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June 27, 2016

Sonoma County Permit Resource
Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Attention: Ms. Becky VerMeer

Re: 4200 Stage Gulch Road
Sonoma, CA
A.P.N. 142-051-031
So. Co. PRMD File: PLP02-0085
Wastewater Feasibility Study
SMA Project No. 2008008

Dear Ms. VerMeer,

The purpose of this letter is to supplement the Use Permit Modification application for the Carneros Vintners Winery which includes an increase from 250,000 cases of wine production (see PLP02-0085) to 2,500,000 cases of wine production and the elimination of public tasting, tours, and all events. Steve Martin Associates, Inc. has prepared this Wastewater Feasibility Study for the purpose of assessing the onsite sanitary and process wastewater system treatment and disposal capacity necessary for the proposed expanded production level.

The requested 2,500,000 cases of wine production will be comprised of the following breakdown:

- a. 55,000 cases (873 tons) – full production and bottled on site
- b. 289,000 cases (4,587 tons) - crush and bulk off haul of juice
- c. 1,056,000 cases (16,762 tons) - crush, fermentation and bulk off haul wine
- d. 300,000 cases (4,762 tons) – Lees wine
- e. 800,000 cases bottling only – bulk wine import for bottling on site

The sanitary wastewater (SW) consists of wastewater from the laboratory and restroom facilities. The process wastewater (PW) consists of winery wastewater generated from producing 2,500,000 cases of wine. The existing SW wastewater management system consists of a SW septic tank, SW sump tank, and a primary above ground mound system with a 200% expansion/reserve area. The existing PW wastewater system includes a PW sump and pump, rotary screen for solids filtration, and an aerated pond system.

The existing wastewater management systems described above and herein will be adequate to treat and dispose of the projected SW and PW flows generated from the increase in production of the winery facility. To assist you in the evaluation of the above conclusions, the following information is enclosed:

Attachment I: Wastewater System Flow Diagram

Attachment II: Wastewater System Design Criteria & Evaluation

Attachment III: Pond Sizing & Pond Water Balance

Attachment IV: Use Permit Plans, Mound System Plans, & PW Pond & Irrigation Area Plans

In addition, please refer to the Overall Site Plan included with this document for the locations of the Wastewater Management System components. The Overall Site Plan indicates the relative locations of buildings, roads, wastewater pretreatment area, process wastewater pond, primary and expansion mounds/leachfield area, and other site features that would be required for this project.

If you have any questions or require further information, please feel free to contact me at (707) 824-9730.

Sincerely,



Steven M. Martin, PE



Tamara A. Martin, REHS

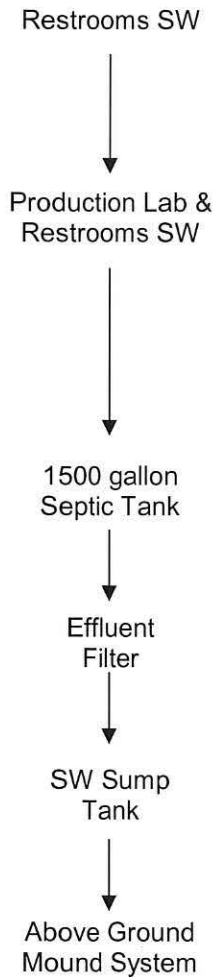
Attachments

ATTACHMENT I

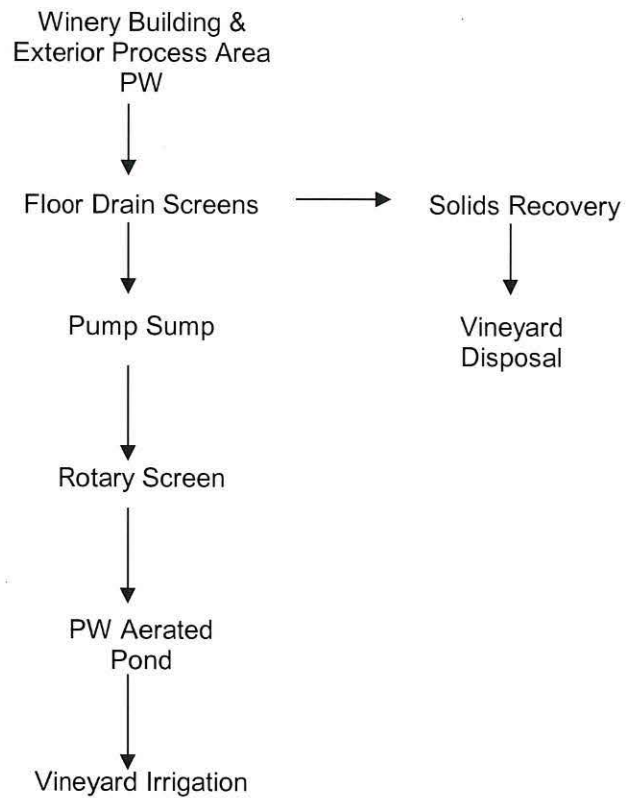
**SANITARY & PROCESS WASTEWATER
MANAGEMENT SYSTEM
FLOW DIAGRAM**

**SANITARY & PROCESS WASTEWATER
MANAGEMENT SYSTEM
FLOW DIAGRAM**

Sanitary Wastewater



Process Wastewater



ATTACHMENT II

**SANITARY & PROCESS WASTEWATER
MANAGEMENT SYSTEM
DESIGN CRITERIA & EVALUATION**

Carneros Vintners
4200 Stage Gulch Road
Sonoma, California

**WASTEWATER MANAGEMENT SYSTEM
DESIGN CRITERIA & EVALUATION**

SANITARY WASTEWATER

Sanitary wastewater (SW) at the winery will consist of typical wastewater generated from restrooms, laboratory and technical tasting facilities.

No public tasting is proposed for this Use Permit Modification. Business visitors are anticipated to average 15 per week, with a maximum of 5 on a peak day.

Anticipated SW flows are projected as follows:

SW FLOWS

AVERAGE DAY:

15 full-time employee x 15 gpcd	=	225
3 business visitors x 2.5 gpcd	=	<u>7.5</u>
Total	=	232.5 gpd

PEAK DAY:

20 full-time employees x 15 gpcd	=	300
5 business visitors x 2.5 gpcd	=	<u>12.5</u>
Total	=	312.5 gpd

Design SW flow = **313 gpd SW**

TREATMENT & DISPOSAL

SW LEACH FIELD OVERVIEW

In 2005, an above ground Wisconsin mound system was designed and installed to serve 10 employees only (SEP05-1043). In 2008, in anticipation of this Use Permit modification application, the mound system was expanded (SEP08-0834) to accommodate a total of 20 full time employees on a peak day and 5 business visitors.

SEPTIC TANK

The required total septic tank size for the projected SW flows based on the Manual of Septic Tank Practice is as follows:

$$\begin{aligned} V &= 1.5 \times Q \\ &= 1.5 \times 313 \text{ gpd} \\ &= 470 \text{ gallons} \end{aligned}$$

The existing 1200-gallon septic tank is sufficient for the treatment of the projected SW flows. The resulting detention time for a peak day flow would be 3.8 days.

SW MOUND SYSTEM SIZING

While the mound system that was installed in 2008 is sized appropriately based on the total flows of 313 gpd, and has the appropriate amount of rock below the pipe for a commercial system, the loading rate that was used was 1.0 gallons per square foot per day. A change in PRMD design guidelines now requires a loading rate of 0.8 g/sf/d.

DESIGN CRITERIA

- Distribution Bed Loading Rate = 0.8 gallons/s.f./day (Commercial) (Medium textured sand)
- Design Flow = 313 gpd
- Linear Loading Rate (LLR) = 4.0 gal. /l.f./day
- Soil Application Rate = 0.563 gallons/s.f./day
- Ground slope is 16.5 % in the area of the primary and expansion mounds

PRIMARY MOUND DESIGN

$$\text{Min. Distribution Bed Area Required} = \frac{\text{Total flow}}{\text{Sand App. Rate}} = \frac{313 \text{ gpd}}{0.8 \text{ gal/s.f. /day}} = \underline{391.25 \text{ s.f.}}$$

$$\text{Existing Distribution Bed Size} = 4' \times 78.25' = \underline{313 \text{ s.f.}}$$

$$\text{Min. Sand Basal Area Required} = \frac{\text{Total Flow}}{\text{Soil App. Rate}} = \frac{313 \text{ gpd}}{0.563 \text{ gal/s.f./day}} = \underline{556 \text{ s.f.}}$$

$$\text{Existing Primary Sand Mound Dimensions:} \quad \underline{27' \times 96.25'}$$

$$\text{Total Existing Mound Footprint (with soil cover):} \quad \underline{41' \times 104.25'}$$

$$\text{Sand Basal Area Provided} = (\text{Distance (width) from upper side of distribution bed to downslope toe of sand}) \times (\text{dist bed length}) = 22' \times 78.25' = \underline{1721.5 \text{ s.f.}}$$

While the gravel bed area is 78.25 sf undersized, the sand basal area, is 1,165.50 sf oversized. As a result, even though a less conservative loading rate was utilized in the 2008 expansion design, the ample amount of sand basal area (which is the total effective absorption area of the entire system) that is currently provided shows that the system will not need to be expanded further.

PROCESS WASTEWATER

Process wastewater consists primarily of wastewaters collected at floor drains and trenches within the winery, receiving, crush, tank and wash-down areas, including exterior tank and process areas which are all under a roof. The screened baskets and strainers have screen opening sizes of 1/4 inch for exterior drains and 1/8 inch for interior drains.

The PW flows by gravity to a PW pump station. The gravity piping collection system provides low maintenance and no infiltration or exfiltration. The piping is compatible with process wastewaters and satisfies Uniform Plumbing Code and local PRMD requirements. A PVC force main to the ponds is sized to be adequate for the peak flow rates anticipated from the pump station. The pump conveys the PW to the rotary screen and Pond.

Biological stabilization occurs in the facultative aerated pond system which will consist of two cells, configured by a floating baffle to be installed upon approval of this Use Permit Modification. Currently the pond has no baffle installed. The total usable volume of the pond system is approximately 2.2 MG in addition to a 2 ft minimum freeboard. Surface mechanical aerators for the aeration pond have been upsized to satisfy biochemical oxygen demand as well as oxygen dispersion requirements for the increase in production. Time clock control of the aerators currently allows personnel to adjust aerator operation to changing winery functions and pond conditions. The existing flow meters measure the flows from the PW pump station to the aerated pond and from the pond to the irrigation system.

The irrigation disposal area is currently sized at 5.8 acres of grass / pasture area with no vineyard irrigation. The increase in production, will require an additional irrigation area of 30 acres of vineyard to dispose of the reclaimed wastewater via drip irrigation. The existing 80 acres of vines on site and adjacent to the winery parcel will more than provide enough vines to dispose of the treated PW. As a result, final reuse (disposal) of effluent is to be accomplished by spray irrigation of 5.4 acres of grassland and drip irrigation of 30 acres vineyard. The irrigation demand is the lowest during the wet season (November through April) and application rates should be less than 1.3 inches per day.

