San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

APR 15 2015

Ms. Andrea Staggs
CBUS Ops Inc. (dba Woodbridge Winery)
PO Box 1260
Woodbridge, CA 95258

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-2321
Project # N-1140986

Dear Ms. Staggs:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. You requested that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. The proposed project is for the installation of two new 652,000 gallon wine storage tanks and modification of four existing 652,000 gallon wine storage tanks to reduce the maximum permitted annual throughput limits.

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authorities to Construct with Certificates of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Enclosures

cc: Mike Tollstrup, CARB (w/enclosure) via email
cc: Gerardo C. Rios, EPA (w/enclosure) via email

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San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Installation of Wine Storage Tanks

Facility Name:	CBUS Ops Inc. (dba Woodbridge Winery)	Date:	April 9, 2015
Mailing Address:	P.O. Box 1260 Woodbridge, CA 95258	Engineer: Lead Engineer:	Ramon Norman Brian Clements
Contact Person:	Andrea Staggs (Project Engineer)	Wendy Garcia	
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E-Mail:	andrea.staggs@cbrands.com	Wendy.Garcia@cbrands.com	
Application #(s):	N-2321-801-1, -802-1, -803-1, -804-1, -834-0, and -835-0		
Project #:	N-1140986		
Deemed Complete:	November 10, 2014		

I. Proposal

CBUS Ops Inc. (dba Woodbridge Winery) has requested Authority to Construct (ATC) permits for the installation of two new 652,000 gallon wine storage tanks (ATC permits N-2321-834-0 and -835-0). The new tanks will be installed under an existing facility-wide limit for VOC emissions, so there will be no overall increase in VOC emissions. VOC emissions from all wine fermentation and wine storage operations at the facility will continue to be limited to no more than 1,167,178 lb-VOC/year. In addition, Permits N-2321-801-0, -802-0, -803-0, and -804-0 for four 652,000 gallon wine storage tanks, for which ATC permits were previously issued under Project N-1133440, will be modified under this project by ATC permits N-2321-801-1, -802-1, -803-1, and -804-1. ATC permits N-2321-801-1, -802-1, -803-1, and -804-1 will reduce the current maximum permitted annual throughput limits to better characterize the actual maximum potential throughput of the tanks during operation. Although wine storage tanks N-2321-801-1, -802-1, -803-1, and -804-1 were previously permitted, potential control systems for the group of all six 652,000 gallon wine storage tanks will be evaluated in Best Available Control Technology (BACT) analysis because tanks are part of the same general project and will be installed in the same area. (See Appendix A for Current Permits N-2321-801-0, -802-0, -803-0, and -804-0)

CBUS Ops Inc. had previously requested ATC permits for the installation of a total of nine new wine storage tanks and 24 new wine storage and fermentation tanks under Project N-1133440. Per the facility's request, the original ATC project was split into two separate projects with Phase 1 (Project N-1133440) for the installation of seven new wine storage tanks and Phase 2, which was for the remaining 26 wine storage and fermentation tanks that the facility indicated would be installed in the spring of 2015 or later. The facility subsequently requested that Phase 2 of the project also be split to allow the projects for the two remaining wine storage tanks and 24 new wine storage and fermentation tanks to be processed separately. Therefore, per the facility's request, the overall project includes three phases: Phase 1 - Project N-

1133440 for installation of seven new wine storage tanks, for which the ATC permits were issued on 6/16/2014; Phase 2 - Project N-1140986, the current project, for installation of two new wine storage tanks; and Phase 3 - Project N-1143210 - for installation of 24 new wine storage and fermentation tanks.

CBUS Ops Inc. received their Title V Permit on March 5, 2007. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. CBUS Ops Inc. must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (4/21/11)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4102	Nuisance (12/17/92)
Rule 4694	Wine Fermentation and Storage Tanks (12/15/05)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The facility is located at 5950 E Woodbridge Road, Acampo, CA. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

CBUS Ops Inc. produces both red and white table wines, as well as other specialty wine products, from the fermentation of grapes. During the "crush season," typically from late August to late November, both red and white grapes are received by truck and delivered to a crusher-stemmer which serves to crush the grapes and remove the stems. In the case of red wines, the resultant juice (termed "must" and containing the grape skins, pulp and seeds) is pumped to red wine fermentation tanks for fermentation, a batch process. The red wine fermentation tanks are specifically designed to ferment the must in contact with the skins and to allow the separation of the skins and seeds from the wine after fermentation. In the case of white wines, the must is sent to screens and presses for separation of grape skins and seeds prior to fermentation. After separation of the skins and seeds, the white must is transferred to a fermentation tank. White wine fermentation can be carried out in a tank without design provisions for solids separation since the skins and seeds have already been separated.

After transfer of the must (for red or white wine) to the fermentation tank, the must is inoculated with yeast which initiates the fermentation reactions. During fermentation, the yeast metabolizes the sugar in the grape juice, converting it to ethanol and carbon dioxide (CO_2) while releasing heat. Temperature is typically controlled by refrigeration, and is maintained at 45–65 °F for white wine fermentation and 70–95 °F for red wine fermentation. The sugar content of the fermentation mass is measured in °Brix (weight %) and is typically 22–26° for unfermented grape juice, dropping to 4° or less at the end of fermentation. Finished ethanol concentration is approximately 10 to 14 percent by volume. Batch fermentation requires 3-5 days per batch for red wine and 1-2 weeks per batch for white wine. VOCs are emitted during the fermentation process along with the CO_2. The VOCs consist primarily of ethanol along with small quantities of other fermentation byproducts.

