul	83	63	73	105	43	82	50	S	9	55	SCT	6	31	0	0
Aug	81	61	71	102	39	84	52	SE	8	62	CLR	4	30	0	0
Sep	71	50	61	98	26	85	53	S	10	47	OVR	1	22	#	0
Oct	59	40	50	89	15	81	52	NW	12	46	OVR	0	10	7	0
Nov	40	25	33	74	-17	80	63	NW	12	57	OVR	0	1	23	2
Dec	26	11	19	63	-29	79	68	NW	11	42	OVR	0	0	30	11
Ann	54	36	45	105	-34	79	56	NW	11	62	OVR	15	151	156	44

Climatic Normals, 1945-1990

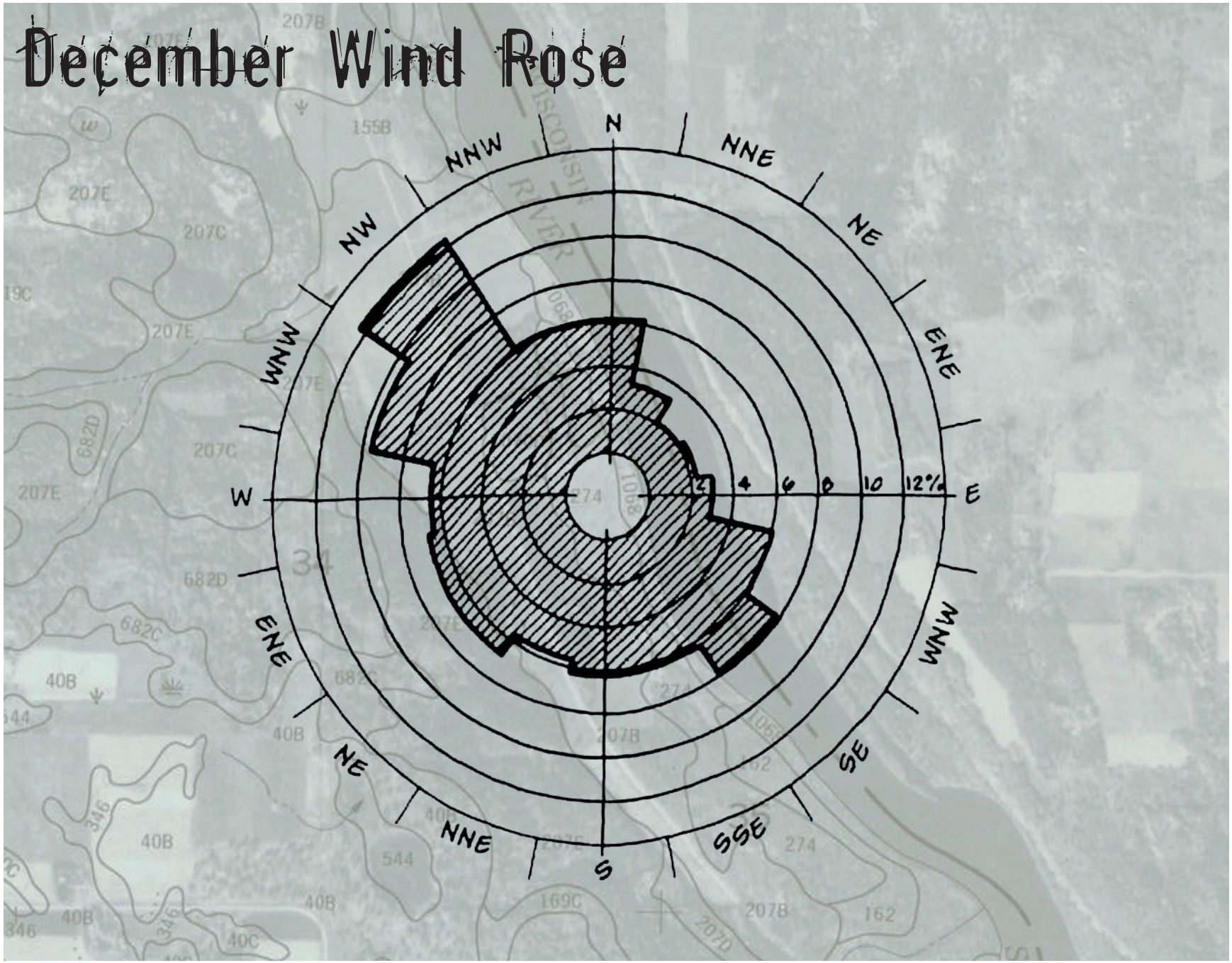
Annual Precipitation



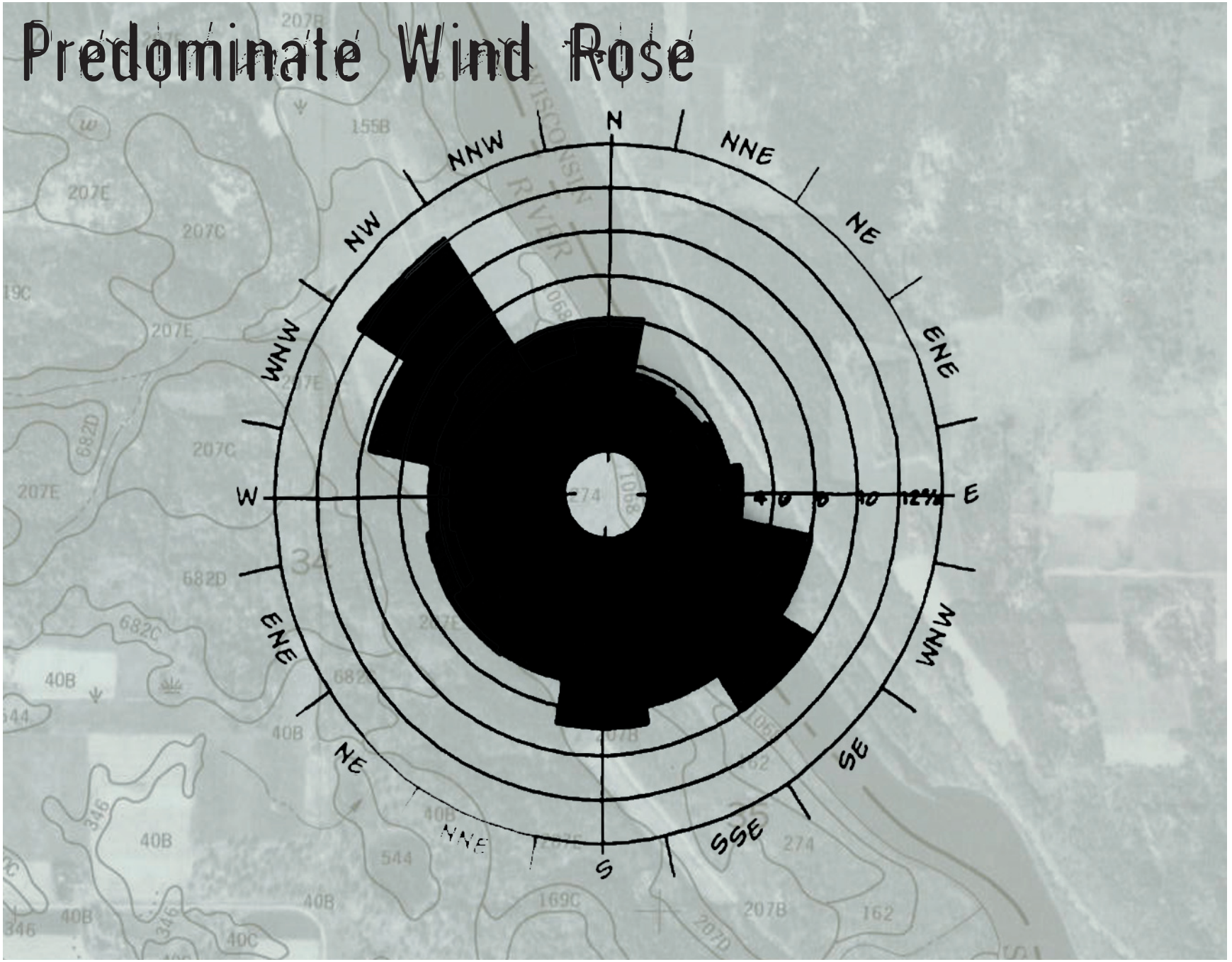
June Wind Rose



December Wind Rose



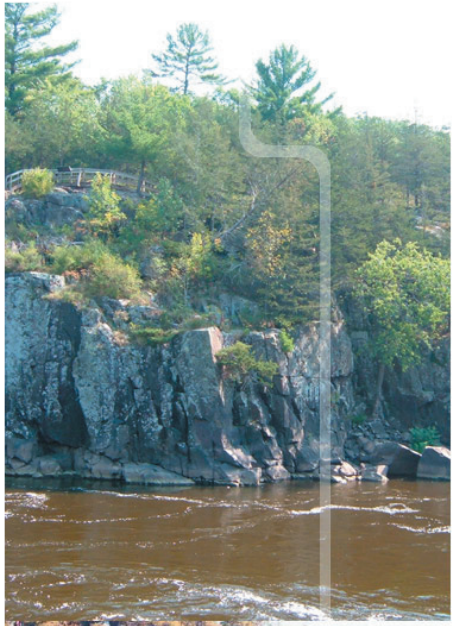
Predominate Wind Rose




Research

Where would California wine growers be without scientific research? They would be mass producing Concord wine, also known as church wine or jug wine. California has excelled as a leading wine producer because of scientific research. California has natural grape vines called Vitus Rotundfolia, which grow wild and are not particularly good to eat or make wine out of. Europe has been famous for their Vitus Vinifera grape vines, which are excellent for making wine from. What California wine producers have been doing for many years is graphing these two vines together to make a hybrid vine that will grow in California and also produce a good wine. Minnesota also has wild grapes growing through out our landscape, the underlying idea is to design a facility that can research and develop quality wines in Minnesota and produce enough, that the rest of the country can find out how good they are.

By designing buildings that derive from the earth from which they are built upon and rise up like they where a part of nature, I hope to have a comprehensive design that allows for quality wine production while expressing the wonderful environment that surrounds it. The first part of designing a building which is derived from the ground that it sits upon, is using natural products that are native to the area. The site itself is on a large sandstone plate while the surrounding area has extensive limestone and granite quarries. Another part of the design concept is to have the building form reflect the river and hills that roll along the river.



BIESANZ STONE

Minnesota Dolomite Limestone

Finishes

Machine Smooth

Brushed Hammer

Polished

Tapestry

Process

Quarry blocks n storage

Slab inventory

Block saw cutting slabs

Finished goods

Test Data

- ABSORPTION (AVE.)
  C97 1.67%
- DENSITY
  C97 163.3 PCF
- COMPRESSIVE STRENGTH
  C170 16.070 psi
- MODULUS OF RUPTURE
  C99 1,145 psi
- AIR INFILTRATION
  E283 PASSED
- WATER PENETRATION
  E331 PASSED

centennial timberframes

...building quality timberframes since 1988

Recycled Timbers

Building 503, constructed in 1942, was one of 255 buildings comprising the Twin Cities Army Ammunition Plant. A renaissance of deconstruction has been fueled by the availability of old-growth harvest and is one of the factors leading to the disassembly of Building 503, as opposed to demolition. The 1999 deconstruction of the Army Arsenal in St. Paul, Minnesota resulted in the salvaging of 1.5 million board feet of lumber, including Douglas Fir timbers. Many Centennial frames have benefited from the recovery of these beautiful timbers.

Beam

Hammer Beam

Before

After

Wine Making Process

Harvest - Grapes are gathered from the vineyard and Transported to the winery.

Crusher - Grapes are conveyed to a de-stemmer/crusher where grape leaves and stems are removed and the grapes are crushed.

Fermentation - Most red grapes go to the fermenter for Primary fermentation (the conver - sion of sugar into alcohol and CO2) while most white grapes are pressed prior to fermenta- tion. Yeast is added to start fermentation.

Press - After fermentation is com- plete, red wines then go to the press, to separate the wine from the grape skins and seeds.

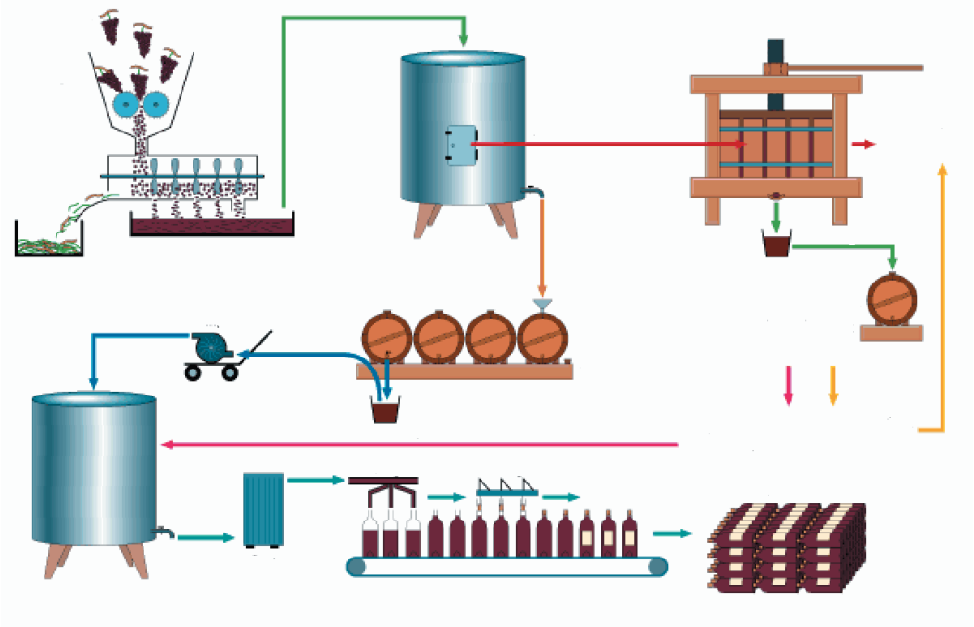
Tank - After fermentation, most wines are settled in large stainless steel or upright oak tanks.