The irrigation system is controlled manually. The Pond Water Balance (PWB) provides operators with the projected irrigation discharge amount per month. Visual observation and monitoring of the vineyard is made weekly to ensure against surface runoff. Irrigation/disposal will be suspended for approximately 24 hours prior to, during and following any forecasted storms. Irrigation/disposal will be suspended as long as saturated soil conditions persist.

PROCESS WASTEWATER FLOWS

Based on flow data from the planned Operator's existing Carneros Vintners and Lodi Custom Crush facility as well as from wineries of similar size and characteristics, the process wastewater (PW) generation rates were determined and the projected flows are calculated as follows:

The 2.5M case wine production is projected to consist of the following breakdown:

- a. 55,000 cases (873 tons) – full production and bottled on site
- b. 289,000 cases (4,587 tons) - crush and bulk off haul of juice
- c. 1,056,000 cases (16,762 tons) - crush, fermentation and bulk off haul wine
- d. 300,000 cases (4,762 tons) – Lees wine
- e. 800,000 cases bottling only – bulk wine import for bottling on site

Annual Volume

55,000 cases full production onsite:

Gallons of wine produced onsite = 2.4 gallons/case x 55,000 cases = 132,000 gal

Generation rate = 2.0 gal PW/gal wine (based on 10 yrs actual flow data from existing & Lodi facility)

Annual Volume = 132,000 gal wine x 2.0 gal PW/gal wine = 264,000 gal PW

289,000 cases crush and run:

Gallons of wine crushed and hauled offsite = 2.4 gallons/case x 289,000 cases = 693,600 gal

Generation rate = 1.0 gal PW/gal wine

Annual Volume = 693,600 gal wine x 1.0 gal PW/gal wine = 693,600 gal PW

1,056,000 cases crush, ferment, and run:

Gallons of wine crushed, fermented, and hauled offsite
= 2.4 gallons/case x 1,056,000 cases = 2,534,400 gal

Generation rate = 1.5 gal PW/gal wine

Annual Volume = 2,534,400 gal wine x 1.5 gal PW/gal wine = 3,801,600 gal PW

300,000 cases Lees wine onsite:

Gallons of Lees wine produced onsite = 2.4 gallons/case x 300,000 cases = 720,000 gal

Generation rate = 1.75 gal PW/gal wine

Annual Volume = 720,000 gal wine x 1.75 gal PW/gal wine = 1,260,000 gal PW

800,000 cases bottling onsite:

Generation rate = 0.3 gal PW/case

Annual Volume = 800,000 cases wine x 0.3 gal PW/case wine = 240,000 gal PW

Total Annual Volume = 6,259,200 gallons of Process Wastewater

Average Harvest Day Flow

Based on 10 plus years' worth of data from the operators existing Carneros Vintners and Lodi facilities, the harvest months of August – November account for approximately 16, 17.5, 13, and 9 percent of the annual PW flow, respectively.

$$6.26 \text{ Mgal PW} \times \frac{(0.16 + 0.175 + 0.13 + .09)}{122 \text{ days}} = 28,474 \text{ gal PW/day}$$

Use 28,500 gal/d PW

Average Day, Peak Harvest Month Flow

The harvest month of September accounts for approximately 17.5 percent of the annual PW flow.

$$6.26 \text{ Mgal PW} \times \frac{(0.175)}{30 \text{ days}} = 36,512 \text{ gal PW/day}$$

Use 37,000 gal/d PW

Peak Day Crush Flow

Maximum crush rate = 500 tons grapes crushed/day

Wine generation rate = 160 gal wine/ton grapes crushed

PW generation rate = 0.5 gal PW/gal wine

Peak flow = 500 tons/day x 160 gal wine/ton x 0.5 gal PW/gal wine

= 40,000 gal PW/day

Use 40,000 gal/d PW

PW SYSTEM DESCRIPTION

Process wastewater will consist primarily of wastewaters collected at floor drains and trenches within the winery, receiving, crush, tank and wash-down areas. No sanitary wastewater will be discharged into the PW management system. The criteria used to evaluate the wastewater management system are summarized in this section. No distillation will occur at the facility; hence there will be no stillage waste.

Process Wastewater Conveyance, Treatment and Disposal

The following features will be incorporated into the process wastewater management system:

- 1) Initial screening
- 2) Gravity collection system
- 3) PW pump station
- 4) Pretreatment consisting of:
 - i) pH control (if necessary)
 - ii) Flow measurement
 - iii) Solids removal screen
- 5) Facultative aerated pond
- 6) Flow measurement
- 7) Filter
- 8) Irrigation disposal (reuse)

A discussion of each of these features is provided below. Refer to the Wastewater Management System Schematic above for a flow diagram of the PW management system.

- 1) Initial screening -- Provided by screened baskets and strainers installed on the trench drains and floor drains within the winery. Screen opening sizes will be on the order of 1/4 inch for exterior drains and 1/8 inch for interior drains.
- 2) Gravity collection system -- Designed to provide low maintenance and no infiltration or exfiltration. Piping is compatible with process wastewaters and satisfies Uniform Plumbing Code and local requirements.
- 3) PW pump station -- The duplex pump station will be capable of pumping all of the anticipated process wastewater flow ranges (see Pond Sizing section for projected process wastewater flows) with one duty and one standby pump that can alternate functions. The duty pump would be used for all but the most extreme PW flow conditions. The second (standby) pump would be activated during peak hour events or similar events of infrequent occurrence and short duration. Storage in the pump sump would provide some additional factor of safety. A PVC force main to the ponds will be sized to be adequate for the peak flow rates anticipated from the duplex pump station. The pumps convey the PW to the Pond.
- 4) Pretreatment -- Consisting of the following elements:

- i) pH control system (if necessary)
 - (a) SMA's experience over the last 10 years has indicated that pH neutralization of winery PW is typically not required for aerated pond systems. The combination of naturally occurring alkalinity in the source water and the alkaline cleaning compounds used within the winery usually provides sufficient buffering to maintain pond pH above 6.5. Neutralizing chemicals should only be used when absolutely necessary. Since the Process Wastewater is ultimately disposed via irrigation, the neutralizing chemicals would be applied to the land.
 - (b) For the above reasons, the installation of pH control systems when the PW Management System is first constructed is not recommended. Instead, SMA recommends that the pH of the ponds be monitored for a year (monitoring is required by the RWQCB), especially through one harvest season. If at the end of the one-year monitoring period it has been demonstrated that pH control is necessary (or sooner if conditions warrant), a pH control system could be added.
 - ii) Flow measurement – An inline magnetic flow measurement device will be provided to measure flows from the PW pump station to the facultative aerated pond.
 - iii) Solids removal screen – A motorized rotary drum screen will remove the large solids from the system and, as a result, reduce the organic biological loading on and the accumulation of solids in the aerated pond system. Solids from the screening operations will be treated as pomace (residual grape solids). Refer to solid waste section for disposal description of pomace.
- 5) Facultative aerated pond -- Biological stabilization will occur in the facultative aerated pond system which will consist of two cells separated by a floating baffle. The first cell is approximately 1.6 Mgal and the second cell is approximately 0.6 Mgal. This pond system will be large enough to provide a normal residence time of 55 days at average day peak harvest month flow conditions. This residence time is within the 50 to 100 days detention time recommended for these types of systems. For ultimate process wastewater/rainfall inputs and evaporation/irrigation outputs, refer to the pond water balance (based on 10 year rainfall and a minimum two foot freeboard) enclosed. The total usable volume of the pond system is approximately 2.2 MG in addition to a 2 ft minimum freeboard.
- Surface mechanical aerators for the aeration pond will be upsized to satisfy biochemical oxygen demand as well as oxygen dispersion requirements for the increased flows. Time clock control of the aerators will be provided to allow operations personnel to adjust aerator operation to changing winery functions and pond conditions.
- 6) Flow Measurement – Flow measurement devices will be provided to measure the flows from the pretreatment area to the aerated pond and from the pond to the irrigation system.
 - 7) Filter – A filter will be provided to screen secondary effluent prior to vineyard irrigation.
 - 8) Irrigation disposal (reuse) -- Final reuse (disposal) of effluent is to be accomplished by spray irrigation of a minimum 5.4 acres of grassland on-site and drip irrigation of 30 acres of vineyard on site and on adjacent parcels. The irrigation demand of the grassland & vineyard exceeds the estimated annual process wastewater volume. Refer to the pond water balance for proposed application rates to the disposal area and effluent storage volumes. To meet the additional irrigation demand the treated PW can be supplemented with irrigation water if needed. The irrigation demand is the lowest during the wet season (November through April) and application rates should be less than 0.2 inches per day. Irrigation of vineyards would likely be suspended in August, just prior to harvest, to control sugar content in the grapes.

If necessary, double check valves or similar backflow prevention devices will be installed on the existing irrigation system discharge to prevent any cross-contamination with treated effluent applied to the

irrigation distribution network. The treated PW is not recycled for winery use.

OTHER CONSIDERATIONS

Odor Control

There should be no obnoxious odors from a properly designed and operated treatment system of this type. See Alternative Courses of Action for operation alternatives for unforeseen conditions.

Ground Water Contamination

The nearest water well to the winery process wastewater treatment and disposal systems is over 600 feet from the aerated pond. No disposal of reclaimed wastewater will occur within 100 feet of any existing wells.

The groundwater in the pond area will be protected from possible contamination by the liners installed in each pond.

Irrigation/disposal of treated effluent is considered a beneficial use and is considered an effective means to protect groundwater quality. Well water may be added to the treated PW when capacity permits to supplement the volume of water used for irrigation.

Surface Waters

All wastewater treatment facilities are designed with sufficient drainage facilities to divert local runoff. Irrigation/disposal operations will be routinely monitored to ensure against surface runoff. Irrigation/disposal will be suspended for approximately 24 hours prior to, during and following any forecasted storms. Irrigation/disposal will be suspended as long as saturated soil conditions persist.

Protection

Exposed wastewater treatment facilities will be posted with appropriate warning signs. The aerated ponds will be fenced, if necessary, to restrict public access.

ALTERNATIVE COURSES OF ACTION

Although no operational difficulties are foreseen, the following additional courses of action would be available if necessary:

- 1) Ability to add carbon dioxide to reduce pH at the pretreatment site or installation of another type of pH control.
- 2) Ability to add hydrogen peroxide or liquid oxygen to the ponds as a supplemental oxygen source or for odor control
- 3) Provision of higher aeration capacity in the pond
- 4) Additional stages of treatment to increase effluent quality
- 5) Increased use of irrigation/disposal area to increase discharge capacity

The facultative aerated ponds have been designed for retention of wastewater and rainwater through the majority of the rainy season with minimal discharges to irrigation/disposal fields (based on a 10 year seasonal rainfall). Should there be a winter with more rainfall than the design condition, several operational procedures are available to compensate:

- 1) Additional water conservation at winery
- 2) Light irrigation during periods between storms -- not exceeding the assimilative capacity of the soil
- 3) Increased irrigation during the months of planned irrigation.
- 4) Pumping and truck transfer of treated and diluted wastewater to a sewage treatment plant or land disposal site

ATTACHMENT III

PW POND SYSTEM SIZING

POND WATER BALANCE

Carneros Vintners
4200 Stage Gulch Road
Sonoma, California

PW POND SYSTEM SIZING

POND SIZING

A total retention time of 50 to 100 days for a Peak Day Flow (40,000 gpd) is recommended for this type of pond system to provide required treatment with at least 50 days.