Following the completion of fermentation, white wine is transferred directly to storage tanks. Red wine is first directed to the presses for separation of solids and then routed to the storage tanks. Tanks at a winery may be used for 1) fermentation operations, during which the tank is vented to the atmosphere to release the evolved CO_2 byproduct from fermentation; 2) storage operations, during which the tank is closed to minimize contact with air and refrigerated to preserve the wine; or 3) both fermentation and storage. The wine storage and fermentation operations are considered separate emissions units. Post-fermentation operations such as cold stabilization, racking, and filtration are conducted in the tanks, resulting in a number of inter-tank transfers during the period between the end of fermentation and bottling or bulk shipment. Storage operations are conducted year-round. VOC emissions occur primarily as a result of the inter-tank transfers which are necessitated by the post fermentation operations. The tanks addressed under this project will be used only for wine storage.

V. Equipment Listing

Existing 652,000 Gallon Wine Storage Tanks: ATCs N-2321-801-1, -802-1, -803-1, & -804-1

ATC #	Equipment Description
N-2321-801-1	ATC Modification Description: MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1701 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR
	Post Project Equipment Description: 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1701 WITH PRESSURE/VACUUM VALVE AND INSULATION
N-2321-802-1	ATC Modification Description: MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1702 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR
	Post Project Equipment Description: 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1702 WITH PRESSURE/VACUUM VALVE AND INSULATION

ATC #	Equipment Description
N-2321-803-1	ATC Modification Description: MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1703 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR
	Post Project Equipment Description: 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1703 WITH PRESSURE/VACUUM VALVE AND INSULATION
N-2321-804-1	ATC Modification Description: MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1704 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR
	Post Project Equipment Description: 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1704 WITH PRESSURE/VACUUM VALVE AND INSULATION

New 652,000 Gallon Wine Storage Tanks: ATCs N-2321-834-0 & -835-0

ATC #	Equipment Description
N-2321-834-0	652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1705 WITH PRESSURE/VACUUM VALVE AND INSULATION
N-2321-835-0	652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1706 WITH PRESSURE/VACUUM VALVE AND INSULATION

VI. Emission Control Technology Evaluation

VOCs (ethanol) are emitted from wine storage tanks as a result of both working losses (which occur when the liquid level in the tank changes) and breathing losses (expansion and contraction effects due to temperature variations). The proposed pressure/vacuum valve limits these emissions by requiring the maximum amount of variation in tank pressure before allowing the tank to vent to the atmosphere or allowing air admission to the tank.

VII. General Calculations

A. Assumptions

- VOC emissions from all wine fermentation and wine storage operations at the facility will continue to be limited to no more than 1,167,178 lb-VOC/year
- Typically, for enclosed tanks with refrigeration and/or insulation (or equivalent) and P/V valves, breathing losses from storage of wine are assumed to be negligible
- The maximum ethanol content of the wine stored in the tanks is 20% by volume (per applicant)

- Maximum pre-project permitted throughput for each existing 652,000 gallon wine storage tank (N-2321-801-0, -802-0, -803-0, & -804-0): 652,000 gal/day (one half turn/day) and 74,750,000 gal/year (114.6 turns/year) - current permit
- Maximum post-project throughput for each 652,000 gallon wine storage tank (N-2321-801-1, -802-1, -803-1, -804-1, -834-0, & -835-0): 652,000 gal/day (one half turn/day) and 26,080,000 gal/year (40 turns/year) - per applicant
- Post-project maximum storage tank liquid storage temperature = 77.3 °F (per FYI-295, for locations near Stockton)
- Post-project annual average storage tank liquid storage temperature = 61.6 °F for all tanks (per FYI-295, for locations near Stockton)

B. Emission Factors

The pre-project emissions from the existing wine storage tanks will be calculated based on Tanks 4.09d Emissions Estimation Software runs for the wine storage tanks.

Tanks 4.09d Emissions Estimation Software will be used to calculate the post-project Potential to Emit from the wine storage tanks.

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Existing 652,000 Gallon Wine Storage Tanks: N-2321-801-0, -802-0, -803-0, & -804-0

Permit Unit	Tank Capacity	Max Daily Throughput	Max Annual Throughput	Daily PE	Annual PE
	(gallon)	(gal/day)	(gal/year)	(lb/day)	(lb/year)
N-2321-801-0	652,000	652,000	74,750,000	197.6	12,022
N-2321-802-0	652,000	652,000	74,750,000	197.6	12,022
N-2321-803-0	652,000	652,000	74,750,000	197.6	12,022
N-2321-804-0	652,000	652,000	74,750,000	197.6	12,022
Total					48,088

New 652,000 Gallon Wine Storage Tanks: N-2321-834-0 & -835-0

Since the tanks are new emissions unit, PE1 = 0 for all pollutants.

2. Post Project Potential to Emit (PE2)

Two Tanks 4.0 runs have been performed. The daily post-project potential to emit was calculated by using a maximum daily throughput of 652,000 gallons during the month of July and dividing the emissions for the month of July by the number of days in the month. The annual post-project potential to emit was calculated using a maximum annual throughput of 26,080,000 gallons. See Appendix B for the Tanks 4.0 runs for the tanks. The PE2 for the proposed tanks is shown in the table below.

Permit Unit	Tank Capacity	Max Daily Throughput	Max Annual Throughput	Daily PE	Annual PE
	(gallon)	(gal/day)	(gal/year)	(lb/day)	(lb/year)
N-2321-801-1	652,000	652,000	26,080,000	197.6	4,194
N-2321-802-1	652,000	652,000	26,080,000	197.6	4,194
N-2321-803-1	652,000	652,000	26,080,000	197.6	4,194
N-2321-804-1	652,000	652,000	26,080,000	197.6	4,194
N-2321-834-0	652,000	652,000	26,080,000	197.6	4,194
N-2321-835-0	652,000	652,000	26,080,000	197.6	4,194
Total					25,164

The PE2 for each proposed tank is shown above. The tanks will also be subject to existing specific limiting condition (SLC) that limits VOC emissions from all wine fermentation and wine storage operations at the facility to no more than 1,167,178 lb-VOC/year.