Barrel - After settling, red wines and fuller-bodied white wines are put into small oak barrels for barrel aging.

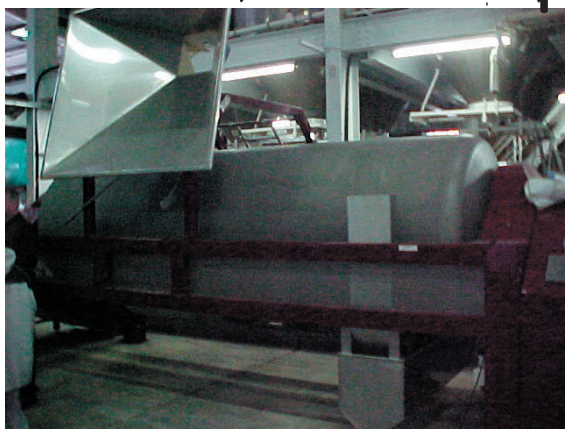
Filter - After barrel aging and prior to bottling, some wines are fined and filtered to help stabilize and clarify them.

Bottling - Finished wines are bottled and labeled

Aging - Many wines are aged further in the bottle; others are ready for immediate enjoyment.



Production Equipment



Grape Crusher

Fermentation barrels

Stainless Steel Tanks

Bottling Line

Grape Press

Filtration System

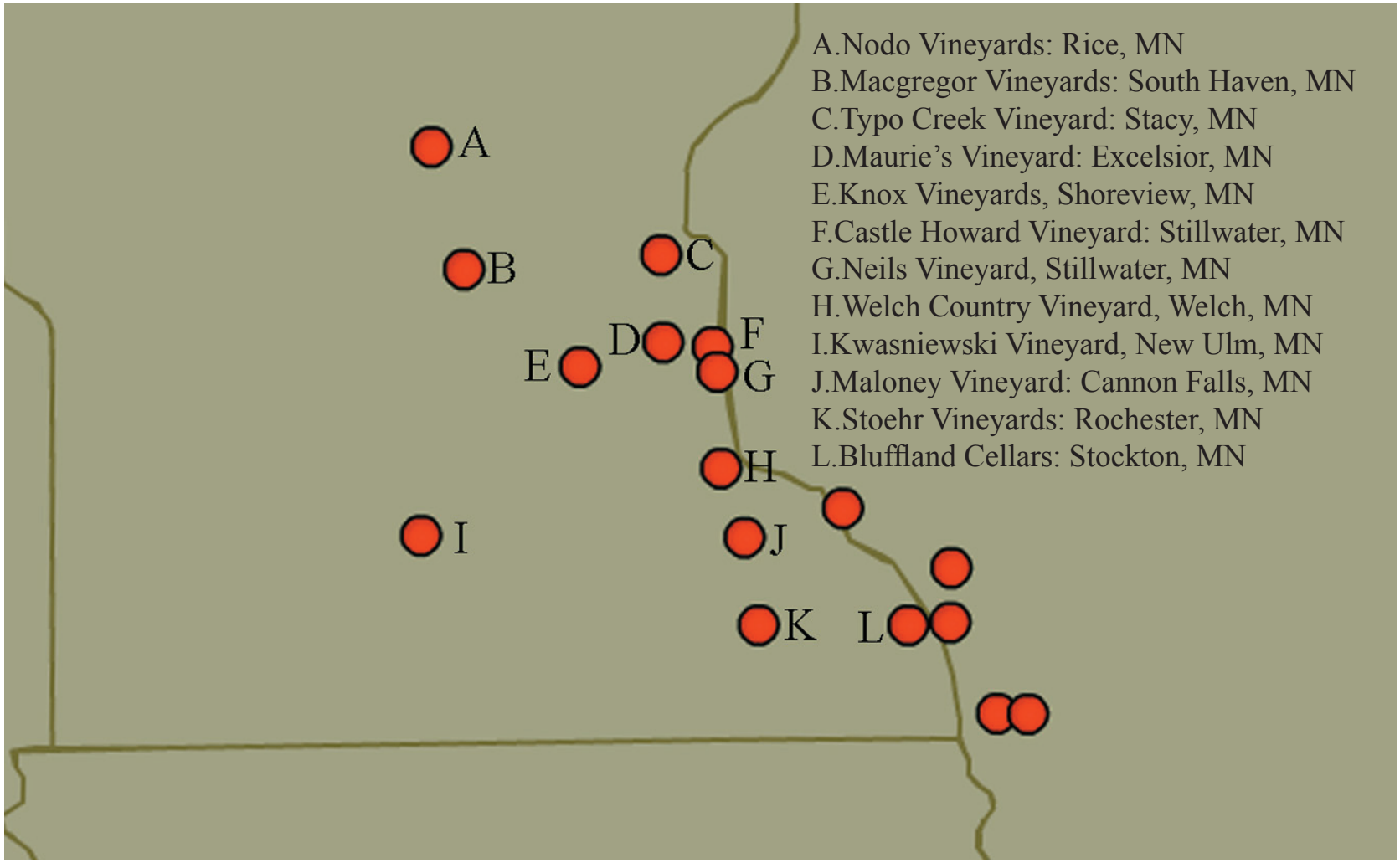
Grape-Growing in Minnesota
Minneapolis lies at the same latitude as the Bordeaux region of France (45 degrees North), and several hundred miles farther south than the great Rheingau region of Germany. As in these regions, the summers in south-central Minnesota are well-suited to grape vines -- sunny, warm, and with ample rainfall. Also, we too have an abundance of good vineyard sites, with rolling hills and bluffs along rivers and lakes. But unlike Europe, Minnesota has a continental climate. Early autumn frosts often cut short the growing season here. The severe winters sometimes damage even the hardiest of grapevines. The challenge to Minnesota grape growers has been to find grape varieties that can be grown within the limits imposed by our climate. That search has taken three directions . . .

Breeding Improved Varieties
For over 50 years, Wisconsin horticulturist Elmer Swenson has worked at breeding new and improved grape varieties especially adapted to the rigors of our climate. Seven of these varieties have been patented and released to cold-climate grape growers. At Northern Vineyards we use the varieties Edelweiss, St. Pepin, and LaCrosse to make white wines, and the red wine variety St. Croix to make a very successful varietal red wine with good body and fruit character. The winery has won numerous national awards for wines made from these grapes.
The University of Minnesota has had a grape-breeding program since 1983. Its sole release so far has been the red wine variety named Frontenac, which we have made commercially since 1996. We use it as a blending component of the Rivertown Red, and also bottle a portion of Frontenac as a 100% varietal under its own name.

The French-American Varieties
The French-American varieties were developed many years ago in France by crossing premium wine grape varieties like Chardonnay and Pinot noir with native American wild species (including our own riparia or wild riverbank grape). The best of these varieties combine the wine quality of fine wine grapes with the disease resistance and early ripening The French-American varieties lack winter hardiness in Minnesota, but can be grown successfully if they are protected from the winter cold. Late in the fall, these grapevines are cut down from their trellis supports, pinned flat on the ground and covered with soil or straw.
In the spring, as soon as the snow melts, the vines are uncovered and tied back up on the trellis for another growing season. This process is time-consuming and costly. But it has allowed us to produce some excellent wines here in Minnesota.

European Varieties
Some of the classic high-quality European wine varieties will ripen in Minnesota given good growing conditions and meticulous care. Northern Vineyards makes a limited amount of Minnesota-grown Chardonnay, Pinot noir, Pinot gris,

Minnesota currently has twelve vineyards growing different grape varietals. These vineyards include:



A.Nodo Vineyards: Rice, MN
B.Macgregor Vineyards: South Haven, MN
C.Typo Creek Vineyard: Stacy, MN
D.Maurie's Vineyard: Excelsior, MN
E.Knox Vineyards, Shoreview, MN
F.Castle Howard Vineyard: Stillwater, MN
G.Neils Vineyard, Stillwater, MN
H.Welch Country Vineyard, Welch, MN
I.Kwasniewski Vineyard, New Ulm, MN
J.Maloney Vineyard: Cannon Falls, MN
K.Stoehr Vineyards: Rochester, MN
L.Bluffland Cellars: Stockton, MN


Case Studies

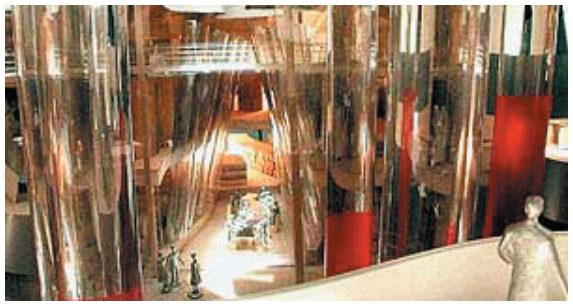
The project was announced in June 2000, the year the principal vineyard was planted with vines shipped from a nursery in Burgundy, France. The hope is that the winery will be completed in time for the vineyard's first release in 2006.

The winery will be sited at the center of Le Clos Jordan's principal 35-acre vineyard, on the gently sloping Jordan Bench of the Niagara Escarpment. Surrounded by environmentally protected forest and woodlands, the winery will be hidden from view, some 1,500 feet from the nearest road.

As visitors drive around the edge of the vineyard, the winery will slowly reveal itself, complementing the landscape as a gently flowing structure with softly curving white stucco walls and an undulating metal roof, reflecting the natural landscape and the sky. It is yet to be determined whether the roof will be titanium or stainless steel.

Gehry sees the roof as "a silver cloud floating over the vineyard with the winery spreading out beneath it."

The winery will operate on multiple levels both above and below grade to take advantage of the natural gravity flow within the wine making process. Sections for each of the key stages in wine making, including grape crushing, de-stemming, pressing, tank and barrel fermentation, together with a tasting lounge, a wine boutique, and a glass-enclosed gathering area in the red wine cellar, would be organized around a central, great hall from which each area would be clearly visible. The current design for the great hall calls for a series of floor-to-ceiling (possibly colored) glass columns soaring dramatically from their base in the underground cellar. Visitors will be guided through the winery via suspended catwalks and pathways at and below ground level. Designed to both accommodate and inspire the process of making exceptional red and white wines, the building will offer an exciting and informative experience for visitors who would be guided through all areas of the winery unobtrusively via suspended catwalks and pathways at and below ground level.



Location: Lincoln, Ontario

Client: Canada's Vincor International
& France's Boisset

Area: 35,000 square feet

Begin Design: 1999

Construction: 2003

Expected Completion: 2006

Expected cost: $30 million

Vineyard size: 137 acres

Production: 25 -30,000 barrels

Viniculture Manager :
Thomas Bachelder

Production: Estate bottled

Estimated price: $50 per bottle

Imported vines: Cote de Nuits and
Cote de Beaune region of
Burgundy

The Dominus winery is located near the small town of Yountville, 50 miles North of San Francisco. The architecture firm of Herzog & DeMeuron designed this 50,000 square foot box in California's Northern Napa Valley. The building is a 300 by 80 foot , two story box. The four outer walls consist of piles of rocks quarried from nearby American Canyon. The stones are held in place with gabions, steel-mesh usually used to prevent stones from falling onto cars following excavation of hillsides during highway construction. The size of the mesh and the stones it restrains becomes larger further up the building's walls. Thus the monolith appears to stand solidly on the ground.

The 300 by 80 foot box contains; storage tanks, cask rooms, a tasting room, and offices. Titl-up concrete walls in a completely separate structure inside the southern two-thirds of the building house the fermentation rooms and tank storage areas. Openings from the inside of most spaces allow visitors to look out through the gaps between the stones at the Napa Valley landscape.

The barrel and tasting rooms are contained in a similar one story structure at the north end of the building. An open suite of administrative offices sheathed in structural glass sits above this northern section. A concrete paved balcony rings the offices, turning the space between the glass walls and the stone curtain into a pergola shaded by the rocks.