The existing pond configuration will provide adequate residence time for the proposed flows, as calculated below with the addition of a floating baffle and increased aeration.

Pond:

Total Volume	=	2.2 MG
Detention Time	=	$\frac{2,200,000 \text{ gal}}{40,000 \text{ gal PW/day}}$
	=	55 days

Detention Time of 55 days

AERATION REQUIREMENTS

Sizing parameters for the aerators are as follows:

- BOD₅ Concentration = 5,000 mg/l
- Peak Day Peak Harvest Month Flow = 40,000 gal PW/day
- Oxygen Requirement = 1.5 lbs O₂/lb BOD
- Oxygen Transfer Rate (Vertical Turbine Aerator) = 2.2 lbs O₂/HP - hr
- Power/Vol Ratio, Cell #1 = 0.10 - 0.20 HP/1,000 cu ft
- Power/Vol Ratio, Cell #2 = 0.05 - 0.10 HP/1,000 cu ft
- Cell #1 Volume = 1.6 Mgal
- Cell #2 Volume = 0.6 Mgal
- Total Pond Volume = 2.2 Mgal

Aerated Pond – Cell No. 1:

BOD₅ Mass Loading:

$$(5,000 \text{ mg/L})(0.040 \text{ Mgal PW/day})(8.345 \text{ lbs/Mgal})$$

$$= 1669 \text{ lbs BOD}_5/\text{day}$$

Oxygen Requirements:

$$\frac{(1.5 \text{ lbs O}_2/\text{lbs BOD}_5)(1669 \text{ lbs BOD}_5/\text{day})}{(24 \text{ hrs/day})}$$

$$= 104 \text{ lbs O}_2/\text{hr}$$

Use 104 lbs O₂/hr

Aerator Horsepower Required:

$$\frac{104 \text{ lbs O}_2/\text{hr}}{2.2 \text{ lbs O}_2/\text{HP-hr}} = 47.3 \text{ HP}$$

Use 50 HP (2-25 HP)

Check Power-to-Volume Ratio:

$$P/V = \frac{50 \text{ HP}}{2,200,000 \text{ gal}} \times \frac{7.48 \text{ gal}}{\text{cf}} \times \frac{10^3}{1,000 \text{ cf}} = \underline{0.17 \text{ HP}/1,000 \text{ cf}}$$

P/V of 0.17 HP/1,000 cf is in the range of acceptable values and less than the maximum of 0.20. Therefore, oxygen transfer and mixing are expected to occur in the upper 3-4 feet of the pond as required in a facultative aerated lagoon system.

The existing pond has 1-25 HP aerator and 1-15 HP aerator in cell #1. The 15 HP aerator will need to be replaced by a new 25 HP aerator.

Aerated Pond – Cell No. 2:

Try P/V of 0.08 HP/1,000 cf

$$0.60 \text{ Mgal} = 80.2 \times 10^3 \text{ cf}$$

$$\begin{aligned} \text{Power Required} &= (0.08 \text{ HP}/1,000 \text{ cf})(80.2 \times 10^3 \text{ cf}) \\ &= 6.4 \text{ HP} \end{aligned}$$

Existing 10 HP aerator installed

TYPICAL WINERY WASTEWATER CHARACTERISTICS

<u>Characteristic</u>	<u>Units</u>	<u>Crushing Season</u>	<u>Noncrushing Season</u>	<u>Reclaimed Water</u>	
		<u>Range</u>	<u>Range</u>	<u>Range</u>	<u>Avg.</u>
pH	--	2.5 - 9.5	3.5 - 11.0	6.5-9.5	7.9
Dissolved Oxygen	mg/L	0.5 - 8.5	1.0 - 10.0	1.0-10.0	6.0
BOD _s	mg/L	500 - 12,000	300 - 3,500	10-160	50
C.O.D.	mg/L	800 - 15,000	500 - 6,000	-	90
Grease	mg/L	5 - 30	5 - 50	-	0.2
Settleable Solids	mg/L	25 - 100	2 - 100	-	0.2
Nonfilterable Residue	mg/L	40 - 800	10 - 400	-	20
Volatile Suspended Solids	mg/L	150 - 700	80 - 350	-	15
Total Dissolved Solids	mg/L	80 - 2,900	80 - 2,900	8-1,500	900
Nitrogen	mg/L	1 - 40	1 - 40	-	5.0
Nitrate	mg/L	0.5 - 4.8	-	0.1-40	1.5
Phosphorous	mg/L	1 - 10	1 - 40	-	5.0
Sodium	mg/L	35 - 200	35 - 200	-	100
Alkalinity (CaCO ₃)	mg/L	40 - 730	10 - 730	-	40
Chloride	mg/L	3 - 250	3 - 250	2.5-210	50
Sulfate	mg/L	10 - 75	20 - 75	-	25

SMA
Steve Martin Associates

Carneros Vintners
Pond Water Balance
POND #1
2.5 MG Production

PROJECT NO. 2008008
DATE: 7/12/16
BY: SMM CHK:
SHEET 1 OF 6

Start Month = August
Min. Depth = 3.00
Annual PW = 6.26
Initial Depth = 3.00

Depth = 14.00
Freeboard = 2.00

DEPTH (feet)	SURFACE AREA (sq. ft.)	VOLUME INCREMENT (gallons)	VOLUME TOTAL (MG)
0	8843	0	0
1	11056	74427	.074
2	13332	91217	.166
3	15668	108468	.274
4	18066	126174	.400
5	20520	144322	.545
6	23031	162892	.708
7	25599	181889	.889
8	28223	201308	1.091
9	30904	221150	1.312
10	33641	241415	1.553
11	36436	262106	1.815
12	39286	283220	2.099
13	42193	304753	2.403
14	45157	326712	2.730

MONTH	PROJECTED WW FLOW (MG)	AVE RAINFALL (inches)	10 YEAR RAINFALL (inches)	PAN EVAP. (inches)	PROJECTED EVAP. (inches)
August	1.058	0.069	0.097	8.270	6.368
September	1.064	0.441	0.617	6.750	5.198
October	0.908	1.814	2.540	4.650	3.581
November	0.338	3.843	5.380	2.250	1.733
December	0.507	5.705	7.987	1.460	1.124
January	0.238	6.571	9.199	1.420	1.093
February	0.407	5.311	7.435	2.090	1.609
March	0.376	4.375	6.125	3.870	2.980
April	0.263	2.063	2.889	5.700	4.389
May	0.182	0.983	1.376	7.740	5.960
June	0.382	0.284	0.397	9.340	7.192
July	0.538	0.041	0.057	9.340	7.192
TOTALS	6.259	31.500	44.100	62.880	48.418

Annual Ave PPT = 31.500

SMA Steve Martin Associates	Carneros Vintners Pond Water Balance POND #1 2.5 MG Production	PROJECT NO. <u>2008008</u> DATE: <u>7/12/16</u> BY: <u>SMM</u> CHK: _____ SHEET <u>2</u> OF <u>6</u>
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POND WATER BALANCE

MONTH	INITIAL VOLUME (MG)	SURFACE AREA (sq. ft.)	POND EVAP. (MG)	PW INFLOW (MG)	10 YEAR PPT. (MG)	VOLUME CHANGE (MG)	TOTAL VOLUME (MG)	DIVERT VOLUME (MG)	ENDING VOLUME (MG)
August	0.274	15668	-0.062	1.058	0.003	0.998	1.272	0.000	1.272
September	1.272	28223	-0.091	1.064	0.017	0.990	2.262	0.750	1.512
October	1.512	30904	-0.069	0.908	0.072	0.910	2.423	1.000	1.423
November	1.423	30904	-0.033	0.338	0.151	0.456	1.879	0.400	1.479
December	1.479	30904	-0.022	0.507	0.225	0.710	2.189	0.300	1.889
January	1.889	36436	-0.025	0.238	0.259	0.472	2.361	0.310	2.051
February	2.051	36436	-0.037	0.407	0.209	0.580	2.630	0.530	2.100
March	2.100	39286	-0.073	0.376	0.172	0.475	2.575	0.481	2.094
April	2.094	36436	-0.100	0.263	0.081	0.245	2.339	0.240	2.099
May	2.099	39286	-0.146	0.182	0.039	0.074	2.173	0.700	1.473
June	1.473	30904	-0.139	0.382	0.011	0.254	1.728	0.900	0.828
July	0.828	23031	-0.103	0.538	0.002	0.437	1.264	0.990	0.274
TOTALS			-0.899	6.259	1.241	6.601		6.601	