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

The only affected pollutant that the proposed project involves is VOC emissions. Facility emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, SSPE1 calculations are not necessary.

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

The only affected pollutant that the proposed project involves is VOC emissions. Since facility emissions are already above the Offset and Major Source Thresholds for VOC emissions, SSPE2 calculations are not necessary.

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values.

For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

This source is an existing Major Source for VOC emissions and will remain a Major Source for VOC. No change in other pollutants are proposed or expected as a result of this project.

Rule 2410 Major Source Determination:

As indicated above, this facility has an existing specific limiting condition (SLC) that limits VOC emissions from all wine fermentation and wine storage operations to 1,167,178 lb-VOC/year.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source threshold for VOC is applicable.

PSD Major Source Determination (tons/year)	
	VOC
Facility PE before Project Increase	583.6
PSD Major Source Thresholds	250
PSD Major Source?	**Yes**

As shown above, the facility is an existing Major Source for PSD for VOC. Therefore, the facility is an existing Major Source for PSD.

6. Baseline Emissions (BE)

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

Existing 652,000 Gallon Wine Storage Tanks: N-2321-801-0, -802-0, -803-0, & -804-0

These units were recently installed, but have not yet been demonstrated to be fully operational; therefore, BE = PE1 = 0 for all pollutants.

New 652,000 Gallon Wine Storage Tanks: N-2321-834-0 & -835-0

Since these are new emission units, BE = PE1 = 0 for all pollutants.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

As discussed in Section I of the project evaluation, the current project for modification of four 652,000 gallon wine storage tanks and addition of two new 652,000 gallon wine storage tanks is Phase 2 of a larger project. Project N-1133440 for the installation of seven new wine storage tanks was Phase I of the overall project. Therefore, the potential to emit from both Phase 1 and Phase 2 will be considered together for purposes of determining if the current project will constitute an SB 288 Major Modification or Federal Major Modification.

Tanks operating at a winery are not completely independent emissions units since various processes at the facility may serve as a bottleneck to limit overall production. Therefore, the potential annual emissions must be established with consideration of all the other associated tanks in the facility. The total potential to emit from all of the proposed new tanks ($PE2_{New}$) is therefore determined as the difference between the post project and the pre project potential emissions from the wine production operation based on the collective physical capacity of the wine tanks at the facility.

The NEI is the total of emission increases for every permit unit addressed in this project and is calculated as follows:

NEI = PE2 – BAE

Where: PE2 = the sum of all the PE2s for each permit unit in this project
BAE = for units that are fully offset, the BAE = the PE1 for every unit, otherwise, the BAE is the actual annual emissions averaged over the baseline period for every unit.

Since Phase 1 and Phase 2 of this project involve only new emissions units, and no change to the existing emission units. The BAE for these units are each equal to zero.

Based on the collective physical capacity of the wine tanks in this facility, $PE2_{NewTanks}$ for Phase 1 and Phase 2 of the project is calculated to be 85,850 pounds VOC per year. See detail potential emissions calculations in Appendix C of this document.

NEI = $\sum(PE2)_{New}$ = 85,850 lb-VOC/yr

SB 288 Major Modification Calculation and Determination					
Pollutant	PE2 (lb/yr)	BAE (lb/yr)	NEI (lb/yr)	Thresholds (lb/yr)	SB 288 Major Modification?
VOC	85,850	0	85,850	50,000	**Yes**

As demonstrated in the preceding table, this project does constitute an SB 288 Major Modification.

8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. Emission decreases may not cancel out the increases for this determination.

Step 1

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project.

As discussed above, the total combined emissions increases from the new tanks in Phase 1 and Phase 2 of the project was calculated as 85,850 lb-VOC/yr, as shown in Appendix C. The project's combined total emissions increases are compared to the Federal Major Modification Thresholds in the following table.

NEI = $\sum(PE2)_{New}$ = 85,850 lb-VOC/yr

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
VOC	85,850	0	**Yes**

Since there is an increase in VOC emissions, this project constitutes a Federal Major Modification, and no further analysis is required.

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO2 (as a primary pollutant)

- SO2 (as a primary pollutant)
- CO
- PM
- PM10

I. Project Location Relative to Class 1 Area

As demonstrated in the "PSD Major Source Determination" Section above, the facility was determined to be a existing PSD Major Source. Because the project is not located within 10 km (6.2 miles) of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

II. Project Emission Increase – Significance Determination

a. Evaluation of Calculated Post-project Potential to Emit for New or Modified Emissions Units vs PSD Significant Emission Increase Thresholds

As a screening tool, the post-project potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if the total potentials to emit from all new and modified units are below the applicable thresholds, no futher PSD analysis is needed.

As indicated above, the proposed wine storage tanks in this project will be subject to the existing SLC that limits VOC emissions from all wine fermentation and storage operations at the facility to 1,167,178 lb-VOC/year. Because there is a direct relationship between the amount of VOC (assumed to be almost entirely ethanol) and the amount of CO_2 produced during wine fermentation and there will be no increase in the potential to emit for VOC under this project, there will also be no increase in the potential to emit for CO_2.

PSD Significant Emission Increase Determination: Potential to Emit (tons/year)					
	NO2	SO2	CO	PM	PM10
Total PE from New and Modified Units	0	0	0	0	0
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	N	N	N	N	N

As demonstrated above, because the post-project total potentials to emit from all new and modified emission units are below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 and no further discussion is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen.

Because the proposed wine storage tanks will be subject to the existing SLC that limits VOC emissions from all wine fermentation and wine storage operations at the facility, there will be no overall increase in potential to emit at the facility. Therefore, the QNEC is equal to 0 for each quarter for each permit unit.