Location: Yountville, Nappa Valley, California

Client: Chistian Moueix & Cherise Chen-Moueix

Architect: Valley Architects, Tom Faherty

Area: 50,000 square feet

Begin Design: 1995

Construction: 1996

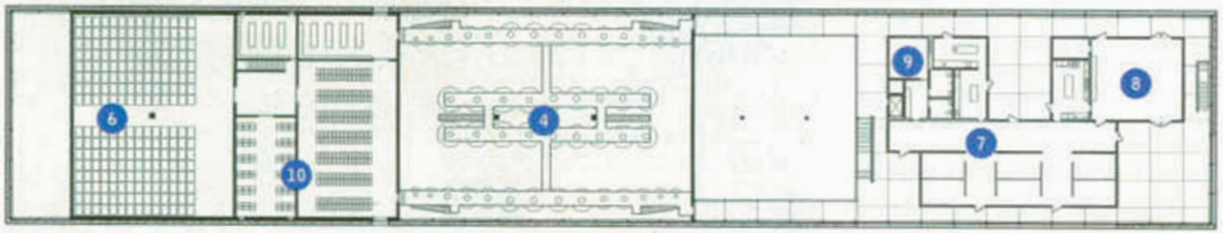
Expected Completion: 1998

Expected cost: $5.4 million

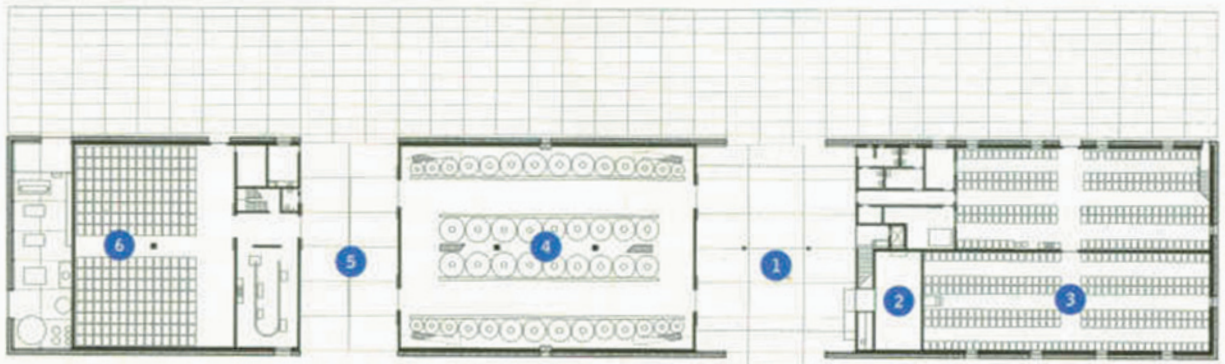



1. porte cochere
2. tasting room
3. barrel room
4. tank room
5. delivery area
6. bottled wine storage
7. offices
8. dining room
9. laboratory
10. library

North-south section



Second-floor plan



First-floor plan

Wine Haven is family-owned and operated by Kevin and Cheri Peterson, along with their sons, Kyle and Troy, WineHaven is one of the fastest growing wineries in Minnesota. After nearly 40 years of producing honey and fruit in the region, the Peterson's made their first commercial wines in 1995 and opened their winery shortly thereafter. Just three varieties of honey wine (mead) were produced that year; this year they produced nearly a dozen varieties of award-winning grape, honey and fruit wines. WineHaven is recognized as one of the top award-winning wineries in the Upper Midwest, having won state, national and international acclaim.

In an interview with Kevin Peterson, he told me how they burry the vines under a foot of dirt each fall to protect them from the harsh winter climate. Even with these precautions, he said they still experience twenty percent winter kill each spring. The vines they are using are from the northern part of New York. With one varietal that the University of Minnesota developed called Foch. The foch is a red grape, but has sweet characteristics. Ice wines also grow very well in this part of Minnesota. The frost that is allowed to engulf the grapes in the fall, helps to increase the sugar content.

The 35 acre vineyard surrounds the building site. Of the 35 acre vineyard, 5 acres support grapes with the rest of the vineyard growing other fruits. Deer are always a problem for Kevin. The deer, rabbits, and other animals are constantly in the vineyard eating the Peterson's product.

The Sanford winery was started in 2000 in the Santa Ynez Valley of Santa Barbara, California. The winery's owner Richard Sanford hired well known "green architect" Robert Mehl to design his mission-style winery. The facility features hand made adobe brick, recycled timbers, a Mexican tile roof, an elevator system for gravity flow wine making, recycling of both waste water and solid waste, and temperature and humidity control courtesy of Mother Nature.

The project is being built in multiple phases which are expected to take five to eight years to complete. The construction is being phased in the order of the wine making cycle, starting with the basic crush and fermentation facilities, timed to the 2001 harvest. Following these will be the barrel room, bottling area, case storage, shipping and receiving, offices, workshops, parking structure, housing and a tasting room.

The winery will feature 87,000 SF of buildings spanning an eight acre building site. The 425 acre Rancho Rinconada vineyard, planted in 1997, will file in around the building site. The main winery building will be 25,000 SF with a classic mission style, slightly taller center, with two wings on either side. The center will house the gravity tanks and the wings will house the barrel rooms.

A concrete vault in the form of a cross has chambers for four 3,600 gallon Westec tanks, that will be excavated 50 feet into the ground. The tanks are independently controlled, and can be lowered so that the top is three feet below grade or raised so the bottom is fifteen feet above grade by an electric powered elevator system. This set of movable tanks is used in all phases of both red and white wine making, from collecting press juice and wine filling and draining barrels. The entire integrated design tries to maximize the use of gravity and all but eliminate pumps. Transfer from tank to tank or to barrel is accomplished with one half inch hose and the gravity tanks.

There where roughly 150,000 adobe blocks used in this project and this is not just a facade, these adobe block are the heart of the structure. This makes Sanford's Winery the largest adobe structure built since the original California Missions two centuries ago. The blocks are referred to as the Sanford formula, which is 50% Rinconada soil, 40% rock dust from a local quarry, and 10% concrete sand. This combination results in 350 psi of pressure per block. The wall system consists of a poured concrete foundation, followed by an eighteen inches of cinder block, faced with broken sandstone in mortar. Then comes the 3,4"x7.5"x15" adobe bricks, each weighing about 20 pounds. The bricks are held in place with mud slurry and horizontal ladder wire. On top of the adobe are board-framed eight inch concrete bond beams, topped with a wooden plate. Besides standard rebar, there are half inch and five-eights inch galvanized all thread rods, anchored in the foundation and poking through the top wooden plates.

Sanford bought an abandoned sawmill in Klickitat, Washington, constructed in first-growth Douglas fir. They dismantled the lumber, creating 500,000 feet of lumber. The longest timbers being 80 feet long. Upon arrival the wood was fumigated and graded. The wood was then cut into specific sizes. Overall, 90% of the wood used in construction was from the original mill.

All the roofing is Mexican tile, made at a tile factory called in Tecate, Mexico. The company now offers this roofing tile as the "Sanford tile." The ceilings in the barrel room have nine inches of R45 insulation. With the help of the adobe brick and insolation, the temperature and humidity is controlled naturally.

The old winery and equipment was producing 50,000 cases of wine a year. SO the existing equipment made the move to the new building, with the hopes that it will be able to produce 80,000 cases of wine a year.

The grapes are all hand picked and arrive in half-ton bins. They are then loaded into a homemade hopper. The whole clusters of white grapes are moved by a Kiesel progressive cavity pump directly into a Europress EHP 8000 press. The press juice is collected in 3,600-gallon Westec tanks, chilled overnight, and moved the next day to either barrels or 3,600-gallon static fermenters. Tank whites are fermented at 60 degrees Fahrenheit. Racking from tanks to barrels for fermentation makes use of the York Machine Works bent-tube racking system, which removes juice from the top, not through the settled sediment.

Red grapes go through an Amos crusher/destemmer, with the rollers open all the way. Half ton bins collect the grapes from the elevator crusher, and they are dropped into one of 21 open top Westec fermenters. It is then chilled down to 50 degrees Fahrenheit fro two days, treated with Color Pro but no SO2, and inoculations.

Red fermentation temperature are kept at no more than 90 degrees Fahrenheit. Ten days after the crush the wine is screened and drained through hoses into one of the gravity tanks. The pomace is collected and pressed in a smaller Europress 5000. It is then transferred into barrels. The barrels are stacked three high in a pyramid shape.

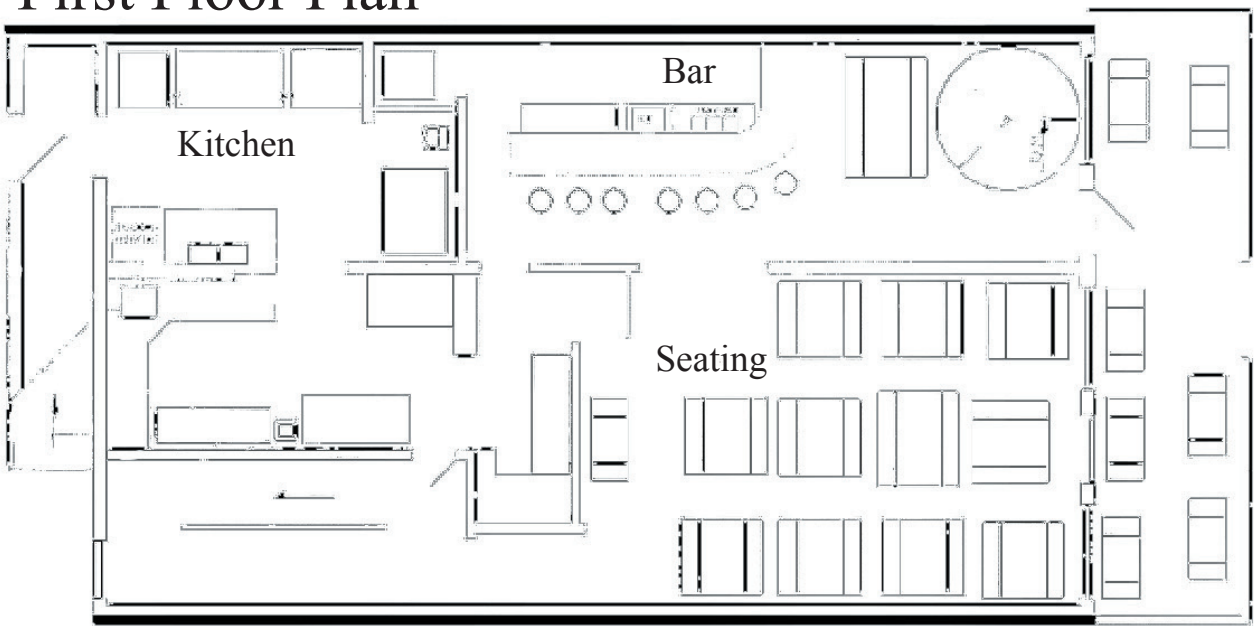
All the winery's water is supplied from a horizontal well drilled into a spring in the nearby hills. The water fills three 30,000-gallon cisterns. One is reserved for irrigation; the rest is available through an eight inch line to the winery. The water used in the glycol cooling system has to be distilled, because of the hard water. Hot water is provided by a large EPA approved clean burning wood stove; the broiler can heat up to 10,000 gallons of water a day.

The waste water goes first to a holding pond at the winery, it then goes through a solids filter on route to a aeration pond across Santa Rosa Road. The pond will eventually be stocked with fish, and the water recycled through the vineyard drip lines. Bathroom water gets filtered and sent off to one of two leach fields interspersed among vineyard rows. Grape and vine waste either gets tilled into the soil or burned and scattered as ash.

Monk's Vineyard Restaurant

Location: 56 Saint George Street, St. Augustine, FL
Value: $1.8 Million
Classification: Historic Preservation
Site Area: 1,624 SF
Building Area: 1,344 SF per floor
Floors: 2
Occupancy: 88 people
Spaces: Bar, Dinning Room, and Kitchen

First Floor Plan



Equipment List

Cappuccino Machine
Coffee Grinder
Coke Dispensing Unit
Ice Sink
3 Compartment Bar Sink
Electric glass washer
Refrigeration - Draft Beer Box
Refrigeration - Bottle Beer Box
8 Bottle Wine Bar w/regulator
2 Credit Card Approval Units
Credit Card Slip Printer
Credit Card Imprinter
2 Cash Registers w/printers
UPS - Uninterrupted Power Supply
Misc. Bar ware
Alarm System
Food Steamer
Coffee Machine
Time Clock
Refrigeration - 2 Door SS Salad/ Sandwich Prep
Refrigeration - 2 Door SS Reach-In Cooler
Refrigeration - 2 Door SS Work Top
Refrigeration - 1 Door SS Reach-in Freezer
Meat Slicer
Food Processor
Wood-Top Worktable
Automatic Dishwasher System
Dish Table w/Sink
3 Compartment SS Scullery Sink
Mop Sink
2 Microwave Ovens
Gas Range
Gas Char broiler
4 Fire Extinguishers
3 Hand Sinks
Exhaust Hood System
Fire Suppression System
450# Ice Machine
900# SS Ice Bin
Misc. Service ware
Misc. Cookware
Refrigeration - 4x6 Step in Cooler w/Shelving
2 Dry Food Shelves
Refrigeration -1 Door Freezer
Clothes Washer & Dryer
Refrigeration - 2 Door (150+ Bottle) Wine Cooler
Safe
Piano
Sound System
4 Window A/C
Floor Matting

Charles Sturt University's Thurgoona Campus is a developing, dynamic model of how communities can address environmental concerns and sustainable living for decades to come. Special features of the site include the minimal use of energy and on-site management of water and waste. Buildings are constructed of rammed earth walls and concrete floors, which store the sun's heat in winter and keep buildings cool in summer. Large, shaded windows with recycled timber frames provide ample ventilation, daylight and views.