Minimum Volume = 0.274

Maximum Volume = 2.099

SMA Steve Martin Associates	Carneros Vintners Irrigation & Effluent Application Rates POND #1	PROJECT <u>2008008</u> DATE: <u>7/12/16</u> BY: <u>SMM</u> SHEET <u>3</u>	CHK: <u>6</u> OF <u>6</u>
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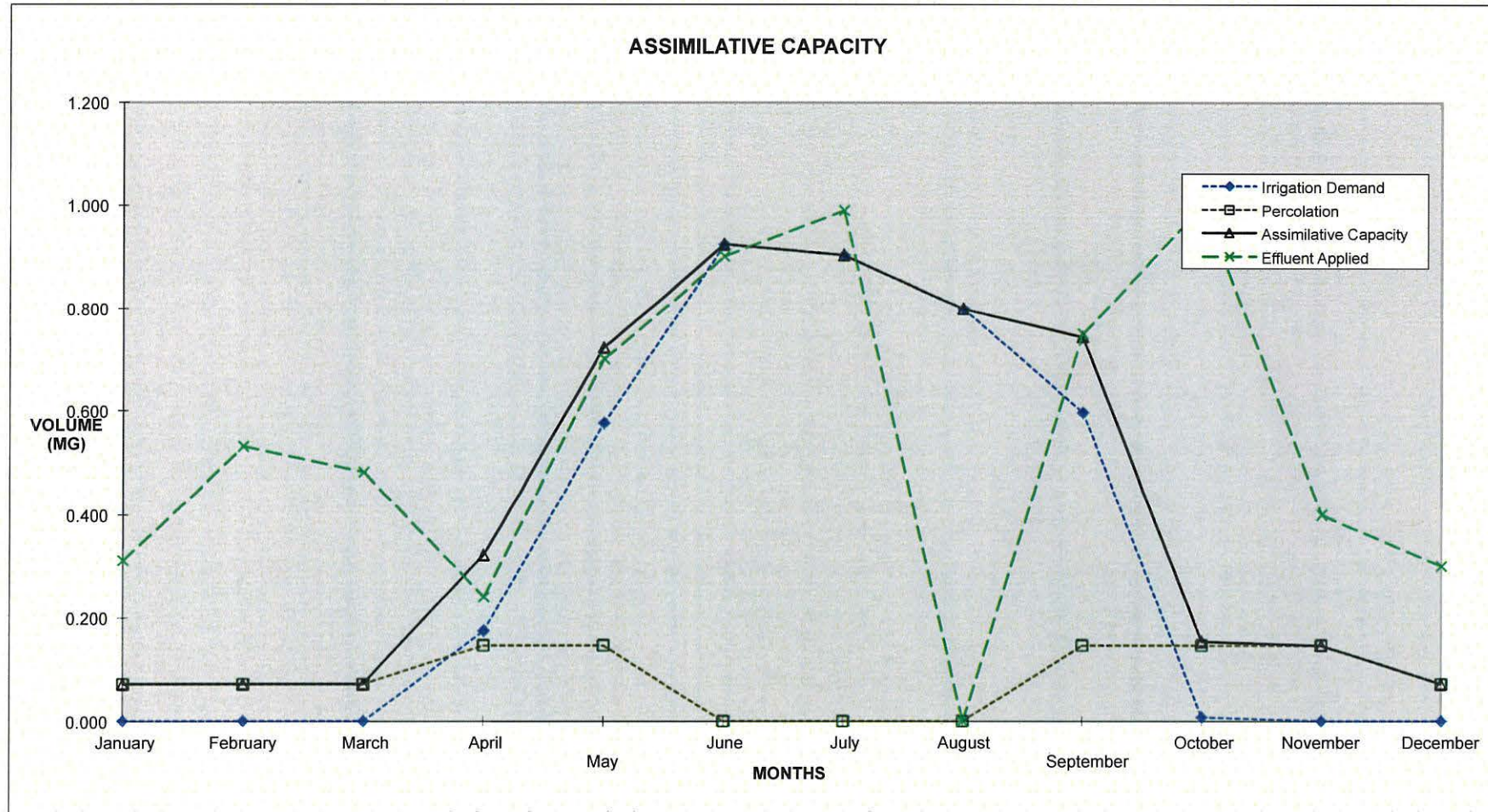
MONTH	ET _o	K _c	ET	PPT	IRRIGATION DEMAND		PERCOLATION APPLIED		ASSIMILATIVE CAPACITY		EFFLUENT APPLIED		EXCESS CAP.	
	IN	PASTURE Constant	IN	IN	IN	MG	IN	MG	IN	MG	MG	IN	MG	
January	1.2	0.80	0.99	9.20	0.00	0.000	0.50	0.073	0.50	0.073	0.310	0.045	-0.237	
February	1.9	0.80	1.50	7.44	0.00	0.000	0.50	0.073	0.50	0.073	0.530	0.078	-0.457	
March	2.2	0.90	2.02	6.13	0.00	0.000	0.50	0.073	0.50	0.073	0.481	0.071	-0.408	
April	4.1	1.00	4.08	2.89	1.19	0.175	1.00	0.147	2.19	0.322	0.240	0.035	0.082	
May	4.8	1.10	5.30	1.38	3.93	0.576	1.00	0.147	4.93	0.723	0.700	0.103	0.023	
June	6.1	1.10	6.69	0.40	6.29	0.923	0.00	0.000	6.29	0.923	0.900	0.132	0.023	
July	5.6	1.10	6.20	0.06	6.15	0.902	0.00	0.000	6.15	0.902	0.990	0.145	-0.088	
August	5.0	1.10	5.54	0.10	5.45	0.799	0.00	0.000	5.45	0.799	0.000	0.000	0.799	
September	4.3	1.10	4.69	0.62	4.07	0.597	1.00	0.147	5.07	0.744	0.750	0.110	-0.006	
October	2.6	1.00	2.59	2.54	0.05	0.007	1.00	0.147	1.05	0.154	1.000	0.147	-0.846	
November	1.7	0.90	1.50	5.38	0.00	0.000	1.00	0.147	1.00	0.147	0.400	0.059	-0.253	
December	0.7	0.80	0.56	7.99	0.00	0.000	0.50	0.073	0.50	0.073	0.300	0.044	-0.227	
TOTAL	40.2		41.67	44.10	27.12	3.98	7.00	1.03	34.12	5.01	6.60	0.97	-1.59	

IRRIGATION AREA = 5.4

NOTES:

- 1 ET_o values based on evaporation values in Table 5-1, "Irrigation with Reclaimed Municipal Wastewater - A Guidance Manual" - California State Water Resources Control Board, July, 1984. Values are for "North Coast - Interior Valleys".
- 2 K_c coefficients for pasture from Table 5-12, reference cited above.
- 3 ET=ET_o x K_c
- 4 Precipitation, 10-year rainfall event, based upon rainfall data for City of Sonoma
- 5 Irrigation Demand = ET-PPT, inches
- 6 Design percolation rate is a maximum of 0.50 inches for the winter months.
- 7 Volumes estimated using 5.4 acres of pasture irrigation. Assimilative capacity is the sum of irrigation demand and percolation applied.
- 8 See "Effluent Application Rates", Page E.3.
- 9 Conclusion: The 5.4 acres of pasture is not adequate for annual disposal/reuse of approximately 6.0 MG of treated process wastewater. Additional vineyard irrigation is needed.

10 Total of 6.6 MG of PW and captured precipitation applied to the Effluent Reuse Area is greater than the estimated assimilative capacity of 5.01 MG.



SMA Steve Martin Associates	Carneros Vintners Irrigation & Effluent Application Rates POND #1	PROJECT <u>2008008</u> DATE: <u>7/12/16</u> BY: <u>SMM</u> SHEET <u>5</u>	CHK: _____ OF <u>6</u>
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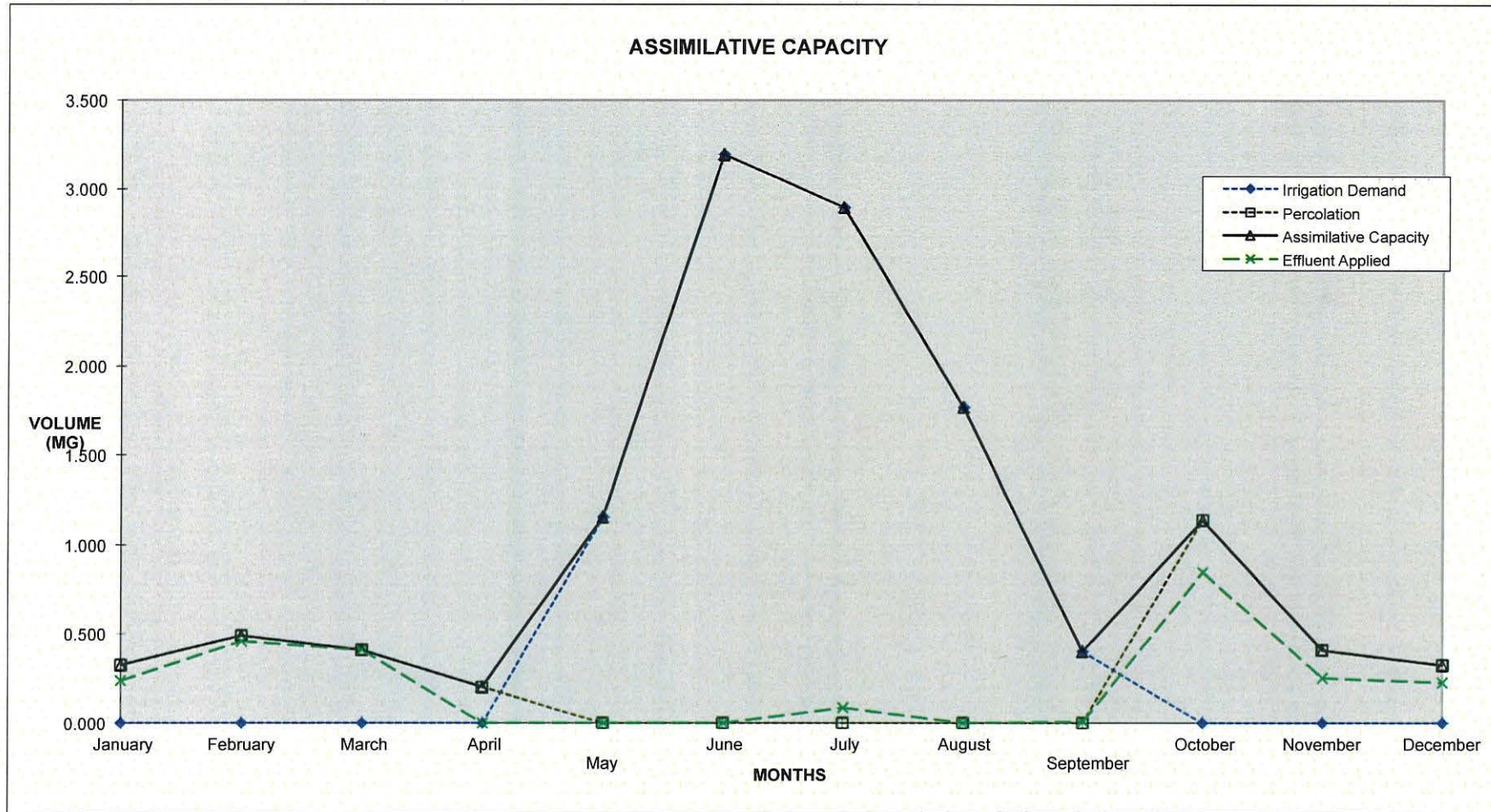
MONTH	ET _o	K _c	ET	PPT	IRRIGATION DEMAND		PERCOLATION APPLIED		ASSIMILATIVE CAPACITY		EFFLUENT APPLIED		EXCESS CAP.	
	IN	Constant	IN	IN	IN	MG	IN	MG	IN	MG	MG	IN	MG	
January	1.2	0.00	0.00	9.20	0.00	0.000	0.40	0.326	0.40	0.326	0.237	0.193	0.089	
February	1.9	0.00	0.00	7.44	0.00	0.000	0.60	0.489	0.60	0.489	0.457	0.372	0.032	
March	2.2	0.00	0.00	6.13	0.00	0.000	0.50	0.408	0.50	0.408	0.408	0.332	0.000	
April	4.1	0.16	0.65	2.89	0.00	0.000	0.25	0.204	0.25	0.204	0.000	0.000	0.204	
May	4.8	0.58	2.80	1.38	1.42	1.157	0.00	0.000	1.42	1.157	0.000	0.000	1.157	
June	6.1	0.71	4.32	0.40	3.92	3.195	0.00	0.000	3.92	3.195	0.000	0.000	3.195	
July	5.6	0.64	3.61	0.06	3.55	2.896	0.00	0.000	3.55	2.896	0.088	0.072	2.807	
August	5.0	0.45	2.27	0.10	2.17	1.770	0.00	0.000	2.17	1.770	0.000	0.000	1.770	
September	4.3	0.26	1.11	0.62	0.49	0.400	0.00	0.000	0.49	0.400	0.006	0.005	0.393	
October	2.6	0.07	0.18	2.54	0.00	0.000	1.40	1.141	1.40	1.141	0.846	0.690	0.295	
November	1.7	0.00	0.00	5.38	0.00	0.000	0.50	0.408	0.50	0.408	0.253	0.206	0.154	
December	0.7	0.00	0.00	7.99	0.00	0.000	0.40	0.326	0.40	0.326	0.227	0.185	0.099	
TOTAL	40.2		14.93	44.10	11.55	9.42	4.05	3.30	15.60	12.72	2.52	2.06	10.20	