VIII. Compliance

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As discussed in Section VII.C.2 above, the applicant is proposing to install two new wine storage tanks that have a PE greater than 2 lb/day for VOC from each tank. Therefore, BACT is triggered for VOC from each tank.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered for relocation of an emissions unit.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed in Section VII.C.2 above, the applicant is proposing to modify four wine storage tanks to decrease the maximum permitted annual throughput from each tank. The proposed modification will not result in an increase in emissions or change in emission factors. However, as discussed in Section I above, because the group of all six 652,000 gallon wine storage tanks are part of the same project and will be installed in the same area, potential control systems for the group of all six tanks will be evaluated in BACT analysis

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does constitute an SB 288 and/or Federal Major Modification for VOC emissions. Therefore BACT is triggered for VOC for all emissions units in the project for which there is an emissions increase.

2. BACT Guideline

BACT Guideline 5.4.13 applies to the wine storage tanks. [Wine Storage Tanks] (See Appendix D)

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see Appendix D), BACT has been satisfied with the following:

VOC: Insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank, "gas tight" tank operation and achieve and maintain a continuous storage temperature not exceeding 75 °F within 60 days of completion of fermentation.

B. Offsets

1. Offset Applicability

Offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

As discussed above, the facility emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, a determination of the quantity of offsets required must be performed.

2. Quantity of Offsets Required

As discussed above, the facility is an existing Major Source for VOC and the SSPE2 is greater than the offset thresholds. Therefore offset calculations will be required for this project.

As seen above, the facility is an existing Major Source for VOC and the SSPE2 is greater than the offset thresholds. Therefore offset calculations will be required for this project.

The quantity of offsets in pounds per year for VOC is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = (Σ[PE2 – BE] + ICCE) x DOR, for all new or modified emissions units in the project,

Where,
PE2 = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Rule 2201

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

There are no increases in Cargo Carrier emissions as result of this project, and the proposed new emissions units are located in the same stationary source, which result DOR = 1.0.

Emission offset = Σ (PE2 – BE) x 1.0 + 0

Emission offset = Σ (PE2 – BE)

According to engineering evaluation N-1120998, all existing tanks were considered Clean Emission Units since they meet the achieved-in-practice BACT requirements for wine storage and fermentation process. Thus, BE is set equal to PE1 for each existing tank.

Emission offset = Σ (PE2 – PE1)

The facility has an existing SLC of 1,167,178 pounds of VOC per year for wine fermentation and storage operations, and the applicant is not proposing any change to this limit as a result of this project. Therefore,

Emission offset = (1,167,178 – 1,167,178) lb-VOC/year
= 0 lb-VOC/year

As demonstrated in the calculation above, the amount of offsets required is zero. Therefore, offsets will not be required for this project.

C. Public Notification

1. Applicability

Public noticing is required for:
a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed, and/or
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

As demonstrated in Sections VII.C.7 and VII.C.8, this project is an SB 288 and Federal Major Modification. Therefore, public noticing for SB 288 and Federal Major Modification purposes is required.

b. PE > 100 lb/day

The PE2 for the proposed new 652,000 gallon wine storage tanks is compared to the daily PE Public Notice thresholds in the following table:

652,000 gallon Wine Storage Tanks PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day)	Public Notice Threshold	Public Notice Triggered?
NO_X	0	100 lb/day	No
SO_X	0	100 lb/day	No
PM_{10}	0	100 lb/day	No
CO	0	100 lb/day	No
VOC	197.6	100 lb/day	**Yes**

Therefore, public noticing for PE > 100 lb/day purposes is required.

c. Offset Threshold

The SSPE1 and SSPE2 are compared to the VOC offset threshold in the following table.

Offset Thresholds				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
VOC	> 20,000	> 20,000	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for surpassing an offset threshold.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. As discussed above, the proposed tanks will be installed under an existing SLC for VOC emissions, so there will be no overall increase in VOC emissions as a result of the project.

The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds			
Pollutant	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO_x	0	20,000 lb/year	No
SO_x	0	20,000 lb/year	No
PM_{10}	0	20,000 lb/year	No
CO	0	20,000 lb/year	No
VOC	0	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

2. Public Notice Action

As discussed above, public noticing is required for this project for SB 288 and Federal Major Modification purposes and for VOC emissions from emissions units in excess of 100 lb/day. Therefore, public notice documents will be submitted to the California Air Resources Board (ARB) and the US Environmental Protection Agency (EPA) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Proposed Rule 2201 (DEL) Conditions

For the proposed wine storage tank emission units in this project, the DEL is enforced with the following conditions:

- This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201]

- The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694]

- The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201]

- The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201]

- The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offsets, public notification and daily emission limit requirements of Rule 2201. Recordkeeping is also

required for winery tanks pursuant to District Rule 4694, *Wine Fermentation and Storage Tanks*. For the proposed wine storage tanks, the following conditions will be listed on the permits to ensure compliance:

- The operator shall record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694, 6.4.2]
- Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201]
- All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201 and 4694]
- Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. However, since this project involves only VOC and no ambient air quality standard exists for VOC, an AAQA is not required for this project.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Title I Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this facility is an existing source and this project does constitute a Federal Major Modification, therefore this requirement is applicable. CBUS Ops Inc.'s (dba Woodbridge Winery) compliance certification is included in Appendix E.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The project includes installation of six 652,000 gallon wine storage tanks.

In addition to winery tanks, the operation of a winery requires a large number support equipment, services and structures such as raw material receiving stations, crushers, piping, filtering and refrigeration units, warehouses, laboratories, bottling and shipping facilities, and administration buildings.

Since the project will provide wine storage tanks to be used at an existing facility, the existing site will result in the least possible impact from the project. Alternative sites would

involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

The prevention of significant deterioration (PSD) program is a construction permitting program for new major stationary sources and major modifications to existing major stationary sources located in areas classified as attainment or in areas that are unclassifiable for any criteria air pollutant.