The buildings have been recognized for their innovative design and sustainable use of resources with three awards during 2000 from the NSW Chapter of the Royal Australian Institute of Architects and the national industry body, the Master Builders of Australia.

The thermal mass of the rammed earth walls, concrete floors and ceiling slabs act as heat sinks to stabilise temperatures in rooms, storing the sun's heat and warming buildings in winter and cooling during summer.

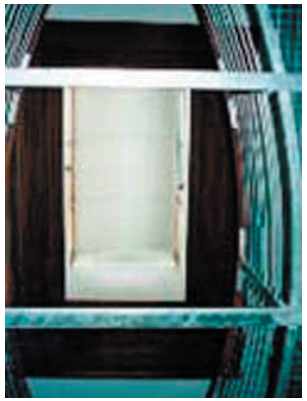
Wool insulation in ceilings insulates the roof against penetration by the sun's heat in summer and traps heat in buildings during winter. Window shading from all direct summer sun reduces room heating and the impact of glare. In summer, the system works in reverse, with piped water that is warmed during the day being pumped to the solar collectors at night to allow heat to be dissipated and the water to be cooled. The cooled water is then circulated through the building to cool it.

Ventilation improves cooling in buildings at night, through the use of automatic louvre vents, which flushes hot air from large spaces and lowers the internal temperatures. Low level vents are located beneath windows in each room, while high level vents are located in large central shafts or high roofs. Cross ventilation is attained through air moving through openable windows and vents in the central shafts or roofs.

Air is also circulated in each room by a reversible ceiling fan, which mixes warm air near the ceiling with lower cool air during winter. The fan reverses air flows during summer to move warm air out of rooms to cool them. Thermal chimneys in office and teaching buildings and the Herbarium assist internal cross ventilation between offices and corridors and help cool the building, as hot air rises and exits through louvres at the top of each stack.

All buildings on the Thurgoona site include:

- Recycled timber, used in joinery, structure and door and window frames, as well as plantation timber.
- Recycled library shelving,structural steel and glass, particularly from the refurbished NSW State Library.
- Minimal use of PVC piping in plumbing.
- Wool roof insulation.
- Wool and linoleum floor coverings.
- Non-toxic paints and timber.
- Mesh guards provide protection from termites.

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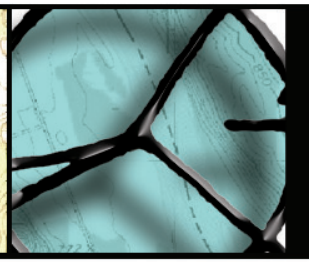
Appendix



Restaurant & Winery

COREY PETERSON

For the past year or so, I have taken a class in vinefication and worked in the beverage industry. I have discovered a great love for wine. I have emmersed myself in the complicated process of vinification. For me art, architecture, and wine go hand in hand. There are many things we as Architects can draw from the process of vinefication.

I chose a location in southeast Minnesota, the site is fifteen miles from the city of Taylor's Falls. Taylor's Falls is a small community on the St. Croix river, with a population under one thousand people. Taylor's Falls is forty-five miles form the Twin Cities and just across the river from Wisconsin.

The client for this project will be Hal Gershman, owner of four Happy Harry's bottle shops in Fargo and Grand Forks. Hal is also the president of the North American Wine Guild.

The region of southeast Minnesota is developing as a lagitamate wine growing area. The problem being, the area lacks the economic support to deveop large scale wineries that produce enough wine to ship to other areas of the country. With developing a vineyard and winery that are capable of producing wine to serve the whole state and country, Minnesota will come to the forefront of U.S. wine making. By also opening a restaurant and wine bar, the income from the restaurant and wine bar will compinsate for the winery until grape production is at it's peak.

A. Title:

Taylor's Falls Restaurant, winery, and place for viticultural research.

B. User / Client Description:

The primary users of the restaurant and wine bar will be people that live near by and tourists. The Tailor's Falls area is a great place to go hiking, canoeing, and a lot of other outdoor activities, which will bring weekenders in. It is also only 45 minutes away from Minneapolis, which should bring people in.

The primary users of the winery, research facility, and vineyard will be the employees. The secondary users of the winery and vineyard will be tourists. People will be able to walk around the vineyard and explore the different aspects of the landscape. The winery itself will be experienced by these secondary users only during guided tours.

The client for this project will be Hal Gershman, owner of four Happy Harry's bottle shops in Fargo and Grand Forks. Hal is also the president of the North American Wine Guild.

C. Major Project Elements:

Site
80 acre vineyard
Outdoor space
Picnic areas
River accommodations
Winery
Wine portico
Crush Pad – de-stemming / crushing
Fermentation
Barrel Room

C. Major Project Elements(cont.)

Bottling Line
Shipping Area
Retail Shop / Tasting Room
Restaurant
Seating (smoking/non-smoking)
Kitchen
Wine Bar
Storage
Cooler
Wine Cellar
Waiting Area
Restrooms
Research Facilities
Offices
Laboratories
Restrooms

D. Site Information:

The site is located in southeast Minnesota, the site is fifteen miles from the city of Taylor's Falls. Taylor's Falls is a small community on the St. Croix river, with a population under one thousand people. Taylor's Falls is forty-five miles form the Twin Cities and just across the river from Wisconsin.

The site lies between highway 16 and the St. Croix river. It is zoned Rural Residential II and consists of mostly sandy loam soil. The land is currently a combination of pasture, farm land, and woodland areas. The site is 80 acres and orientated North and South.

E. Emphasis:

Winery Design

Designing a place for wine production. From the harvest to the bottling and shipping. There are many integral parts to wine production and a lot of research will be done to determine everything that is needed.

Restaurant Design

The design of a formal dinning setting that centers around quiet dinning. The highest quality of food, decor, and staff will be sought after. An attached wine bar will be centered around casual relaxation. The décor will be different and the atmosphere will be centered around a casual coffee shop atmosphere.

Research Facility Design

The research facility will work with grape vines and attempt to graph wild Minnesota vines with Eastern U.S.A. grape vines. The facility will be small but organized and centralized around the task of graphing vines together and testing the products.

Landscape Design

The landscape is going to be very important to the design. Being tourist will be arriving to tour the vineyard and winery, the landscape has to be very welcoming and usable. The landscape will serve specific purposes and interact with the different buildings. The landscape needs to interrelate with the existing landscape, but also develop an interaction between the users and the buildings.

F. Typology:

This project will consist of multiple buildings and the land uses surrounding them. The project will consist of a vineyard and buildings for housing the tools and machines for maintaining a vineyard. It will also consist of a winery, where the grapes will be processed, stored, and shipped from. As a part of the winery, there will be a viticultural research center, that will research grape varietals and graphing vines to develop a hybrid vine that will produce more efficiently in Minnesota. The project's secondary, but integral part is a restaurant and wine bar. The restaurant will be fine dinning and the wine bar will have a casual atmosphere, where people can relax and enjoy a nice glass of wine. The last part of the design that will help to tie all these different buildings together and create a harmonious operation is the site detail and landscaping.

G. Theoretical Basis:

Where would California wine growers be without scientific research? They would be mass producing Concord wine, also known as church wine or jug wine. California has excelled as a leading wine producer because of scientific research. California has natural grape vines called Vitus Rotundfolia, which grow wild and are not particularly good to eat or make wine out of. Europe has been famous for their Vitus Vinifera grape vines, which are excellent for making wine from. What California wine producers have been doing for many years is graphing these two vines together to make a hybrid vine that will grow in California and also produce a good wine. Minnesota also has wild grapes growing through out our landscape, the underlying idea is to design a facility that can research and develop quality wines in Minnesota and produce enough, that the rest of the country can find out how good they are.

H. Project Justification:

South East Minnesota is home to fourteen vineyards and many small wineries. These wineries each grow between five to ten acres of grapes each. This is not enough to produce many bottles of wine, so they buy grapes form California and mix them together. South East Minnesota has appropriate soil, but the climate and number of growing days are not ideal. Our growing season is between ten and twenty days shorter than New York's. Our winter temperature also gets fifteen to thirty degrees colder. One way this region is combating these temperatures, is by burying the vines during winter. These is fairly effective, but there is still winter kill. My goal is to develop a winery and work on graphing the wild Minnesota vines with Vitus Labrusca, the American vine, which will produce a quality wine and reduce winter kill.

I. Design Methodology:

There are two main focuses to the design process. The site conditions and the river will be the basis for building orientation, materials, and structural design. Where the site will aid in the design of aesthetic portions of the project the Building use and processes within the buildings will help to design the building layouts and space relationships. The concept of having buildings that are technically sound and relate with their site is the underlying bases for design.

J. Research Direction:

Research is going to be a big part of this project. There needs to be research into the conditions for growing grapes as well as the process of making wine from the grapes. Research about the demographics, history, site analysis, and weather conditions. There needs to be equal amounts of research into restaurants, and wine bars.

K. Design Documentation:

The program will be the primary place for documentation of my research. Everything that I find through research will be documented in the program. All the information is important and thus will be included in the thesis program.

L. Schedule Of Work Plan:

Fall Semester

Week 1: (Oct. 4-8)

Oct. 7	Thesis proposal due
Oct. 7	Student critic preference slips & faculty preference slips available
	Research

Week 2: (Oct. 11-15)

Oct. 14	Students and Faculty return preference slips to main office
	Research

Week 3: (Oct. 18-22)

Oct. 21	Primary and Secondary Critics announced
	Research

Week 4: (Oct. 25-29)

Oct. 28	Last day of AR/LA 561 class
	Research
	Define the Program

Week 5: (Nov. 1-5)

	Research
	Work on program
	Work on draft of program

Week 6: (Nov. 8-12)

Nov. 11 Veteran's Day
Organize site information
Work on draft of program

Week 7: (Nov. 15-19)

Nov. 15-19 Final week of design studio
Research
Work on draft of program

Week 8: (Nov. 22-26)

Nov. 24 Draft Thesis Program due to Primary Critic (1 copy)
Nov. 25-26 Thanksgiving Holiday
Site analysis and building documentation

Week 9: (Nov. 29- Dec. 3)

Organize site information and building documentation

Week 10: (Dec. 6-10)

Dec. 9 Final Thesis Program due to Primary Critic (1 copy)
Dec. 10 Last day of classes
Review of program with Thesis Critic to determine areas of refinement
Work on final program draft

Week 11: (Dec. 13-17)

Dec. 13-17 Final Exams
Dec. 16 Program grade due to A/LA 561 course instructor

Week 12: (Dec. 20-24)

Research

Week 13: (Dec. 27-31)

Research

Week 14: (Jan. 3-7)

Research

Spring Semester

Week 15: (Jan. 10-14)
- Jan. 11 Classes begin
- Conceptual and schematic design

Week 16: (Jan. 17-21)
- Jan. 17 Martin Luther King, Jr. Holiday
- Feb. 21 President's Day Holiday
- Conceptual and schematic design

Week 17: (Jan. 24-28)
- Conceptual and schematic design

Week 18: (Jan. 31 – Feb. 4)
- Conceptual and schematic design

Week 19: (Feb. 7-11)
- Conceptual and schematic design

Week 20: (Feb. 14-18)
- Design Development

Week 21: (Feb. 21-25)
- Design Development

Week 22: (Feb. 28 – Mar. 4)
- Design Development

Week 23: (Mar. 7-11)
- Mar. 7-11 Mid-semester Review
- Design Development

Week 24: (Mar. 14-18)
- Mar. 14-18 Spring Break
- Presentation Drawings

Week 25: (Mar. 21-25)
- Presentation Drawings

Week 26: (Mar. 28 – Apr. 1)

Mar. 25-28 Easter Holiday
Presentation Drawings

Week 27: (Apr. 4-8)

Presentation Drawings

Week 28: (Apr. 11-15)

Presentation Drawings

Week 29: (Apr. 18-22)

Presentation Drawings

Week 30: (Apr. 25-29)

Apr. 25 Thesis projects due at 4:30pm in the Memorial Union Ballroom

Apr. 26-27 Annual Thesis Exhibit in the Memorial Union Ballroom

Apr. 28 Final Thesis Review

Apr. 29 Draft of Thesis document due to Primary Critic

Week 31: (May 2-6)

May 1-5 Final Thesis Review

May 6 Last day of classes

Week 32: (May 9-13)

May 9-13 Final Exams

May 12 Final Thesis Document due at 4:30pm in the Department Office

May 13 Commencement at 4:00pm Fargo dome

M. Documentation of the Design Process:

All of the research that I find and design decisions I make will be documented in a binder. Documentation will consist of free hand sketches, AutoCAD drawings, Form Z renderings, word documents, and raw data.