IRRIGATION AREA = 30

NOTES:

- 1 ET_o values based on evaporation values in Table 5-1, "Irrigation with Reclaimed Municipal Wastewater - A Guidance Manual" - California State Water Resources Control Board, July, 1984. Values are for "North Coast - Interior Valleys".
- 2 K_c coefficients for pasture from Table 5-12, reference cited above.
- 3 ET=ET_o x K_c
- 4 Precipitation, 10-year rainfall event, based upon rainfall data for City of Sonoma
- 5 Irrigation Demand = ET-PPT, inches
- 6 Design percolation rate is a maximum of 0.60 inches for the winter months.
- 7 Volumes estimated using 30.0 acres of vineyard irrigation. Assimilative capacity is the sum of irrigation demand and percolation applied.
- 8 See "Effluent Application Rates", Page E.3.
- 9 Conclusion: The 30 acres of vines is adequate for annual disposal/reuse of approximately 2.52 MG of treated process wastewater (which is the balance after irrigating the pasture area first).

10 Total of 2.52 MG of PW and captured precipitation applied to the Effluent Reuse Area is less than the estimated assimilative capacity of 15.7 MG.



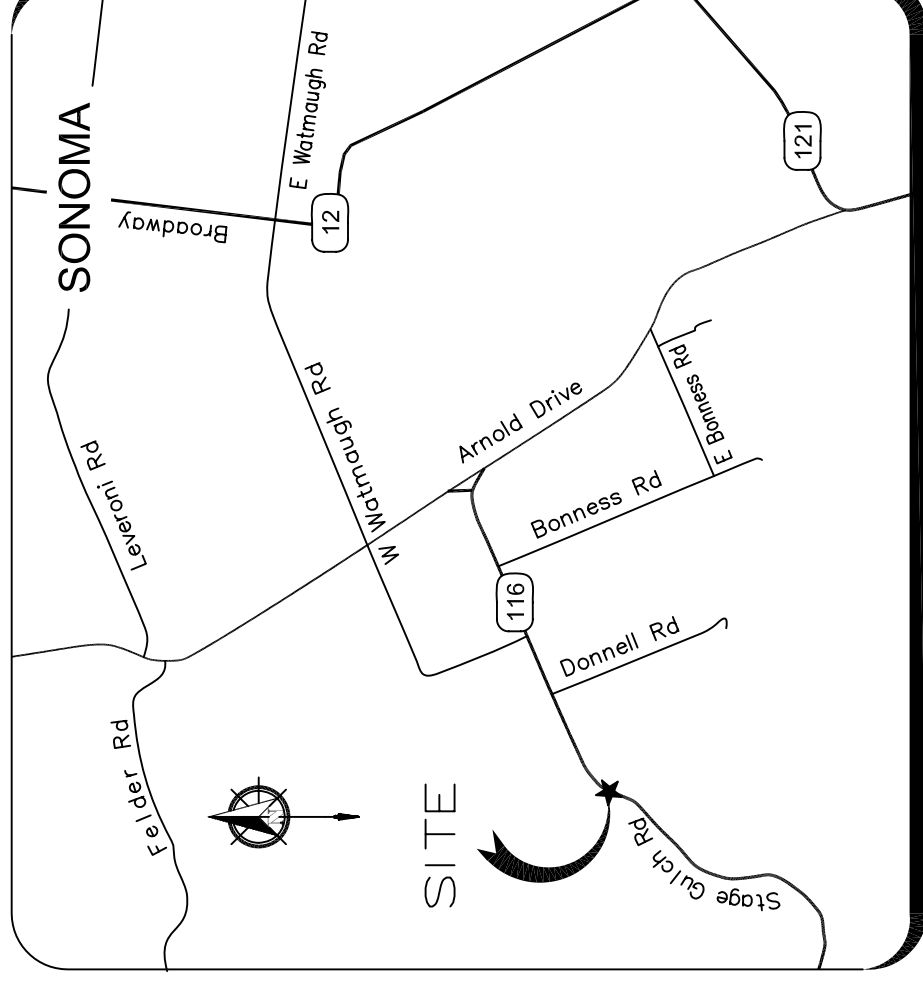
ATTACHMENT IV

**SHEET UP1
SANITARY WASTEWATER MOUND SYSTEM PLANS C1-C3
PROCESS WASTEWATER POND SHEETS PW1-PW4
RECLAIMED PROCESS WASTEWATER IRRIGATION AREAS SHEET C1**

WASTEWATER SYSTEM IMPROVEMENTS

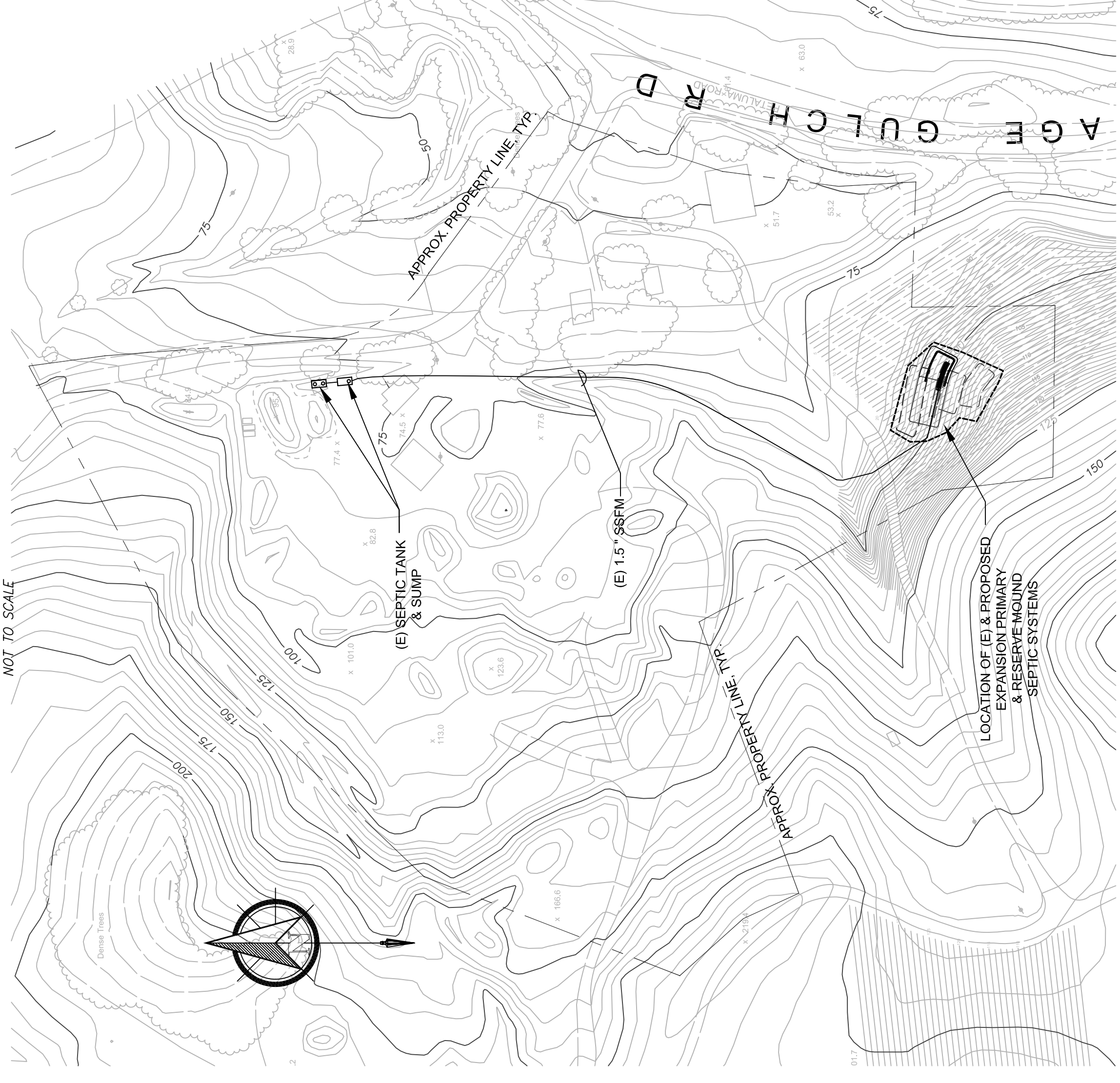
FOR CARNEROS VINTNERS 4200 STAGE GULCH RD. SONOMA, CA

APN: 142-051-031



VICINITY MAP

NOT TO SCALE



OVERALL SITE PLAN

NOT TO SCALE

GENERAL NOTES:

- THE PURPOSE OF THIS PROJECT IS TO EXPAND AN EXISTING WASTEWATER MANAGEMENT SYSTEM FOR THE TREATMENT AND DISPOSAL OF SANITARY WASTEWATER. SYSTEM INCLUDES A SEPTIC / SETTLING TANK FOR SW, SW PUMP SUMP, AND AN ABOVE GROUND MOUND SYSTEM FOR RELATED GRADING, DRAINAGE, EROSION CONTROL, AND UTILITY CONSTRUCTION.
- CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR, MATERIALS, SUPPLIES, AND EQUIPMENT FOR CONSTRUCTION OF THE IMPROVEMENTS SHOWN ON THESE DRAWINGS AND AS DESCRIBED IN RELATED CONTRACT DOCUMENTS.
- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL SECURE ALL REQUIRED CONSTRUCTION PERMITS FROM SONOMA COUNTY PERMIT RESOURCE MANAGEMENT DEPARTMENT AND OTHER AGENCIES AS NECESSARY. THE CONTRACTOR SHALL PREPARE AND SUBMIT PERMIT APPLICATIONS AND PAY ALL PERMIT FEES.
- CONTRACTOR SHALL HAVE A C-42 LICENSE WITH THE STATE OF CALIFORNIA TO PERFORM THE WORK OUTLINED IN THESE PLANS. CONTRACTOR SHALL HAVE 5 YRS MIN. EXPERIENCE INSTALLING MOUND SYSTEMS.
- ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS FOR THE IMPROVEMENTS SHOWN ON THESE PLANS SHALL CONFORM TO THE LATEST EDITION OF THE UNIFORM BUILDING CODE, UNIFORM PLUMBING CODE, APPLICABLE SONOMA COUNTY PERMIT REGULATIONS, AND REGULATIONS OF APPLICABLE UTILITY COMPANIES.
- CONTRACTOR SHALL CONTACT THE OWNER AND THE ENGINEER TO ARRANGE FOR A PRE-CONSTRUCTION CONFERENCE FOR THE PURPOSE OF REVIEWING JOB REQUIREMENTS.
- THE SONOMA COUNTY PERMIT RESOURCE MANAGEMENT DEPARTMENT SHALL BE NOTIFIED 24 HOURS PRIOR TO STARTING ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE APPROPRIATE AGENCIES INFORMED OF THEIR SCHEDULE.
- CONTRACTOR SHALL PROVIDE 24 HOURS ADVANCE NOTICE TO THE ENGINEER FOR REQUESTED INSPECTIONS.
- CONTRACTOR SHALL NOTIFY PUBLIC OR PRIVATE UTILITY COMPANIES AT LEAST TWO WORKING DAYS PRIOR TO COMMENCEMENT OF NEW WORK ACTIVITIES ON THIS PROJECT TO VERIFY THE LOCATION OF EXISTING UTILITY LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THESE UTILITY COMPANIES INFORMED OF HIS SCHEDULE. CALL UNDERGROUND SERVICE ALERT (U.S.A.) TOLL FREE AT 1-800-222-2600, 7:00 A.M. TO 5:00 P.M., MONDAY THROUGH FRIDAY.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE; HOWEVER, THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES MAY NOT HAVE BEEN INDICATED ON THESE PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE AND DEPTH OF ALL UTILITIES SHOWN OR SHOWN ADJACENT TO THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF EXISTING UTILITIES; CONFLICTS AND/OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- EXISTING UTILITIES SHALL BE KEPT IN SERVICE AT ALL TIMES. UTILITIES THAT INTERFERE WITH THE WORK TO BE PERFORMED SHALL BE PROTECTED AS REQUIRED BY COUNTY OF SONOMA, THE LOCAL UTILITIES AND THE OWNER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING FACILITIES AND IMPROVEMENTS FROM DAMAGE RESULTING FROM CONTRACTOR'S WORK. ANY DAMAGE CAUSED BY CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND RAM ENGINEERING HARMLESS FROM LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR RAM ENGINEERING.
- SHOULD ANY CONTRACTOR OR SUBCONTRACTOR FIND ANY DEFICIENCIES, ERRORS, CONFLICTS OR OMISSIONS IN THESE DRAWINGS SPECIFICATIONS OR SHOULD THERE BE ANY DOUBT AS TO THEIR MEANING OR INTENT, THE CONTRACTOR SHALL NOTIFY RAM ENGINEERING.
- THE DRAWINGS SHALL NOT BE SCALED. WRITTEN DIMENSIONS ALWAYS TAKE PRECEDENCE OVER SCALED DIMENSIONS. ALL WORK SHALL BE GOVERNED BY THE DIMENSIONS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK.
- THESE DRAWINGS ARE INTENDED TO BE USED FOR CONSTRUCTION OF THE SITE IMPROVEMENTS SHOWN HEREON. CONTRACTOR SHOULD FIND DISCREPANCIES, OMISSIONS, OR CONFLICTS IN THESE DRAWINGS. CONTRACTOR SHALL NOTIFY RAM ENGINEERING PRIOR TO CONSTRUCTION NOT INDICATED OR NOTED SHALL BE CONSIDERED OF THE SAME CHARACTER SHOW FOR SIMILAR OR EXISTING CONSTRUCTION.
- THE SCREENED CONTOURS AND TOPOGRAPHIC INFORMATION ON THESE DRAWINGS SHALL BE BASED ON THE ALBION SURVEYS OF ST. HELENA, CALIFORNIA LOCATION AS OF AUGUST 2000 AND FEBRUARY 2006. THE OVERALL TOPOGRAPHIC INFORMATION WAS PROVIDED BY ALBION SURVEYS OF ST. HELENA, CALIFORNIA ON AUG. 16, 2000. THE VICINITY OF THE MOUND PRIMARY AND EXPANSION SYSTEMS WAS FIELD VERIFIED BY JACKSON & ASSOCIATES OF SANTA ROSA, CALIFORNIA ON FEB. 22, 2006.
- PROPERTY LINES SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND FOR INFORMATIONAL PURPOSES ONLY. THIS DRAWING DOES NOT REPRESENT A BOUNDARY SURVEY.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OWNERS REPRESENTATIVE ADJOINING OPERATIONS OPEN TO THE OWNERS AT ALL TIMES.
- THE CONTRACTOR SHALL PURCHASE AND MAINTAIN SUCH INSURANCE AS WILL PROTECT AND HOLD HIM, THE OWNER AND THE ENGINEER HARMLESS FROM CLAIMS OF NEGLIGENCE OR OTHER LIABILITY ARISING FROM THE WORK. CONTRACTOR'S OPERATIONS UNDER THE CONTRACT OR BY ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM, OR BY ANYONE FOR WHOM CONTRACTOR IS RESPONSIBLE, SHALL BE LIABLE.
- THE CONTRACTOR SHALL PROVIDE THE OWNER AS A CONDITION OF COMPLETION AND RECEIPT OF FINAL PAYMENT A WRITTEN GUARANTEE COVERING ALL MATERIALS AND WORKMANSHIP FURNISHED AND PERFORMED FOR THIS WORK AGAINST DEFECTS FOR A PERIOD ONE (1) YEAR AFTER THE DATE OF FILING THE NOTICE OF COMPLETION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR A DAILY RECORD OF "AS BUILT" CONDITIONS WHICH DIFFER FROM THE ORIGINAL DRAWINGS. THE CONTRACTOR WILL BE PROVIDED WITH A SET OF REPRODUCIBLE DRAWINGS ON WHICH THE FINAL "AS BUILT" CONDITIONS SHALL BE RECORDED. THE "AS BUILT" DRAWING (SIGNED AND DATED) SHALL BE FURNISHED TO THE ENGINEER UPON COMPLETION OF THE WORK AND PRIOR TO FINAL PAYMENT. SUBSTITUTIONS FOR MATERIALS OR METHODS SHALL BE APPROVED BY THE ENGINEER. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR WORK AFFECTED BY SUCH CHANGES ACCOMPLISHED WITHOUT HIS REVIEW.
- AS THE RESPONSIBILITY FOR THE ENGINEERING DESIGN WORK DEPICTED ON THESE DRAWINGS IS LIMITED TO THE DESIGN WORK SHOWN THEREON, CONTRACTOR SHALL BE MADE TO THE WORK DURING OR PRIOR TO CONSTRUCTION WITHOUT THE EXPRESS WRITTEN PERMISSION OR ACKNOWLEDGEMENT OF RAM ENGINEERING.

INSPECTION SCHEDULES & NOTES:

- THE ENGINEER SHALL INSPECT THE SITE AND WEATHER CONDITIONS PRIOR TO CONSTRUCTION OF THE SYSTEM. HE/SHE MUST VERIFY DRY AND ACCEPTABLE SOIL AND WEATHER CONDITIONS FOR CONSTRUCTION, AND DECIDE IF CONDITIONS ARE SUITABLE TO BEGIN CONSTRUCTION.
 - THE ENGINEER SHALL VERIFY (WITH THE CONTRACTOR) THE PROPER STAKING OF THE SYSTEM PRIOR TO ANY CONSTRUCTION. THE SYSTEM DETAILS, CONFIGURATION, LOCATION, CONTOUR, PERCOLATION AREA, EXPANSION AREA, ETC. SHALL BE VERIFIED.
 - THE ENGINEER OR CONTRACTOR SHALL NOTIFY THE HEALTH DEPARTMENT A MINIMUM OF 24 HOURS IN ADVANCE OF WHEN CONSTRUCTION IS TO TAKE PLACE AND CERTIFY THAT THE SOIL CONDITIONS ARE ACCEPTABLE FOR CONSTRUCTION PURPOSES, AND THAT THE STAKING OF THE SYSTEM HAS BEEN ACCOMPLISHED AND CERTIFIED.
 - ALL MEETINGS AND INSPECTIONS SHALL BE SCHEDULED WITH THE ENGINEER A MINIMUM OF 48 HOURS IN ADVANCE. THESE SHALL INCLUDE AS A MINIMUM:
 - PRE-CONSTRUCTION CONFERENCE.
 - INTERIM INSPECTION, PERFORMED PRIOR TO COVERING ANY ELEMENTS OF THE SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE ENGINEER OF ANY INSPECTIONS. THE HEALTH DEPARTMENT SHALL BE NOTIFIED A MINIMUM OF 24 HOURS IN ADVANCE, AND NO LATER THAN 9 A.M. OF THE PRIOR WORKING DAY.
 - FINAL INSPECTION OF COMPLETED SYSTEM AND ALL RELATED ITEMS PER THE CONSTRUCTION DOCUMENTS.
- PRE-CONSTRUCTION CONFERENCE:
- THE FOLLOWING ITEMS SHALL BE REVIEWED. CONSTRUCTION MAY PROCEED IF THE ENGINEER NOTIFIES THE HEALTH DEPARTMENT THAT ALL ELEMENTS APPEAR TO CONFORM TO THE FOLLOWING REQUIREMENTS:
- SOIL MOISTURE AT THE APPROPRIATE DEPTHS ARE NOT SO HIGH AS TO HAVE THE SOIL SMEAR OR COMPACT DUE TO CONSTRUCTION ACTIVITIES.
 - IMMINENT WEATHER CONDITIONS APPEAR THAT THEY WILL NOT CREATE UNSUITABLE SOIL MOISTURE CONDITIONS DURING THE COURSE OF CONSTRUCTION.
 - LAYOUT AND STAKING OF THE DISTRIBUTION BOX, SAND MOUND, AND SOIL TOE BOUNDARY SUBSTANTIALLY CONFORM TO THE APPROVED CONSTRUCTION DOCUMENTS HAS BEEN ACCOMPLISHED.
 - THE SOURCE OF THE SOIL COVER MATERIAL SHALL BE DESIGNATED, AND A SAMPLE SHALL BE MADE AVAILABLE AND APPROVED BY THE DESIGN CONSULTANT PRIOR TO PLACEMENT.
 - THE SOURCE OF THE SAND FILL MATERIAL SHALL BE DESIGNATED, AND A SAMPLE SHALL BE MADE AVAILABLE AND APPROVED BY THE DESIGN CONSULTANT PRIOR TO PLACEMENT.
- INTERIM INSPECTION
- THE FOLLOWING ELEMENTS, (WHEN REQUIRED), SHALL BE VERIFIED BY VISUAL INSPECTION AND OPERATION OF THE SYSTEM. WHEN ALL REQUIRED ITEMS ARE COMPLETED AND APPROVED, THE DISPOSAL FIELD, TRENCHES AND TANKS MAY BE COVERED OR BACKFILLED.
- LINE AND GRADE OF ALL EXCAVATIONS AND FILLS AS APPLICABLE.
 - FUNCTION AND SETTING OF ANY CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO VALVES, SWITCHES AND ALARMS.
 - HYDRAULIC (SQUIRT) TESTING OF ANY PUMP AND DISTRIBUTION SYSTEM TO ASSURE THAT THE PUMP IS ADEQUATE FOR DESIGN FLOWS.
 - ALL THE REMAINING ELEMENTS REQUIRED TO COMPLETE THE SYSTEM SHALL BE ON SITE AT THE TIME FOR VERIFICATION, AND APPROVAL BY THE ENGINEER SHALL BE IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS.
- FINAL INSPECTION
- THE ENGINEER SHALL VERIFY THAT ALL CONSTRUCTION IS IN GENERAL CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. A FINAL LETTER FROM THE ENGINEER TO THE SONOMA COUNTY PERMIT RESOURCE MANAGEMENT DEPARTMENT SHALL STATE THAT ALL CONSTRUCTION HAS BEEN COMPLETED, APPROVED AND IS IN CONFORMANCE WITH ALL SPECIFICATIONS.
- NOTE: THE SONOMA COUNTY PERMIT RESOURCE MANAGEMENT DEPARTMENT (PRMD) WILL PERFORM A FINAL INSPECTION OF THE SYSTEM FOLLOWING RECEIPT OF THE ENGINEER'S APPROVAL LETTER. PRMD WILL NOT SIGN-OFF THE PERMIT OR JOB CARD UNTIL THE HOUSE OPERATIONAL PERMIT WILL BE ISSUED AND THE ANNIVERSARY DATE ESTABLISHED.
- ENGINEER'S NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NOTIFICATIONS.