As demonstrated above, this project is not subject to the requirements of Rule 2410 due to a significant emission increase and no further discussion is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Section 3.20.5 states that a minor permit modification is a permit modification that does not meet the definition of modification as given in Section 111 or Section 112 of the Federal Clean Air Act. Since this project is a Title I modification (i.e. Federal Major Modification), the proposed project is considered to be a modification under the Federal Clean Air Act. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

As discussed above, the facility has applied for a Certificate of Conformity (COC). Therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility shall not implement the changes requested until the final permit is issued.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates certain NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to wine storage tank operations.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates certain NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to wine storage tank operations.

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

Ethanol is the only pollutant that will be emitted by the proposed wine tanks. Ethanol is not a Toxic Air Contaminant (TAC) as defined by Section 44321 of the California Health and Safety Code. Therefore, there are no increases in HAP emissions associated with any emission units in this project, therefore a health risk assessment is not necessary and no further risk analysis is required.

Rule 4694 Wine Fermentation and Storage Tanks

The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) from the fermentation and bulk storage of wine, or achieve equivalent reductions from alternative emission sources. This rule is applicable to all wineries with Baseline Fermentation Emissions in excess of 10 tons-VOC/year. This facility has Baseline Fermentation Emissions in excess of 10 tons-VOC/year; therefore the tanks at the facility are subject to this rule. The storage tank provisions of this rule apply to all tanks with capacity in excess of 5,000 gallons.

Section 5.1 requires the winery operator achieve Required Annual Emissions Reductions (RAER) equal to at least 35% of the winery's Baseline Fermentation Emissions (BFE). Per the definition of RAER in Section 3.25 of the Rule, the RAER may be achieved by any combination of Fermentation Emission Reductions (FER), Certified Emission Reductions (CER) or District Obtained Emission Reductions (DOER) as established in the facility's District-approved Rule 4694 Compliance Plan. Since the proposed tanks will be used only for storage, this section is not applicable; therefore, no further discussion is required.

Section 5.2 places specific restrictions on wine storage tanks with 5,000 gallons or more in capacity when such tanks are not constructed of wood or concrete.

Section 5.2.1 requires these tanks to be equipped and operated with a pressure-vacuum relief valve meeting all of the following requirements:

- The pressure-vacuum relief valve shall operate within 10% of the maximum allowable working pressure of the tank,
- The pressure-vacuum relief valve shall operate in accordance with the manufacturer's instructions, and

- The pressure-vacuum relief valve shall be permanently labeled with the operating pressure settings.
- The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21.

The following conditions will be listed on the permits for stainless steel tanks ≥ 5,000 gallons in capacity and used for storage to ensure compliance with the requirements of Section 5.2.1:

- This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694]
- The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694]

Section 5.2.2 requires that the temperature of the stored wine be maintained at or below 75° F. The following condition will be placed on the permits for stainless steel tanks ≥ 5,000 gallons in capacity and used for storage to ensure compliance with the requirements of Section 5.2.2:

- The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rule 4694]

Every three years, Section 6.1 and 6.2 require facilities with fermentation operations to submit a Three-Year Compliance Plan and a Three-Year Compliance Plan Verification respectively. The proposed tanks in this project are only for wine storage and since these sections are not applicable to wine storage operations, no further discussion is required.

Section 6.4 requires that records required by this rule be maintained, retained on-site for a minimum of five years, and made available to the APCO upon request. The following condition will be listed on each permit to ensure on-going compliance with this section:

- All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 2201 and 4694]

Section 6.4.1 requires that records be kept for each fermentation batch. Since the proposed tanks will be used only for storage, this section is not applicable.

Section 6.4.2 requires that weekly records be kept of wine volume and temperature in each storage tank. The following conditions will be listed on the permit for each storage tank to ensure compliance with the requirements of Section 6.4.2:

- The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694]

Section 6.4.3 requires that all monitoring be performed for any Certified Emission Reductions as identified in the facility's Three-Year Compliance Plan and that the records of all monitoring be maintained. Since this requirement is for operators mitigation fermentation emission and the proposed tanks are only for wine storage operations, this section is not applicable to wine tanks in this project. Therefore, no further discussion is required.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. In addition, the proposed project will not result in an increase in Toxic Air Contaminants. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

San Joaquin County is the public agency having principal responsibility for approving the project. As such, San Joaquin County served as the Lead Agency (CCR §15367). In approving the project, the Lead Agency prepared and adopted a Negative Declaration. The Lead agency filed a Notice of Determination, stating that the environmental document was adopted pursuant to the provisions of CEQA and concluding that the project would not have a significant effect on the environment.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CCR §15381). As a Responsible Agency the District complies with CEQA by considering the environmental document prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CCR §15096).

The District has considered the Lead Agency's environmental document and finds that it adequately characterizes the project's potential impact on air quality. In addition, the District

has conducted an engineering evaluation of the project, this document, which demonstrates that all feasible and cost-effective control measures to reduce potential impacts on air quality resulting from project related stationary source emissions have been applied to the project as part of BACT. Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions would be reduced to lessen the impacts on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATCs N-2321-801-1, -802-1, -803-1, -804-1, -834-0, and -835-0 subject to the permit conditions on the attached draft ATC in Appendix F.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
N-2321-801-1	3020-05-F	652,000 gallon storage tank	$301.00
N-2321-802-1	3020-05-F	652,000 gallon storage tank	$301.00
N-2321-803-1	3020-05-F	652,000 gallon storage tank	$301.00
N-2321-804-1	3020-05-F	652,000 gallon storage tank	$301.00
N-2321-834-0	3020-05-F	652,000 gallon storage tank	$301.00
N-2321-835-0	3020-05-F	652,000 gallon storage tank	$301.00