N. Bibliography / Resources:

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O. Previous Studio Experience:

2nd Year Fall: (Hatlen)
Spherical Shape Design
Nativity Elementary School Library

2nd Year Spring: (Yergens)
Building Element Presentation
Live / Work Studio
Church Addition
Hitterdahl Church

3rd Year Fall: (Prafcke)
Construction Material Presentation
Ronald McDonald House
Implement Dealership

3rd Year Spring: (Martens)
Fluid Motion Center
New Memorial Union

4th Year Fall: (Barnhouse, Urness)
Urban Design

4th Year Spring: (Kratky)
Medium Density Housing
Bioclimatic High-Rise

5th Year Fall: (Martens)
Valley City RFP

Hemp Textiles

100 % hemp natural blue
- plain weave

$11.00 / yard

100 % organic cotton
- sage & gray

$13.00 / yard

100 % hemp barely blue
- plain weave

$11.00 / yard

100 % organic cotton
- rust & barely

$13.00 / yard

100 % hemp natural straw
- plain weave

$11.00 / yard

100 % plain hemp weave
- semi bleached

$16.00 / yard

100 % hemp textured
weave

$18.00 / yard

100 % hemp flax
- pinwheel weave

$17.75 / yard

Cost Comparison

For Recycled Timbers

Size: 8” x 8” x 8’

Cost: $5.00 Lineal Foot
Total Cost: $40.00

Origin: Milled

Size: 8” x 8” x 8’

Cost: $4.50 Square Foot
Total Cost: $24.00

Origin: Recycled

Economic Impact
of Wine Industry in California

SAN FRANCISCO – California wine is the number one finished agricultural product in retail value from the state, and its industry has a total annual economic impact on the state of $33 billion in wages, revenues and economic activity, according to a comprehensive new report commissioned by the Wine Institute and the California Association of Winegrape Growers. Independent industry consultants Motto, Kryla & Fisher LLP (MKF) in St. Helena prepared the study entitled, "Economic Impact of California Wine," which was released at the World Trade Club in San Francisco today.

The research showed that California's wine industry and affiliated businesses provide 145,000 full-time equivalent jobs in the state, with a total of $4.3 billion in gross wages. California received $1 billion in taxes and other business licenses and fees, and the federal government and other states and local municipalities collect an additional $2.1 billion a year. California's wine industry generated an estimated $12.3 billion in retail sales in the U.S. in 1998, and tourism directly related to the wine industry results in expenditures of $1.2 billion annually. California, if it were a nation, would be the fourth leading wine producer worldwide, and accounted for over $500 million in exports in 1998, or an estimated 98 percent of wine shipped from the U.S.

"The MKF Impact Study validates the position of the California wine industry as one of the crown jewels of the state's economy, culture and world class image," said John De Luca, president and CEO of Wine Institute. "The economic data clearly demonstrate that the jobs, revenue, taxes and trade generated by our vintners, growers and affiliated sectors constitute an ever expanding asset to California's overall agriculture, commerce, tourism, cuisine and international appeal."

President of the California Association of Winegrape Growers Karen Ross stated that "California's wine community is uniquely tied to the land and natural resources of this state. Vineyards represent a long-term commitment with a significant statewide investment mainly by families and family owned corporations. Many may see vineyards as merely a part of the rural landscape. The MKF report substantiates these same vineyards are the starting point for creating jobs as diverse as our wines, and generating billions in income and tax revenues that benefit Californians in distant cities throughout our state."

California Wine	Economic Impact
Number of Wineries	847
Number of Grape Growers	4,400
Full-time Equivalent Jobs	145,000
Wages Paid	$4.3 billion
Wine Produced (750ml Bottles)	2.6 billion
Retail Value of California Wine	$12.3 billion
Wine Sales Growth Rate (Compound Annual Rate 1994-1999)	12%
Tourism Expenditures	$1.2 billion
Number of Visitors	10.7 million
Taxes Paid (California / Total)	$1 billion / $3.1 billion
Charitable Contributions	$62 million

TOTAL ECONOMIC IMPACT

Revenue:	California Economic Impact
Winery Sales	$7,900,000,000
Retailers and Restaurant Wine Sales (in California)	4,425,000,000
Distributors Sales (in California)	3,000,000,000
Retailers and Restaurant Wine Sales (in California)	4,425,000,000
Wine Grapes (excluding Thompson Seedless)	1,600,000,000
Tourism	1,200,000,000
Glass	1,150,000,000
Tax Revenues	1,002,000,000
Financing Revenues – Debt	886,000,000
Vineyard Development – Independent Grower – Overhead/Financing/Prop Tax	643,000,000
Vineyard Development Materials (excluding vines)	373,000,000
Corks/Capsules/Screwtops	175,000,000
Boxes and Bag-in-a-Box	170,000,000
Wine Labels	106,000,000
Grapevines	81,000,000
Trucking	63,000,000
Charitable Contributions	62,000,000
Cooperage	56,000,000
Financing Revenues – Equity	20,000,000
Stainless Steel Tanks	11,000,000
Wine Labs	4,000,000
Grapevine Assessments	2,000,000
Winery Research	2,000,000

Wine Industry Indirect - IMPLAN – from Appendix	4.3 2,365,000,000
Other Industry Induced - IMPLAN – from Appendix 4.3	1,552,000,000
Other Industry Indirect - IMPLAN – from Appendix 4.3	1,481,000,000
Wine Industry Induced - IMPLAN – from Appendix 4.3	161,000,000
Total Revenue	**$28,490,000,000**

Wages:

Winery Employees	$641,000,000
Vineyard Employees	597,000,000
Vineyard Development- Contracted Services	397,000,000
Vineyard Development Labor	283,000,000
Tourism Employees (hotel, rest, etc.)	218,000,000
Distributor Employees (wine only)	100,000,000
Glass	70,000,000
Labels	53,000,000
Boxes and Bag-in-a-Box	46,000,000
Grapevine/Nursery Employees	27,000,000
Trucking	26,000,000
Liquor Store/Wine Specific	20,000,000
Cooperage	12,000,000
Corks/Capsules/Screwtops	7,000,000
Stainless Steel Tanks	5,000,000
Education	4,000,000
Wine Labs	2,000,000

Wages(cont.)	
Wine Industry Indirect- IMPLAN – from Appendix 4.4	769,000,000
Other Industry Induced- IMPLAN – from Appendix 4.4	480,000,000
Other Industry Indirect- IMPLAN – from Appendix 4.4	466,000,000
Wine Industry Induced- IMPLAN – from Appendix 4.4	58,000,000
Total Wages	**4,281,000,000**
Total	**$32,771,000,000**

Soil Types Present

207B - Nymore Loamy Sand

Typical Profile

0 - 7 inches: dark brown loamy sand
7 - 27 inches: reddish brwon loamy sand
27 - 60 inches: brown sand

Soil Properties

Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Low
Organic matter content: Moderatly low
Surface runoff: Slow
Depth of water table: More than 6 feet

Use and Management

-The major crops are corn, small grain, and hay.
-The low available water capacity results in moisture stress for most crops during most years.
-Irrigation can maximize crop production.
-In nonirrigated areas, crops that can tolerate drought are the best suited.
-Leaving crop residue on the surface reduces the hazard of wind erosion.
-Returning crop residue to the soil and adding other organic material improve tilth.

274 - Newson Mucky Loamy Sand

Typical Profile

0 - 8 inches: Black mucky loamy sand
8 - 32 inches: dark grayish brown and grayish brown, mottled loamy sand
32 - 48 inches: Dark grayish brown, mottled sand
48 - 60 inches: dark brown, mottled sand

Soil Properties

Drainage class: Very poorly drained
Permeability: Moderately rapid
Available water capacity: Low
Organic matter content: High
Surface runoff: Very Slow
Depth of water table: 1 foot above to 1 foot below

Use and Management

-The major crops are corn, soybeans, and small grain.
-A drainage system is needed for optimum crop production, but establishing a drainage system is difficult in areas that do not have suitable outlets.
-Droughtiness is a hazard becuase of the low available water capacity, especially in the latterr part of the growing season.
-Leaving crop residue on the surface reduces the hazard of wind erosion.

540 - Seelyeville Muck

Typical Profile

0 - 32 inches: Black muck
32 - 36 inches: Very dark brwon mucky peat
36 - 60 inches: Black muck

Soil Properties

Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid
Available water capacity: Very high
Organic matter content: Very High
Surface runoff: Very Slow
Depth of water table: 1 foot above to 1 foot below

Use and Management

-The major crops are specialty crops, cultured sod, and corn.
-A drainage system is needed for optimum crop production, but establishing a drainage system is difficult in areas that do not have suitable outlets.
-Leaving crop residue on the surface reduces the hazard of wind erosion.

1068 - Caryville Sandy Loam

Typical Profile

0 - 10 inches: Very dark grayish brown sandy loam
10 - 60 inches: Stratified dark yellowish brown sand and very dark grayis brown very fine sandy loam

Soil Properties

Drainage class: Moderately well drained
Permeability: Moderately rapid
Available water capacity: low
Organic matter content: Moderate
Surface runoff: Slow
Depth of water table: 4 - 6 feet

Use and Management

-The major crops are small grain and hay.
-The low available water capacity results in moisture stress for most crops during most years.
-Irrigation can maximize crop production.
-In nonirrigated areas, crops that can tolerate drought are the best suited.
-Leaving crop residue on the surface reduces the hazard of wind erosion.
-Returning crop residue to the soil and adding other organic material improve tilth.

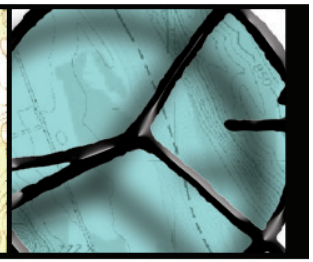
Corey Allan Peterson

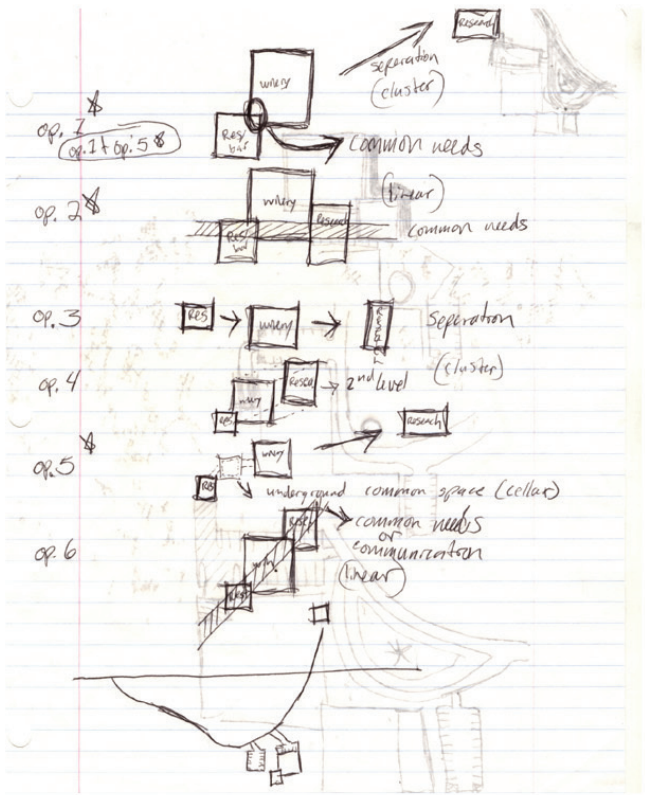
Hometown:

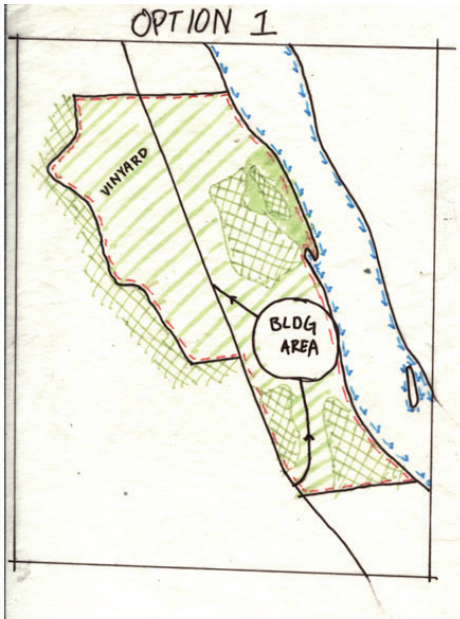
Quote: “Education is the best provision for the journey to old age.”