SHEET INDEX

- C1 GENERAL INFORMATION AND OVERALL SITE PLAN
- C2 WASTEWATER SYSTEM PLAN
- C3 DETAIL SHEET

REVISIONS	DATE	DESCRIPTION

RAM Engineering
130 South Main Street, Suite 201
Sebastopol, CA 95472
(707) 824-0266 Fax (707) 824-9707
www.ramengineering.net

GENERAL INFORMATION
AND OVERALL SITE
PLAN
APN: 142-051-031

CARNEROS VINTNERS
4200 Stage Gulch Road
Sonoma, CA
APN: 142-051-031



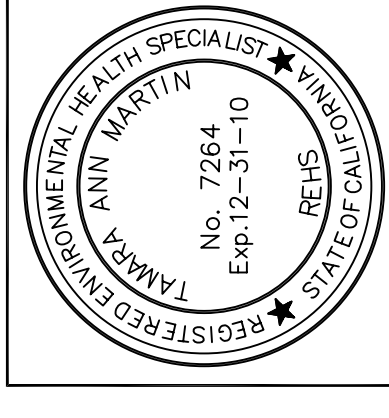
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DATE	12-1-08
DRAWN	LUC CHKD TM
FILE NO.	320Sept16Expansion
SHEET	C1
OF	3

REVISIONS	DESCRIPTION

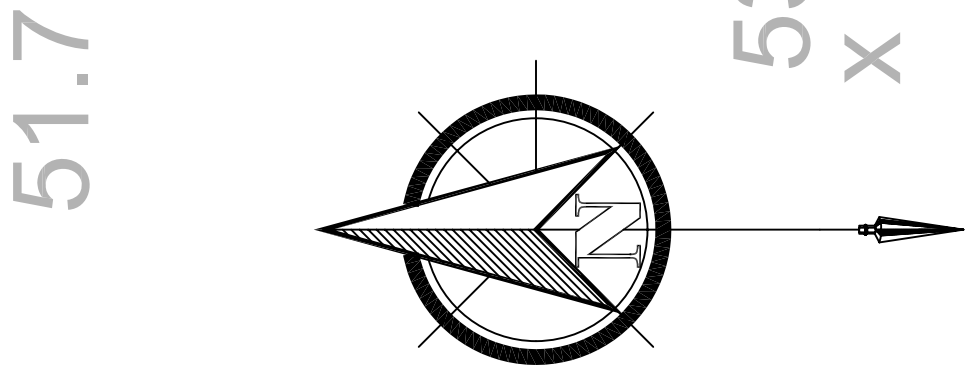
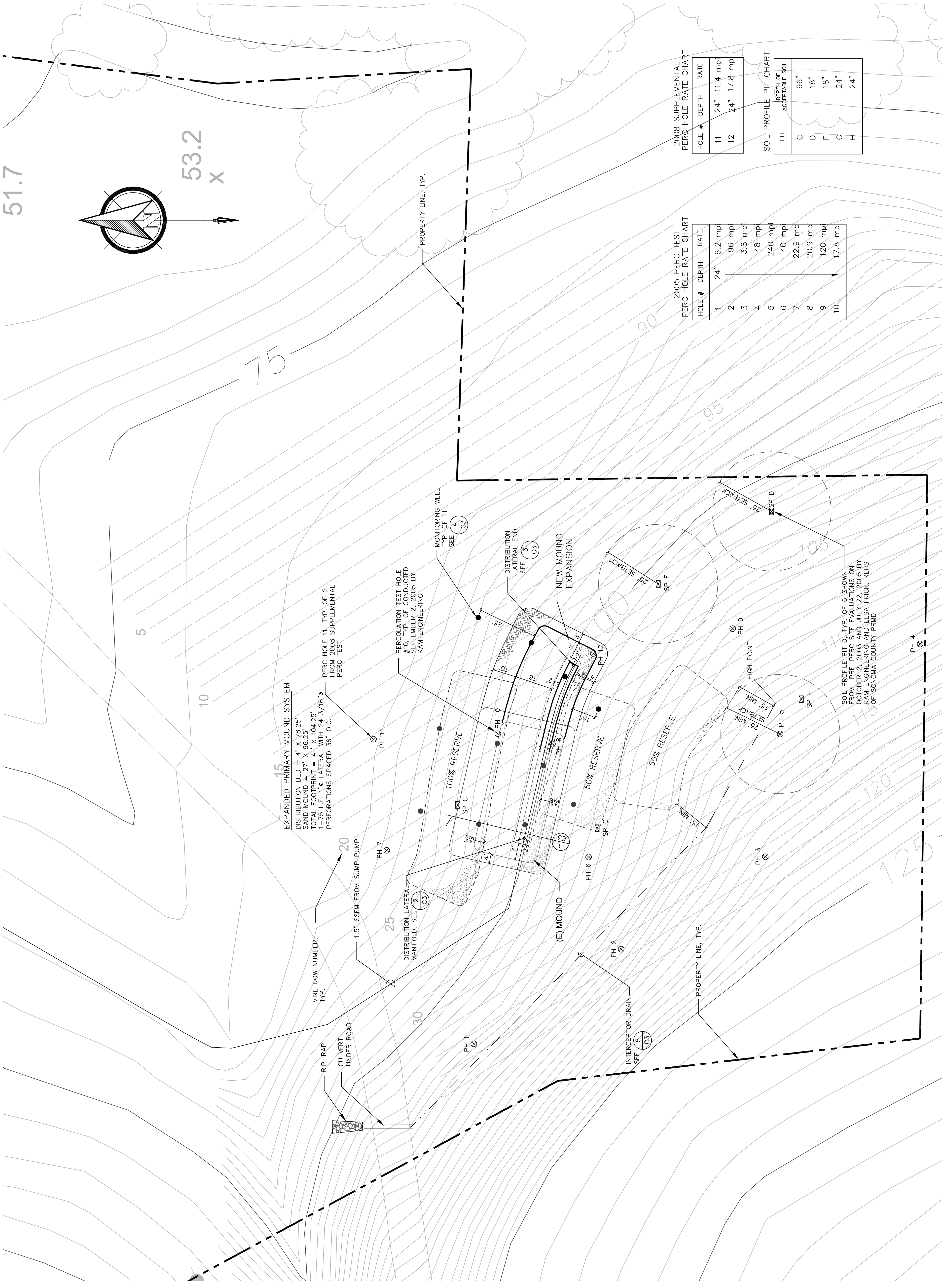
RAM
 RAM Engineering
 130 South Main Street, Suite 201
 Sebastopol, CA 95472
 (707) 824-0266 Fax (707) 824-9707
 www.ramengineering.net

WASTEWATER SYSTEM
 EXPANSION PLAN

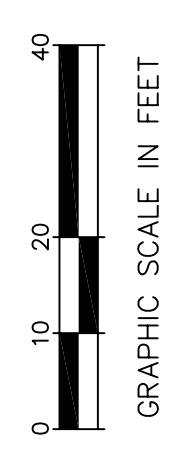
CARNEROS WINTERS
 4200 Stage Gulch Road
 Sonoma, CA
 APN: 142-051-031



JOB: RAM 200320
 DATE: 12-1-08
 DRAWN: LJC CHKD: TM
 FILE NO: 3205SepticExpansion
 SHEET: **C2**
 OF 3



WISCONSIN MOUND WASTEWATER SYSTEM PLAN
 SCALE: 1" = 20'-0"