Appendixes

A: Current Permits N-2321-801-0, -802-0, -803-0, and -804-0
B: Tanks 4.09d Emissions Estimation Calculations
C: Winery Potential Emissions Increase Calculations
D: BACT Guideline 5.4.13 and Top-Down BACT Analysis
E: Compliance Certification
F: Draft ATC Permits

APPENDIX A
Current Permits N-2321-801-0, -802-0, -803-0, and -804-0

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: N-2321-801-0 **EXPIRATION DATE:** 08/31/2017

EQUIPMENT DESCRIPTION:
652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1701 WITH PRESSURE/VACUUM VALVE AND INSULATION

PERMIT UNIT REQUIREMENTS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
3. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
4. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
5. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rule 4694] Federally Enforceable Through Title V Permit
6. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 74,750,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit
8. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit
9. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

10. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
13. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
15. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: N-2321-802-0 **EXPIRATION DATE:** 08/31/2017

EQUIPMENT DESCRIPTION:
652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1702 WITH PRESSURE/VACUUM VALVE AND INSULATION

PERMIT UNIT REQUIREMENTS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
3. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
4. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
5. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rule 4694] Federally Enforceable Through Title V Permit
6. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 74,750,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit
8. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit
9. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

10. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
13. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
15. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: N-2321-803-0 **EXPIRATION DATE:** 08/31/2017

EQUIPMENT DESCRIPTION:
652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1703 WITH PRESSURE/VACUUM VALVE AND INSULATION

PERMIT UNIT REQUIREMENTS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
3. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
4. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
5. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rule 4694] Federally Enforceable Through Title V Permit
6. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 74,750,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit
8. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit
9. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

10. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
13. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
15. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: N-2321-804-0 **EXPIRATION DATE:** 08/31/2017

EQUIPMENT DESCRIPTION:
652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1704 WITH PRESSURE/VACUUM VALVE AND INSULATION

PERMIT UNIT REQUIREMENTS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
3. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
4. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
5. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rule 4694] Federally Enforceable Through Title V Permit
6. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 74,750,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit
8. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit
9. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

10. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
13. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
15. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

APPENDIX B
Tanks 4.09d Emissions Estimation Calculations

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	N-2321-801, -802, -803, -804, -834, & -835 (Daily)
City:	Acampo
State:	Califomia
Company:	CBUS Ops dba Woodbridge Winery
Type of Tank:	Vertical Fixed Roof Tank
Description:	652,000 Gallon Stainless Steel Enclosed Top Wine Storage Tanks with Pressure/Vacuum Valve and Insulation (Tanks 1701, 1702, 1703, 1704, 1705, & 1706) - Daily

Tank Dimensions

Shell Height (ft):		40.00
Diameter (ft):		53.06
Liquid Height (ft) :		39.00
Avg. Liquid Height (ft):		35.00
Volume (gallons):		652,000.00
Turnovers:		31.00
Net Throughput(gal/yr):		20,212,000.00
Is Tank Heated (y/n):	Y	

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone	
Height (ft)		1.00
Slope (ft/ft) (Cone Roof)		0.04

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Stockton, Califomia (Avg Atmospheric Pressure = 14.72 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

N-2321-801, -802, -803, -804, -834, & -835 (Daily) - Vertical Fixed Roof Tank
Acampo, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Wine 20.0 % Vol Alcohol	Jul	77.30	77.30	77.30	77.30	0.7129	0.7129	0.7129	28.8820			20.00	Option 1: VP70 = .55047 VP80 = .77304

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

N-2321-801, -802, -803, -804, -834, & -835 (Daily) - Vertical Fixed Roof Tank
Acampo, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):							0.0000					
Vapor Space Volume (cu ft):							11,794.0788					
Vapor Density (lb/cu ft):							0.0036					
Vapor Space Expansion Factor:							0.0000					
Vented Vapor Saturation Factor:							0.8323					
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):							11,794.0788					
Tank Diameter (ft):							53.0625					
Vapor Space Outage (ft):							5.3333					
Tank Shell Height (ft):							40.0000					
Average Liquid Height (ft):							35.0000					
Roof Outage (ft):							0.3333					
Roof Outage (Cone Roof)												
Roof Outage (ft):							0.3333					
Roof Height (ft):							1.0000					
Roof Slope (ft/ft):							0.0400					
Shell Radius (ft):							26.5313					
Vapor Density												
Vapor Density (lb/cu ft):							0.0036					
Vapor Molecular Weight (lb/lb-mole):							28.8820					
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):							0.7129					
Daily Avg. Liquid Surface Temp. (deg. R):							536.9700					
Daily Average Ambient Temp. (deg. F):							77.6500					
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):							10.731					
Liquid Bulk Temperature (deg. R):							536.9700					
Tank Paint Solar Absorptance (Shell):							0.1700					
Tank Paint Solar Absorptance (Roof):							0.1700					
Daily Total Solar Insulation Factor (Btu/sqft day):							2,688.0000					
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:							0.0000					
Daily Vapor Temperature Range (deg. R):							0.0000					
Daily Vapor Pressure Range (psia):							0.0000					
Breather Vent Press. Setting Range(psia):							0.0600					
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):							0.7129					
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):							0.7129					
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):							0.7129					
Daily Avg. Liquid Surface Temp. (deg R):							536.9700					
Daily Min. Liquid Surface Temp. (deg R):							536.9700					
Daily Max. Liquid Surface Temp. (deg R):							536.9700					
Daily Ambient Temp. Range (deg. R):							33.5000					
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:							0.8323					
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):							0.7129					