Aristotle

Process




op. 1
op. 1 + op. 5
winery
research
separation (cluster)
common needs
(linear)
op. 2
op. 3
op. 4
2nd level
op. 5
underground common space (cellar)
op. 6
common needs or communication
(linear)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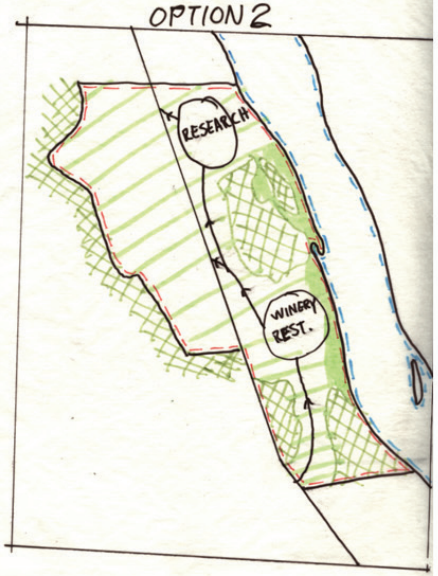
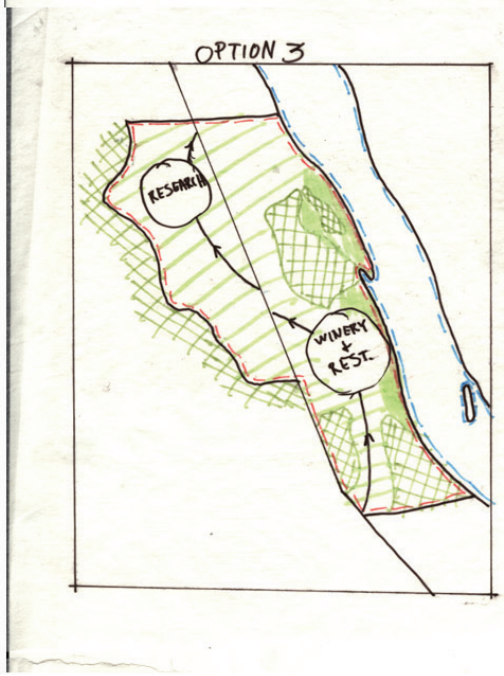
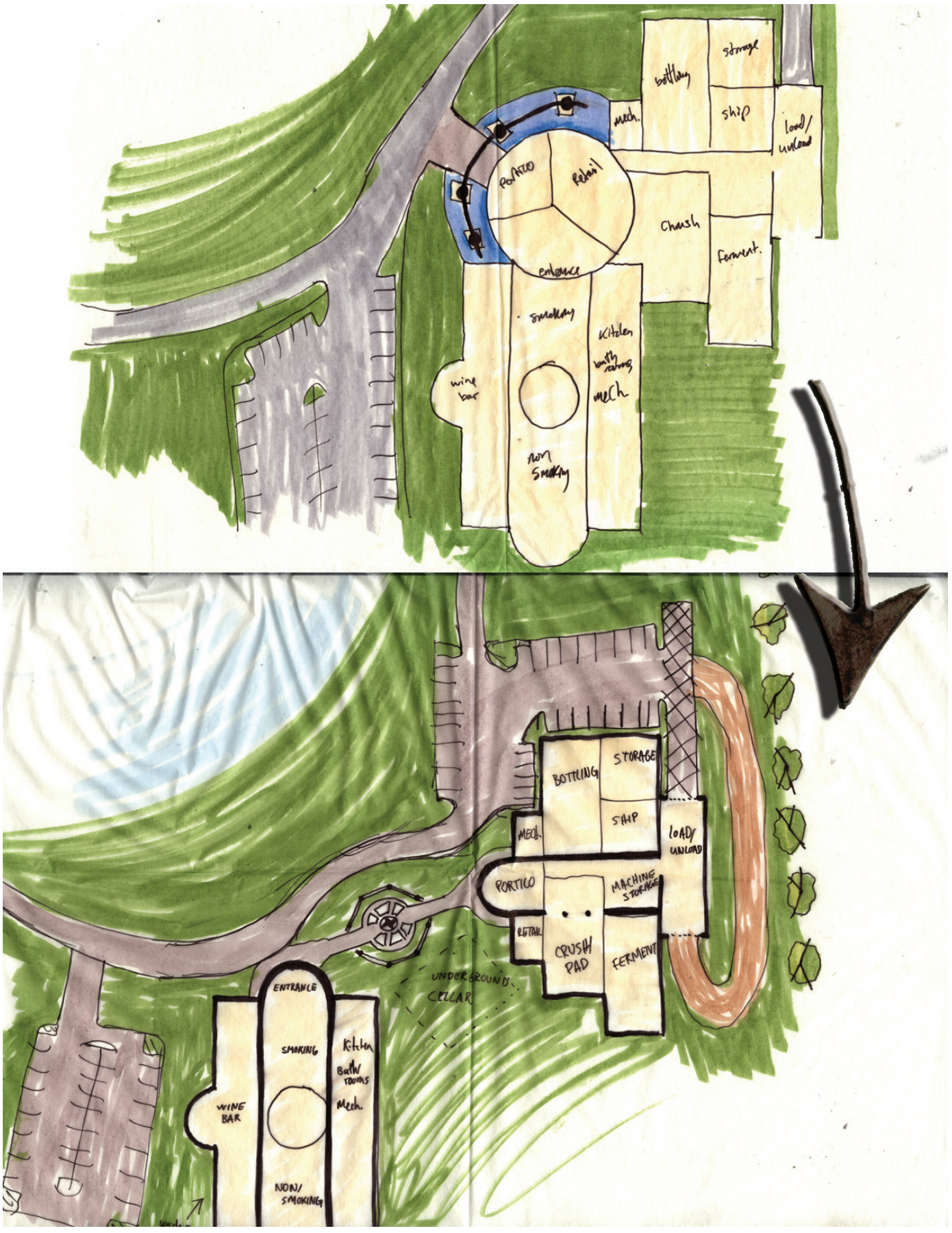
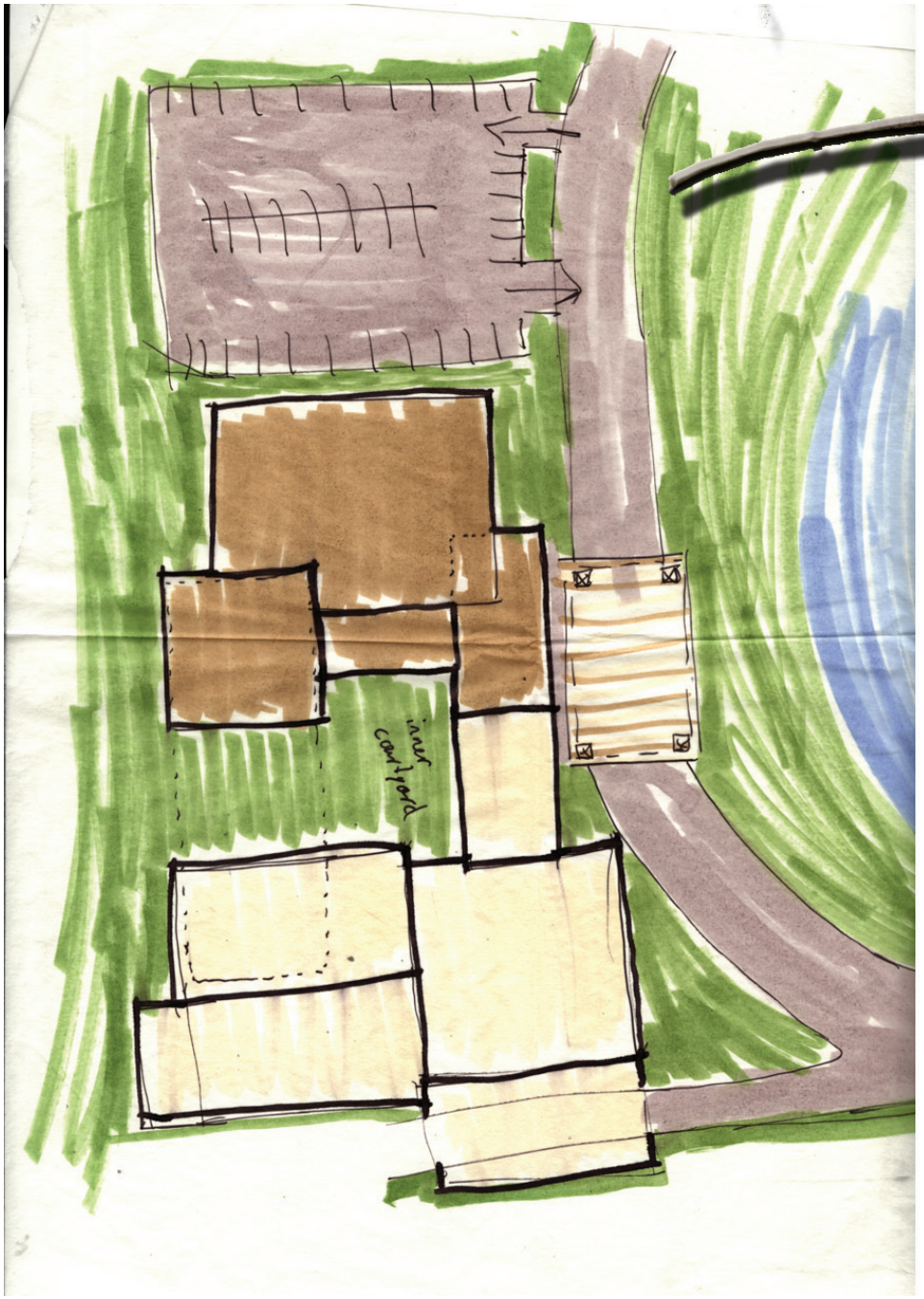
VINYARD
BLDG AREA

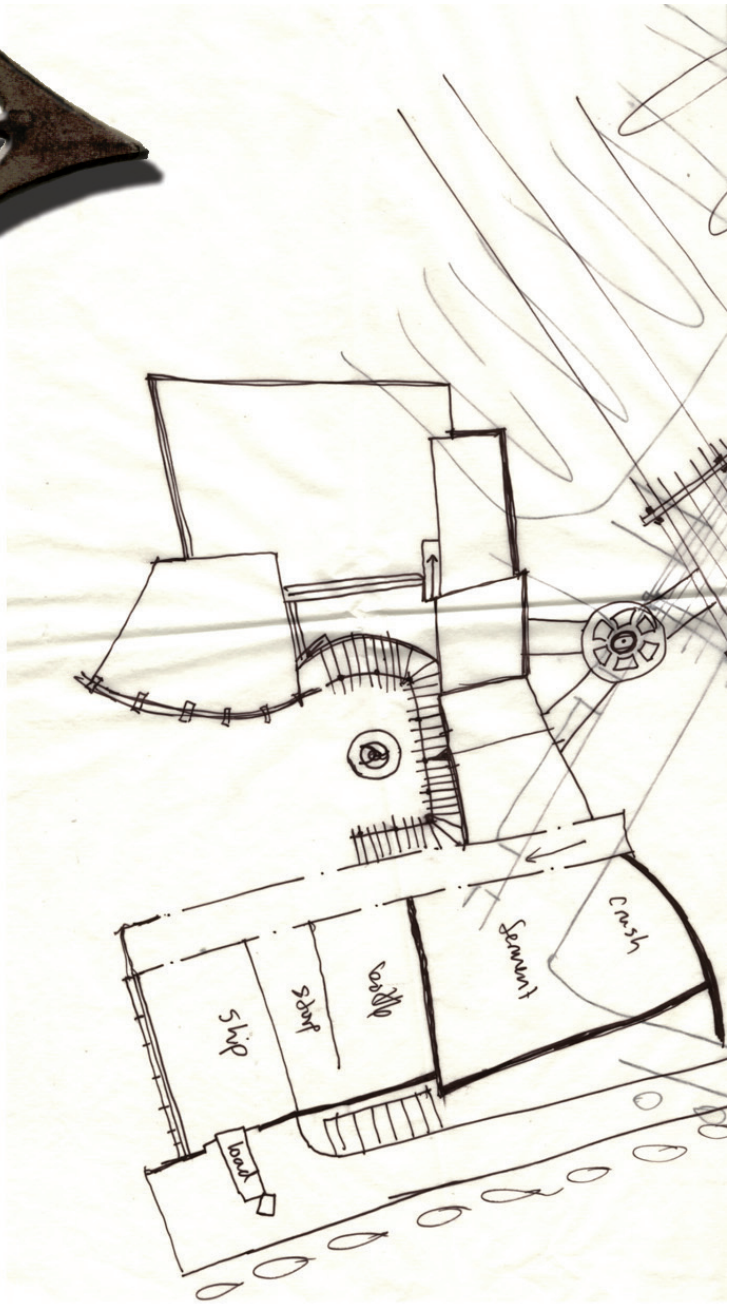

OPTION 2
RESEARCH
WINERY REST.