MATERIALS SPECIFICATIONS AND ELECTRICAL REQUIREMENTS

1. GRAVITY PIPE SHALL BE 4" THROUGH 15" POLYVINYL CHLORIDE (PVC) SINKER PIPE, PVC SINKER PIPE, COUPLINGS, RUBBER GASKETS AND FITTINGS CONFORMING TO ASTM D-3034, SDR 35 TO ASTM D-2466.
2. PRESSURE PIPE SHALL BE SCHEDULE 40 POLYETHYLENE GLYCOL (PE) SOLVENT WELD PIPE CONFORMING TO ASTM D-1785 AND SCHEDULE 40 SOCKET-TYPE PVC FITTINGS CONFORMING TO ASTM D-2466.
3. CHECK VALVE SHALL BE A FLOWMATIC MODEL 208P PVC BALL CHECK VALVE WITH SOCKETED ENDS PRESSURE RATING 100 PSI, PVC CONSTRUCTION.
4. GATE VALVES SHALL HAVE PVC BODY, SOLID WEDGE DISC WITH NON-RISING STEM AND SOCKETED END VALVES SHALL BE MANUFACTURED BY HARRINGTON INDUSTRIAL PLASTICS, INC. OR EQUAL.
5. THE PW SUMP TANK SHALL BE A SINGLE COMPARTMENT APRON LISTED 2000 GALLON CAPACITY HOLDING TANKS BY SELVAGE CONCRETE PRODUCTS OR EQUAL.
6. PRECAST CONCRETE TANK SHALL MEET THE FOLLOWING REQUIREMENTS:
 - A. SHALL BE DESIGNED FOR UP TO 6 FEET OF EARTH FILL.
 - B. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS AND ALL REINFORCING BARS SHALL BE ASTM A-615 GRADE 40 OR GRADE 60, WITH SUPPLEMENT S-1.
 - C. OPENINGS SHALL BE PROVIDED ON THE TANKS AS INDICATED ON THE DRAWINGS.
 - D. EXTERIOR SURFACES OF TANK SHALL BE COMPLETELY COVERED WITH THOROSEAL FOUNDATION COATING AS MANUFACTURED BY THORO SYSTEM PRODUCTS, INC. AT THE RATE OF 2 LBS. PER SQUARE YARD EACH COAT.
 - E. ALL INTERIOR SURFACES OF PW TANKS SHALL BE COMPLETELY COVERED WITH A 50 MIL THICKNESS RAMBOR TG5000 WATERPROOFING MEMBRANE BY RAMBOR CORPORATION. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS AND ALL REINFORCING BARS SHALL BE ASTM A-615 GRADE 40 OR GRADE 60, WITH SUPPLEMENT S-1.
 - F. RISERS ON THE TANK SHALL BE 24-INCH DIAMETER PRE-CAST CONCRETE RINGS WITH TRAFFIC RATED CAST IRON FRAME AND COVER WITH GAS TIGHT GASKET.
7. A 24 HOUR WATER TIGHT TEST SHALL BE CONDUCTED ON TANK WITH A MAXIMUM WATER LOSS OF 0.10 GALLONS PER HOUR.
8. WASTEWATER SUMP PUMP SHALL BE A GULDS MODEL 2043Y40D, 7.5 HP, SUBMERSIBLE PUMP (OR EQUIVALENT). THE PUMP SHALL BE CAPABLE OF PUMPING 100 GPM AT A TDH OF 70 FEET MIN.
9. FLOAT SWITCH SHALL BE A WIDE ANGLE SWITCH BY SJ ELECTRO SYSTEMS OR EQUIVALENT WITH SUFFICIENT UNINTERRUPTED CABLE LENGTH. FLOAT SETTINGS FOR OFF, ON, AND HW ALARM SHALL BE PROVIDED AS SHOWN IN DETAIL.
10. WASTEWATER POND AERATORS SHALL BE MANUFACTURED BY EMPOWERMENTAL EQUIPMENT. EMPOWERMENTAL AERATORS SHALL BE MODEL FA1215, AND ONE 15 HP 1200 RPM (MODEL FA1215), AND ONE 25 HP - 1200 RPM (MODEL FA1225) OR EQUIVALENT.

AERATOR OPERATION:

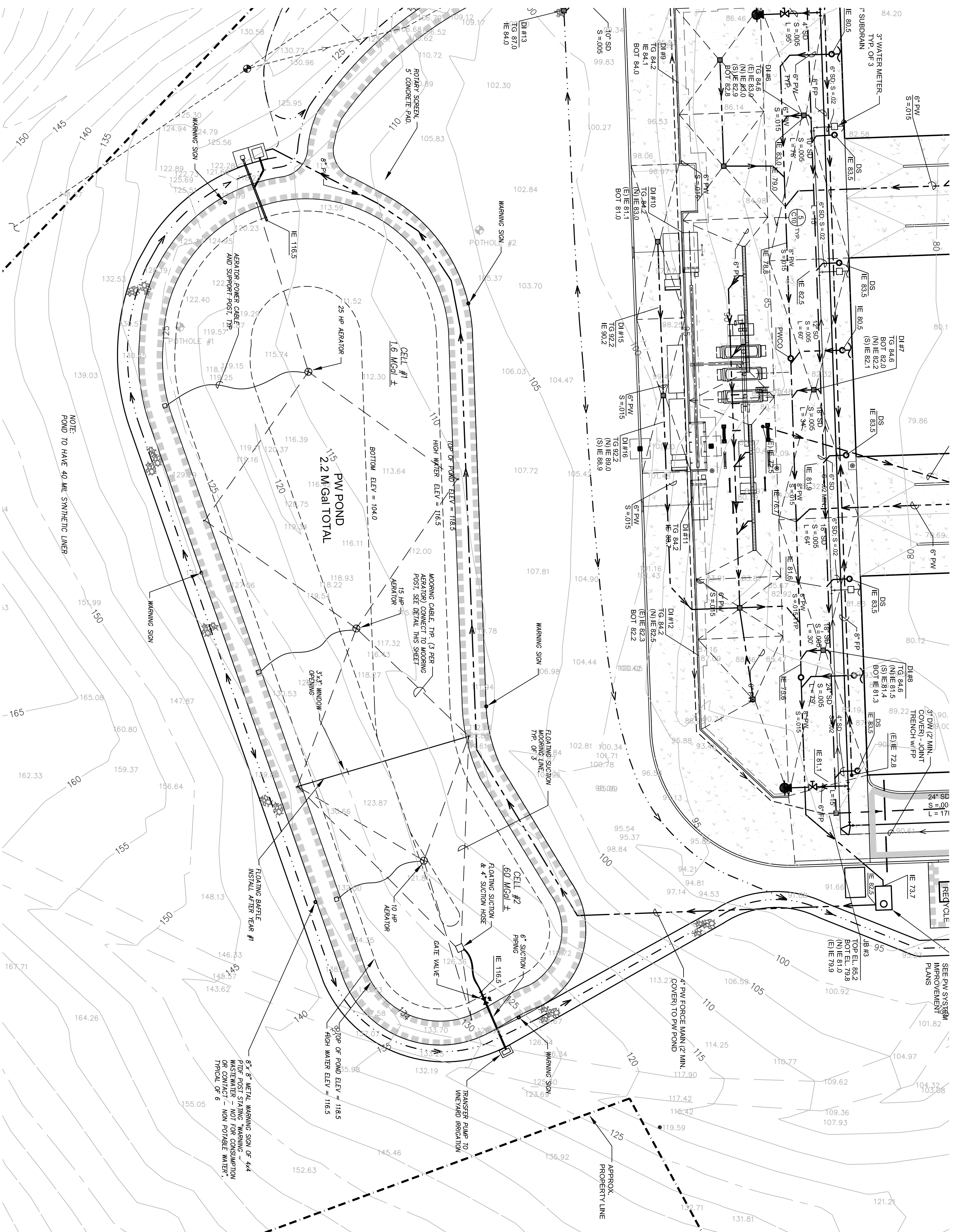
 - A. AN ADJUSTABLE OR PROGRAMMABLE TIME CLOCK SHALL ALLOW FOR UP TO 3 ON-OFF SEQUENCES DURING A 24-HOUR DAY AND OPERATION ON VARIABLE DAYS OF THE WEEK.
 - B. THE AERATORS ARE H-O-A AND TIMER ACTIVATED IN THE "HAND" MODE THE AERATORS WILL RUN CONTINUOUSLY. IN THE "AUTO" MODE THE AERATORS WILL BE CONTROLLED BY THEIR RESPECTIVE TIMERS.
11. ROTARY SCREEN SHALL BE MANUFACTURED BY P&L SPECIALTIES, MODEL PL-RS 4-24, 0.5 HP, 480 V, 3 PHASE, OR EQUIVALENT. ROTARY SCREEN BACKWASH SOLENOID VALVE SHALL BE AN ASO VARIABLE VOLTAGE SOLENOID VALVE.

ROTARY SCREEN OPERATION:

 - A. IN AUTO MODE, THE ROTARY SCREEN IS ACTIVATED WHEN PUMP IN PW TANK COMES ON.
 - B. WHEN THE PUMP IN THE PW SUMP TURNS OFF, THE SCREEN WILL CONTINUE TO OPERATE FOR AN ADJUSTABLE PERIOD OF TIME (0-5 MIN.) FOR CONTINUED BACKWASHING.
 - C. AN EMERGENCY SHUT OFF IS REQUIRED NEAR THE SCREEN.

ROTARY SCREEN BACKWASH OPERATION:

 - A. IN AUTO MODE, THE SOLENOID VALVE IS OPENED REPEATEDLY BY A REPEAT CYCLE TIMER DURING THE TIME THE SCREEN IS ON, "ON" AND "OFF" SETTINGS SHALL BE ADJUSTABLE ("ON" FOR A PERIOD OF 0-5 MINUTES, "OFF" FOR A PERIOD OF 0-60 MINUTES).
 - B. THE SOLENOID VALVE ALSO OPENS DURING THE TIME THE SCREEN CONTINUES TO RUN AFTER THE PUMP SHUTS OFF.
12. POWER SUPPLY SHALL BE 480 V - 3 PHASE.
13. PW FLOWMETER SHALL BE A MAGNETIC FLOWMETER (WITH REMOTELY LOCATED FLOW RATE AND TOTALIZER INDICATORS), 117 MAG, 60 HZ.
14. TRANSFER/IRRIGATION PUMP SHALL BE A 15 HP, 480 V, 3 PHASE, 60 HZ, SELF PRIMING PUMP, OVERLOAD PROTECTION REQUIRED. PUMP IS MANUALLY OPERATED BY SEPARATE ON-OFF SWITCH LOCATED IN CONTROL PANEL.
15. THE PRE-TREATMENT CONTROL PANEL SHALL BE A WEATHER PROOF PANEL WITH THE ACCESSORIES AND FEATURES AS FOLLOWS:
 - A. HAND-OFF AUTOMATIC SWITCHES
 - B. RUNNING LIGHTS
 - C. RUN TIME METERS
 - D. MOTOR PROTECT RELAY, FUSE, CIRCUIT BREAKER
 - E. HIGH WATER ALARM (HWA) WITH LIGHT AND BELL AND CONTACT
 - F. HIGH TEMPERATURE/FAILURE TO START ALARM
 - G. HIGH TEMPERATURE/FAILURE TO START ALARM
 - H. MAIN DISCONNECT SWITCHES AS REQUIRED
16. THE CONTROL PANEL AT THE WASTEWATER POND SHALL BE A WEATHER PROOF PANEL WITH THE ACCESSORIES AND FEATURES AS FOLLOWS:
 - A. HAND-OFF AUTOMATIC SWITCHES
 - B. 10 HP AERATOR
 - C. 25 HP AERATOR
 - D. TRANSFER/IRRIGATION PUMP
 - E. ROTARY SCREEN
 - F. 15 HP AERATOR "ON"
 - G. 25 HP AERATOR "ON"
 - H. TRANSFER/IRRIGATION PUMP "ON"
 - I. ROTARY SCREEN "ON"
 - J. BACKWASH VALVE "OPEN"
 - K. TIME METERS
 - L. MOTOR PROTECT RELAY, FUSE, CIRCUIT BREAKER
 - M. HIGH TEMPERATURE/FAILURE TO START ALARM
 - N. MAIN DISCONNECT SWITCHES AS REQUIRED



PW POND UTILITY PLAN

SCALE: 1" = 30'-0"



GRAPHIC SCALE

1" EQUALS 50 FT.

REVISIONS	DATE	DESCRIPTION
60409	5/28/09	ROTARY SCREEN DETAILS

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PROCESS WASTEWATER POND
EQUIPMENT PLAN

CARNEROS VINTNERS
4200 Stage Gulch Road (Hwy 116)
Sonoma, California
APN: 142-051-031



JOB	SMA 2008008
DATE	Jan. 5, 2009
DRAWN	LC CAD TMM
FILE NO.	09-008PW(PW2)
SHEET	

PW2