Vapor Space Outage (ft):	5.3333
Working Losses (lb):	9,909.3122
Vapor Molecular Weight (lb/lb-mole):	28.8820
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7129
Net Throughput (gal/mo.):	20,212,000.0000
Annual Turnovers:	31.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	652,000.0000
Maximum Liquid Height (ft):	39.0000
Tank Diameter (ft):	53.0625
Working Loss Product Factor:	1.0000
Total Losses (lb):	9,909.3122

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: July

N-2321-801, -802, -803, -804, -834, & -835 (Daily) - Vertical Fixed Roof Tank
Acampo, California

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Wine 20.0 % Vol Alcohol	9,909.31	0.00	9,909.31

Max Daily VOC Emissions

$$\frac{46.02}{28.882} \times \frac{28.882 - 18.02}{46.02 - 18.02} \times \frac{9,909.31 \text{ lb-(total Emissions)/month}}{31 \text{ day/month}} = 197.6 \text{ lb-VOC/day}$$

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	N-2321-801, -802, -803, -804, -834 & -835 (Annual)
City:	Acampo
State:	California
Company:	CBUS Ops dba Woodbridge Winery
Type of Tank:	Vertical Fixed Roof Tank
Description:	652,000 Gallon Stainless Steel Enclosed Top Wine Storage Tanks with Pressure/Vacuum Valve and Insulation (Tanks 1701, 1702, 1703, 1704, 1705, & 1706) - Annual

Tank Dimensions

Shell Height (ft):	40.00
Diameter (ft):	53.06
Liquid Height (ft) :	39.00
Avg. Liquid Height (ft):	35.00
Volume (gallons):	652,000.00
Turnovers:	40.00
Net Throughput(gal/yr):	26,080,000.00
Is Tank Heated (y/n):	Y

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	1.00
Slope (ft/ft) (Cone Roof)	0.04

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Stockton, California (Avg Atmospheric Pressure = 14.72 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

N-2321-801, -802, -803, -804, -834 & -835 (Annual) - Vertical Fixed Roof Tank
Acampo, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Wine 20.0 % Vol Alcohol	Jan	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Feb	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Mar	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Apr	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	May	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Jun	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Jul	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Aug	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Sep	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Oct	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Nov	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047
Wine 20.0 % Vol Alcohol	Dec	61.60	61.60	61.60	61.60	0.4128	0.4128	0.4128	28.8820			20.00	Option 1: VP60 = .38652 VP70 = .55047

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

N-2321-801, -802, -803, -804, -834 & -835 (Annual) - Vertical Fixed Roof Tank
Acampo, California

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Space Volume (cu ft):	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788
Vapor Density (lb/cu ft):	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021
Vapor Space Expansion Factor:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vented Vapor Saturation Factor:	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788	11,794.0788
Tank Diameter (ft):	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625
Vapor Space Outage (ft):	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333
Tank Shell Height (ft):	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
Average Liquid Height (ft):	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000
Roof Outage (ft):	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333	0.3333
Roof Height (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Roof Slope (ft/ft):	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400
Shell Radius (ft):	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313	26.5313
Vapor Density												
Vapor Density (lb/cu ft):	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021
Vapor Molecular Weight (lb/lb-mole):	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128
Daily Avg. Liquid Surface Temp. (deg. R):	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700
Daily Average Ambient Temp. (deg. F):	45.0000	50.5000	54.0500	59.3000	66.7000	73.3000	77.6500	76.8000	72.7000	64.5500	53.0500	44.9500
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	597.0000	939.0000	1,458.0000	2,004.0000	2,435.0000	2,684.0000	2,688.0000	2,368.0000	1,907.0000	1,315.0000	782.0000	538.0000
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Daily Vapor Pressure Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breather Vent Press. Setting Range(psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128
Daily Avg. Liquid Surface Temp. (deg R):	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700
Daily Min. Liquid Surface Temp. (deg R):	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700
Daily Max. Liquid Surface Temp. (deg R):	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700	521.2700
Daily Ambient Temp. Range (deg. R):	16.0000	20.4000	22.9000	27.2000	29.8000	31.6000	33.5000	32.2000	30.4000	27.5000	20.7000	15.7000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955	0.8955
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128

Vapor Space Outage (ft):	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333	5.3333
Working Losses (lb):	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634
Vapor Molecular Weight (lb/lb-mole):	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820	28.8820
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128	0.4128
Net Throughput (gal/mo.):	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330	2,173,333.3330
Annual Turnovers:	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
Turnover Factor:	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167	0.9167
Maximum Liquid Volume (gal):	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000	652,000.0000
Maximum Liquid Height (ft):	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000	39.0000
Tank Diameter (ft):	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625	53.0625
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634	565.4634

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

N-2321-801, -802, -803, -804, -834 & -835 (Annual) - Vertical Fixed Roof Tank
Acampo, California

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Wine 20.0 % Vol Alcohol	6,785.56	0.00	6,785.56

Annual VOC Emissions

$$\frac{46.02}{28.882} \times \frac{28.882 - 18.02}{46.02 - 18.02} \times 6{,}785.56 \text{ lb-Vapor/yr} = 4{,}194.3 \text{ lb-VOC/yr}$$

APPENDIX C
Winery Potential Emissions Increase Calculations

Winery Potential Emissions Increase Calculations

The purpose of the following calculations is solely to determine if the proposed project will trigger SB 288 Major Modification or Federal Major Modification. The increase (or difference) in emissions are calculated below using the current emission factors for wine tanks from District FYI-114. The facility has an existing specific limiting condition (SLC) that limits the total VOC emissions from all wine fermentation and storage operations at the facility to no more than 1,167,178 pounds of VOC per year for[1]. The existing SLC will not be changed with the addition of the two new wine storage tanks proposed under this project.

As discussed in Section I of the project evaluation, the current project for addition of two new 652,000 gallon wine storage tanks is Phase 2 of a larger project. Project N-1133440 for the installation of seven new wine storage tanks is Phase 1 of the overall project. Therefore, the potential to emit from both Phase 1 and Phase 2 will be considered together for purposes of determining if the current project will constitute an SB 288 Major Modification or a Federal Major Modification.