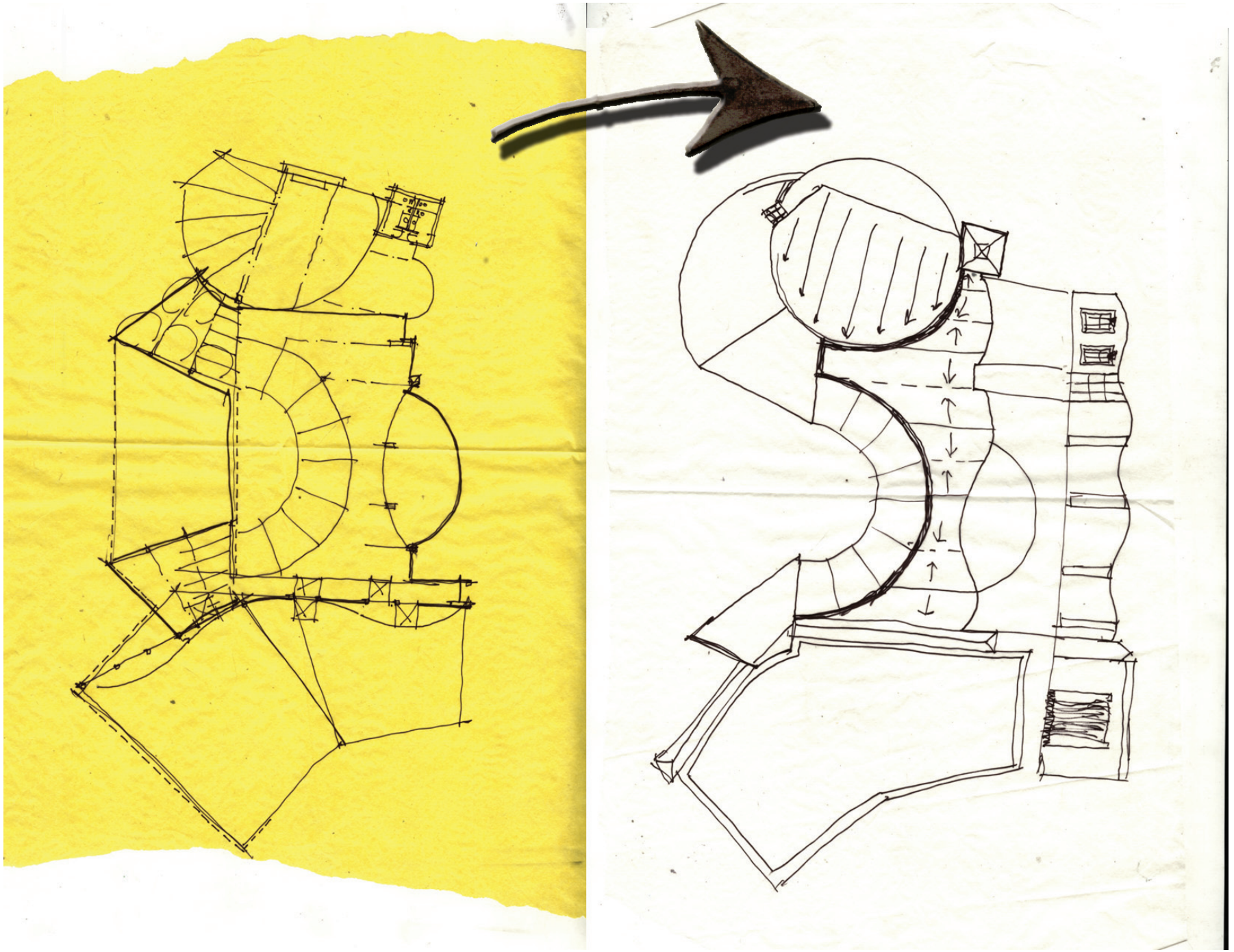

OPTION 3
RESEARCH
WINERY + REST.

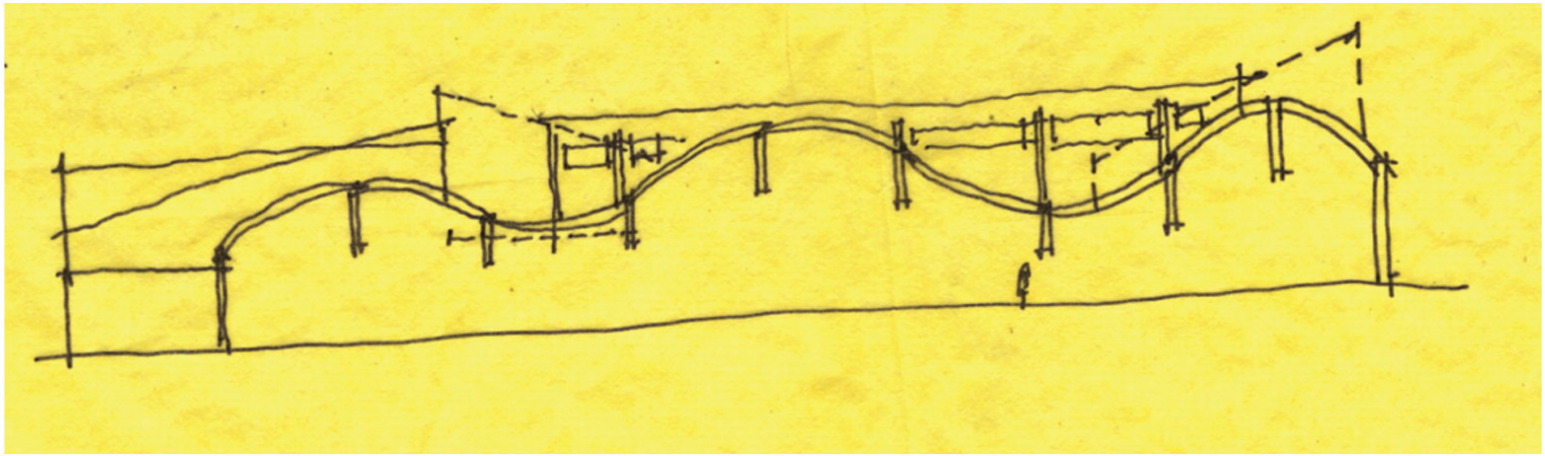

775
775
785
790
785
780

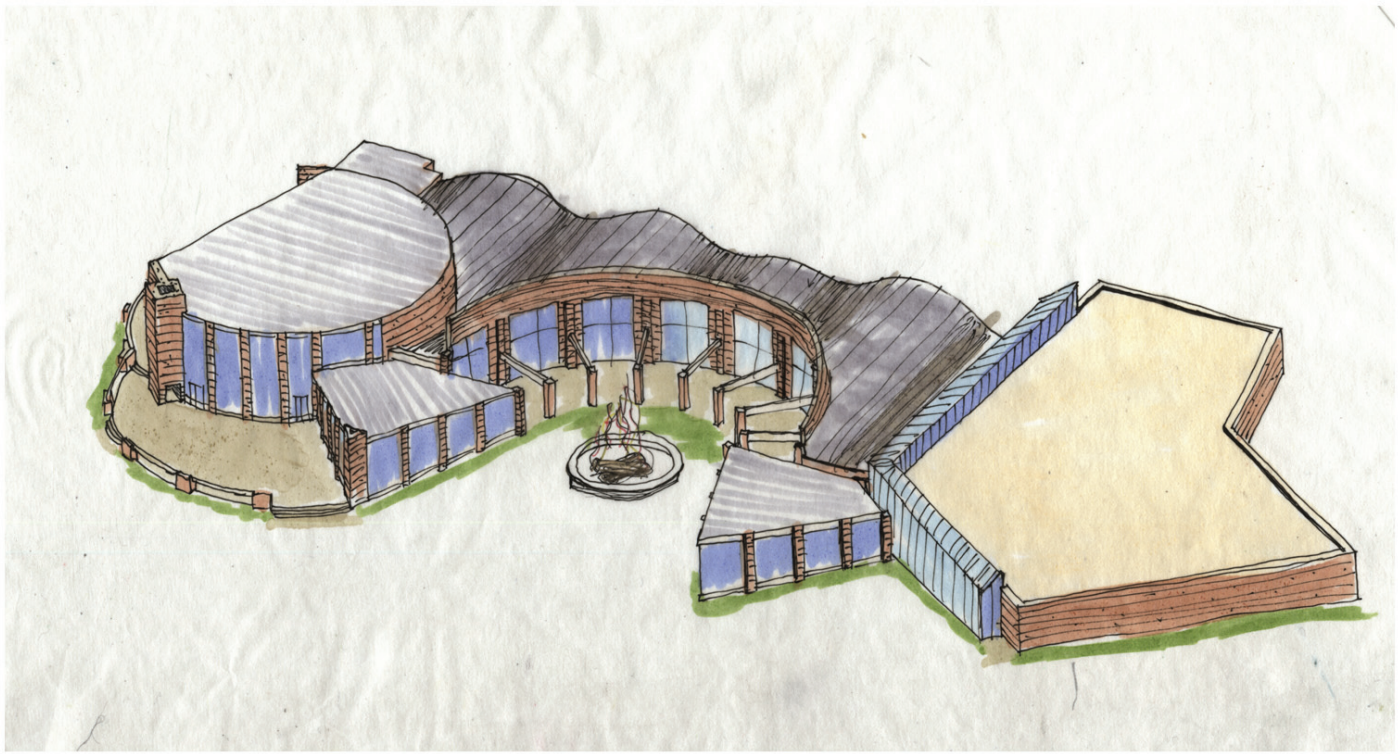

bottling
storage
ship
mech.
load/
unload
portico
Retail
Crush
ferment.
entrance
smoking
Kitchen
bath rooms
wine bar
mech.
non smoking
BOTTLING
STORAGE
SHIP
MECH.
LOAD/ UNLOAD
PORTICO
MACHINE STORAGE
RETAIL
CRUSH PAD
FERMENT
UNDERGROUND CELLAR
ENTRANCE
SMOKING
Kitchen
Bath rooms
Mech.
WINE BAR
NON/ SMOKING


inner courtyard

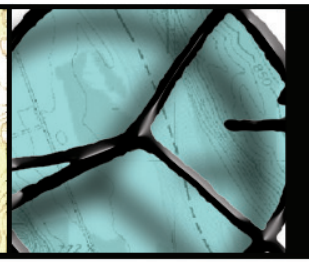

ship
shop
saddle
seamen
cash
boat







Solution



Restaurant & Winery

Wine Process

Harvest

From the vine to the processing facility timing is crucial in order to keep the full flavor of the freshly picked grapes. Manual labor has been the most common form of harvesting since vinification began.

Crushing

The act of breaking open the berry so the juices within can be extracted is called crushing. Destemming usually accompanies this where the stems of the berries are removed.

Fermentation

Fermentation occurs when the sugar contained within wine is converted into alcohol and carbon dioxide.

Pressing

Usually occurring after fermentation, and always after crushing (though in the beginning this was done first), the pressing of berries squeezes the remaining juice from the solid pieces.

Filtration

Filtration is used to remove the large particles from the wine juice. On certain wines these particles are left in to add flavor.

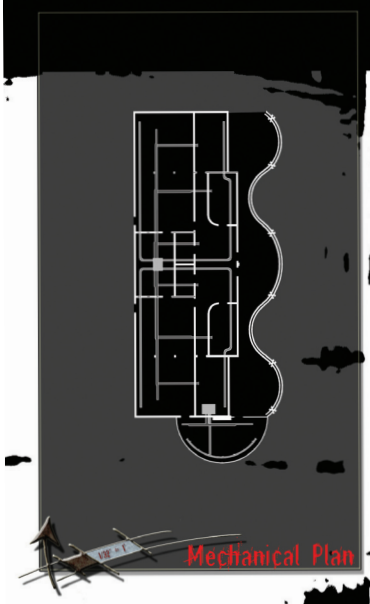
Aging

One of the largest aspects that sets wine apart from other beverages is the process of ageing, most wines go through.

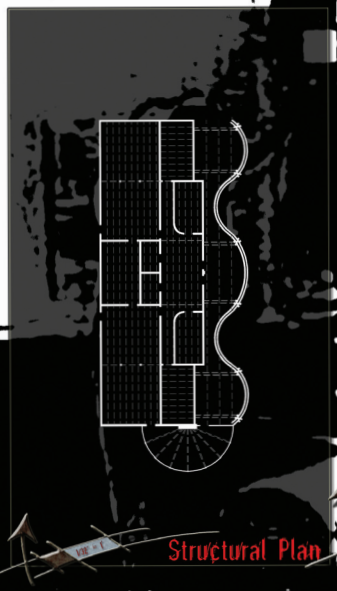
Bottling

In the beginning each bottle was done by hand from wine casks or individual barrels. That is now considered ancient tradition and is rarely used, even within smaller wineries. The process today is semi or even fully mechanized through the use of bottling lines.

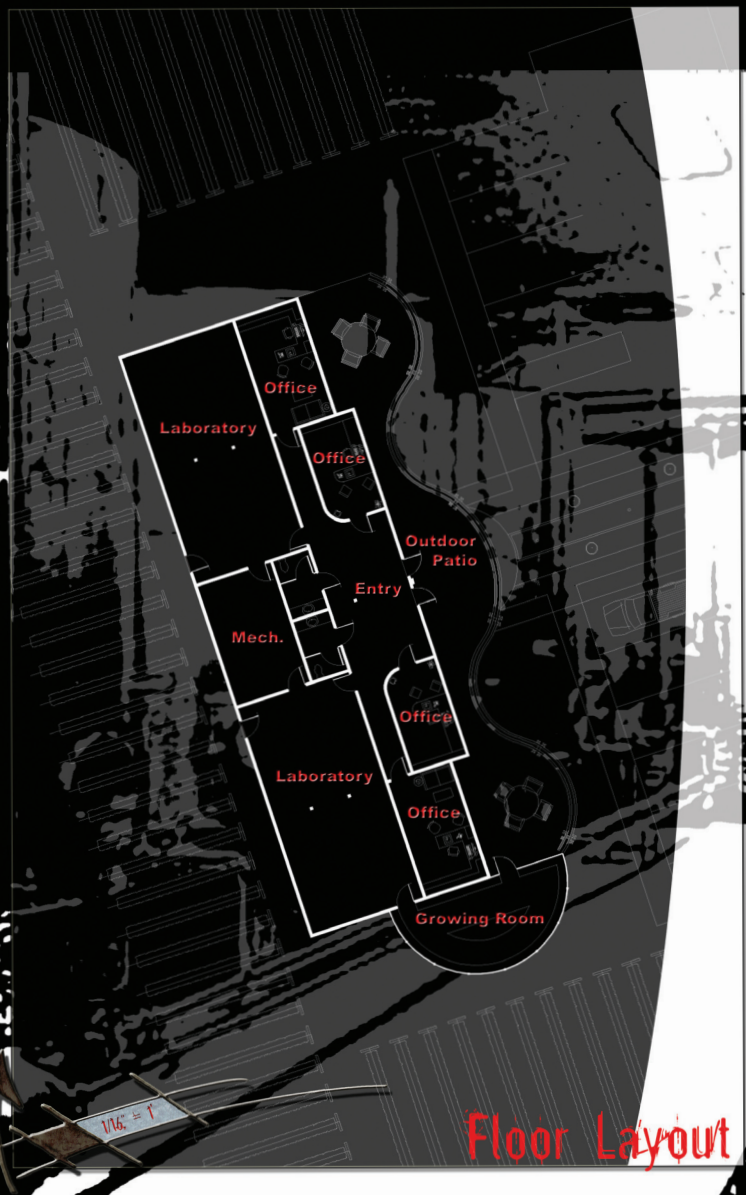
Research Facility



Mechanical Plan

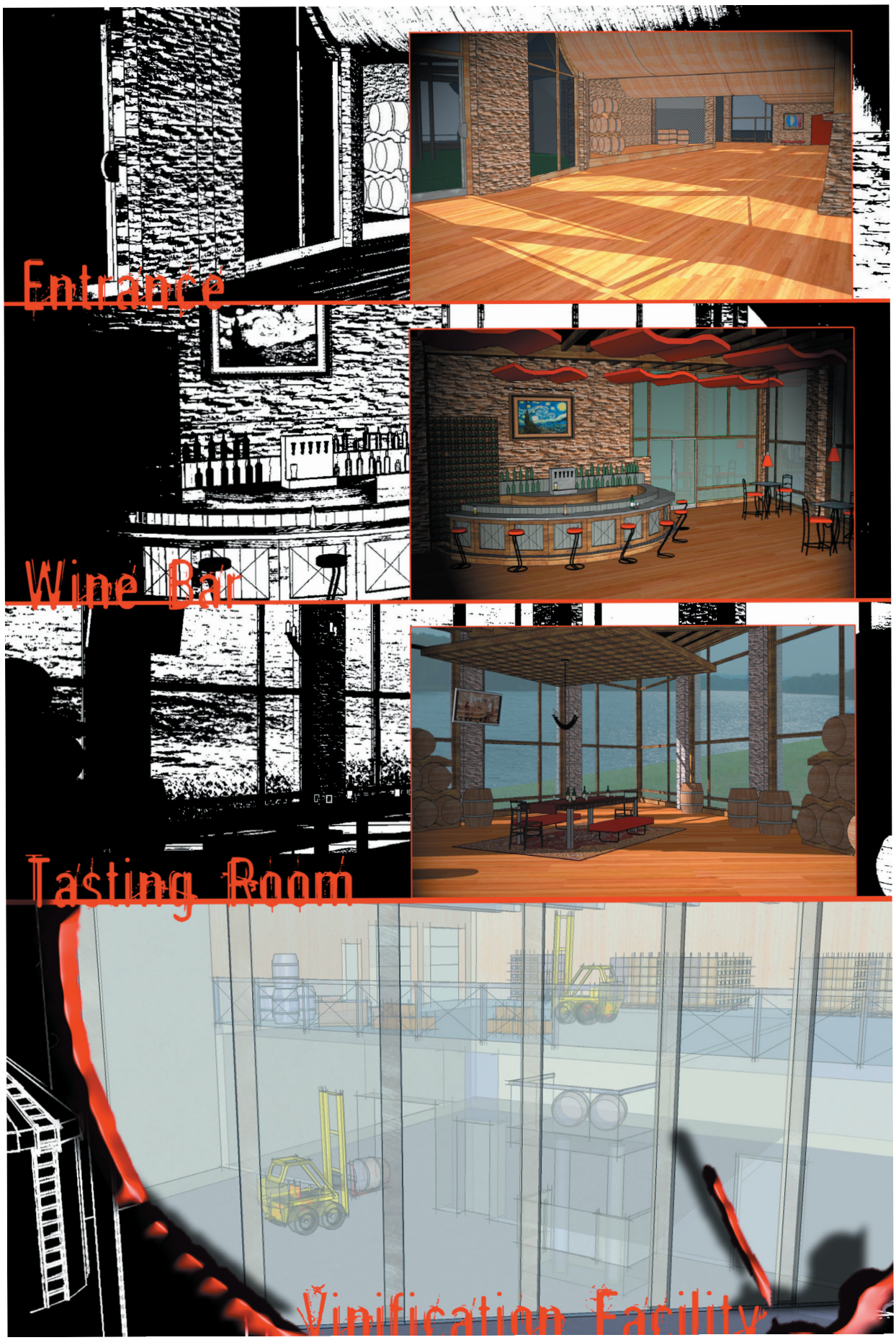


Structural Plan



Floor Layout

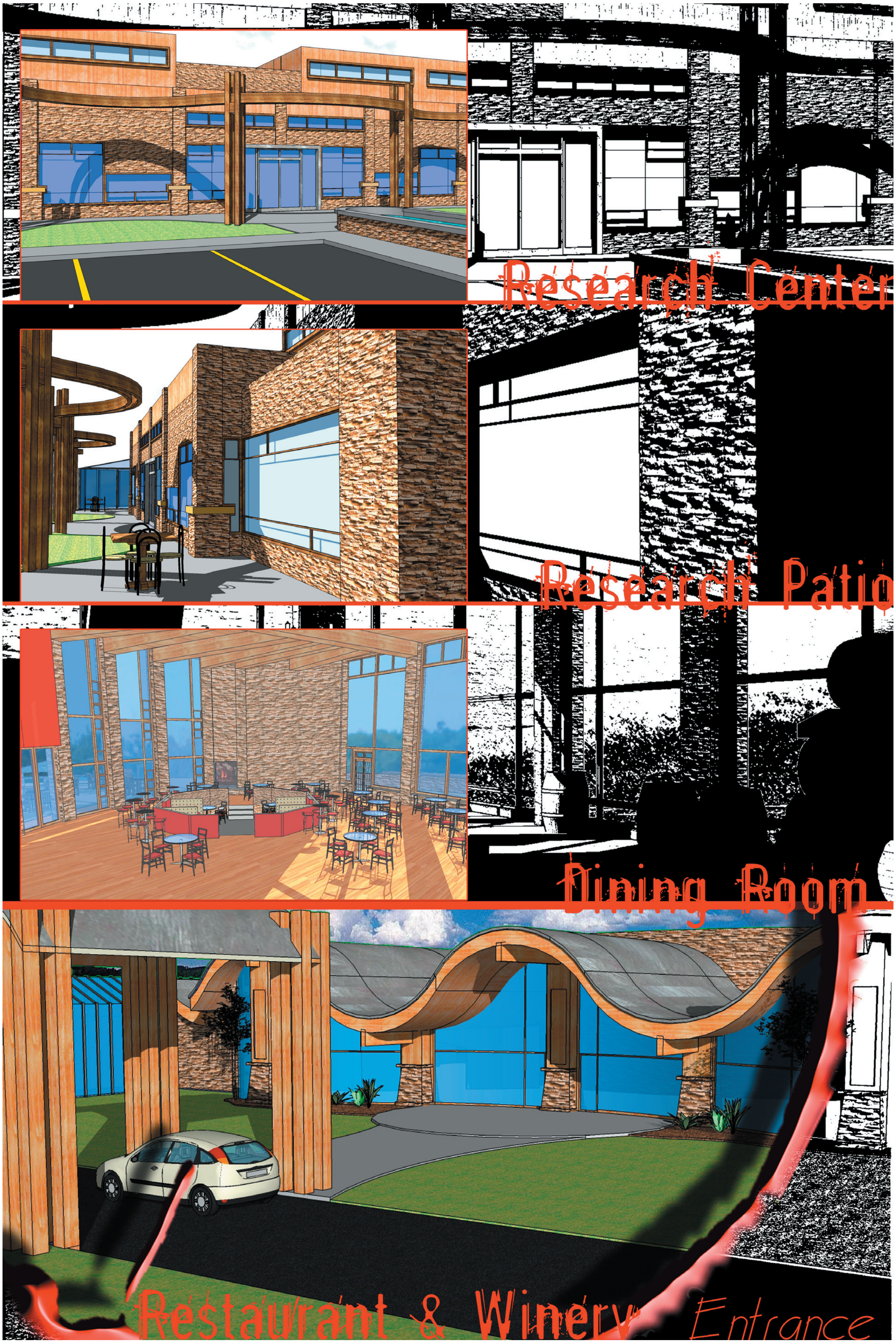
The research facility is designed to help develop new grape vines that are more suitable to growing in the cold winter climates of southern Minnesota. Currently southern Minnesota grape growers bury the vines under a couple feet of dirt to protect them from the cold winters. This has been a very common practice for grape growers that are located in cold climates. Grape vines tend to retain large percentages of water, during the winter months, these deposits of water freeze and the vines explode. Even after burying the vines, grape growers experience fifteen to twenty percent loss. With new vines taking five years to start producing grapes for wine this can be expensive. That is why this small research facility will be devoted to developing state of the art grape vines that can withstand the cold climate.


Entrance
Wine Bar
Tasting Room
Vinification Facility

Site Plan

Taylor's Falls, MN

St. Croix River


Research Center
Research Patio
Dining Room
Restaurant & Winery Entrance

Alternative Methods

Hemp: Also Known as Cannabis Sativa L has become a huge cash crop for many countries through out the world. Hemp is one of the oldest sources of textile fiber, with remains traced back six millennia. Canada is the closest country that allows Hemp as an agricultural product. Hemp grows in only ninety days, with absolutely no pesticides or herbicides. Hemp also produces more biomass tonnage than any other crop and is less expensive and produces less pollution than timber and petroleum. The fiber harvested from the Hemp plant can be used to make fabric, rope, concrete, insolation, and many other products we use every day. All Mercedez S-classes are produced with Hemp insolation. Hemp has not become a legal cash crop in the U.S. yet, but with the potential for an economically sound product that will be less harmful to our environment, it is sure to become one of America's number one crops in the years to come. For now These materials that are stronger and more environmentally safe, can be imported from Canada.

Minnesota Limestone: Southern Minnesota Is well known for their natural limestone outcroppings. When designing a building, not only does cost of the materials have the be thought of, but the cost of getting materials, and the environmental effects of shipping them. By making use of this region's natural rock queries, we will decrease the distance the rock needs to be hauled and create a connection between the building and the land it sits upon. By using materials and plants that are native to this region, we will effectively conserve the integrity of the site.

Recycled Timber: Through out the Twin Cities area there are a number of older buildings, built with heavy timber frames, that have been left empty. There is a company out of the Minneapolis area that deconstructs these buildings and refinishes the timbers for new building projects. The cost of this recycled timber is very comparable to new harvest timber. The time it takes to grow trees large enough to harvest for heavy timber framed buildings, forces our society to look to a new way to build these beautiful buildings. One way would be glu-lam and the other way is recycling the heavy timbers we already have. The recycled timbers are beautifully refinished and are immersed with a rich history.

Organic Grapes: Grapes have been growing naturally for centuries. Many grape growers use pesticides and herbicides to reduce the amount of work that is required to care for these temperamental crops. Through dedication and hard work, these grape vines will be grown 100% naturally. The harvest will consist of hand picking each grape bunch, the protection from weeds and pests, will be done naturally as well. Fences will be in place to guard against deer and rabbits and close attention will be paid to prevent from disease and insects. The vineyard will be naturally irrigated with water from the St. Criox river and runoff will be chemical free and able to run back into the ground and river. This dedication will create a one of a kind wine that can be enjoyed by today's generation and many generations to come.


Cross Section
1- South Patio
2- Dining Room
3- Wine Bar
4- Barrel Room
5- Tasting Room
6- Observation Hallway
7- Storage & Shipping
8- Mechanical Room


Wall Detail
1- Parapet
2- Flashing
3- Metal Roof Membrane
4- Rigid Foam
5- Vapor Barrier
6- Recycled Heavy Timber Roof Joist
7- Insulated Glass
8- Thermal Break
9- Structural Mullion
10-Post Tension Concrete Slab
11-Water Proofing Membrane
12-Gravel Fill