1. Potential to Emit (existing tanks)

The potential annual VOC emissions from the existing fermentation and storage operations at this winery are determined as follows:

White Wine Fermentation

$W1 = C \times D_w \times M$ (limited by crusher capacity)
$W2 = P \times D_w \times M$ (limited by pressing capacity)
$W3 = (V_{FW} \times D_w)/W_{FW}$ (limited by white fermenter volume)
$W4 = (V_T \times D_w)/R_{TW}$ (limited by overall tank processing)

Where:

- C = grape crushing capacity
  = 13,200 tons/day (per engineering evaluation N-1092377)
- D_w = days in a white wine crush season
  = 120 days
- M = amount of juice produced per ton of grapes crushed
  = 200 gal/ton
- P = pressing capacity
  = 8,400 tons/day (per engineering evaluation N-1092377)
- W_{FW} = white fermentation period
  = 10 days
- R_{TW} = total winery retention time for white wine
  = 40 days + 10 days = 50 days
- V_{FW} = total volume of white wine fermenters
  = 55,433,318 gal (per Project N-1130204)
- V_T = total winery cooperage
  = 55,504,890 gal (Project N-1130204 post-project cooperage)

[1] The calculation presented in this appendix differs from the SLC due to revised emission factors in FYI-114.

Using the above parameters,

W1 = (13,200 x 120 x 200) = 316.80×10^6 gal/year
W2 = (8,400 x 120 x 200) = 201.60×10^6 gal/year
W3 = (55,433,318 x 120) / 10 = 665.20×10^6 gal/year
W4 = (55,504,890 x 120) / 50 = 133.212×10^6 gal/year

CBUS Ops Inc. requested to install seven new wine storage tanks under Phase 1 of the project and is requesting to install two additional new wine storage tanks under Phase 2 of the project. These tanks will result an increase facility's storage capacities, and no changes to the facility's fermentation, crushing or pressing capacities. Therefore crushing capacity and pressing capacity (W1 and W2) are not considered from the analysis. Only the fermenter volume and overall tank processing (W3 and W4) are compared.

W_W = W4 (lesser of W3, W4)
= 133.212×10^6 gal/year

The potential white wine fermentation emissions would be:

$PE1_{white} = E_{fw} \times W_W$

Where:
E_{fw} = white wine emission factor
= 2.5 lb-VOC/1,000 gal (per District FYI-114)

$PE1_{white}$ = (2.5 lb-VOC/1,000 gal) × (133.212×10^6 gal/yr)
= 333,030 lb-VOC/year

White Wine Storage Emissions:
Storage emissions are calculated as follows:

$PE1_{white} = E_s \times T \times W_w$

Where:
E_s = wine storage emission factor based on District FYI-114 (6/13/12). The existing tanks allow them to store up to 20% alcohol by volume. Thus, Es is equal to 0.175 lb-VOC/1,000 gal.
T = total post fermentation inter-tank transfers per batch of wine
= 8
W_w = 133.212×10^6 gal/year (determined above)

$PE1_{white}$ = (0.175 lb-VOC/1,000 gal) × (8) × (133.212×10^6 gal/year)
= 186,497 lb-VOC/year

Total PE1 for White Wine Production:
Potential emissions from 100% white wine production scenario are then determined as follows:

$PE1_{white}$ = $PE1_{white\ fermentation}$ + $PE1_{white\ storage}$
= 333,030 lb-VOC/year + 186,497 lb-VOC/year
= 519,527 lb-VOC/year

Red Wine Fermentation Emissions:
W1 = C × D_r × M (limited by crusher capacity)
W2 = P × D_r × M (limited by pressing capacity)
W3 = (V_{FR} × F × D_r)/R_{FR} (limited by red fermenter volume)
W4 = (V_T × D_r)/R_{TS} (limited by overall tank processing)

Where:
- C = grape crushing capacity
  = 13,200 tons/day
- D_r = days in a red wine crush season
  = 120 days
- F = Fill factor for red wine fermentation
  = 80%
- M = amount of juice produced per ton of grapes crushed
  = 200 gal/ton
- P = pressing capacity
  = 8,400 tons/day
- R_{FR} = red fermentation period
  = 5 days
- R_{TW} = total winery retention time for white wine
  = 40 days + 5 days = 45 days
- V_{FW} = total volume of red wine fermenters
  = 55,433,318 gal
- V_T = total winery cooperage
  = 55,504,890 gal

Using the above parameters,

W1 = (13,200 x 120 x 200) = 316.80 x 10^6 gal/year
W2 = (8,400 x 120 x 200) = 201.60 x 10^6 gal/year
W3 = (55,433,318 x 0.8 x 120) / 5 = 1,064.32 x 10^6 gal/year
W4 = (55,504,890 x 120) / 45 = 148.013 x 10^6 gal/year

CBUS Ops Inc. requested to install seven new wine storage tanks under Phase 1 of the project and is requesting to install two additional new wine storage tanks under Phase 2 of the project. These tanks will result an increase facility's storage capacities, and no changes to the facility's fermentation, crushing or pressing capacities. Therefore crushing capacity and pressing capacity (W1 and W2) are not considered from the analysis. Only the fermenter volume and overall tank processing (W3 and W4) are compared.

W_R = W4 (lesser of W3, W4)
= 148.013×10^6 gal/yr

The potential red wine fermentation emissions would be:

$PE1_{red} = E_{fr} \times W_R$

Where:
E_{fr} = red wine emission factor
= 6.2 lb-VOC/1,000 gal (per District FYI-114)

$PE1_{red}$ = (6.2 lb-VOC/1,000 gal) × (148.013×10^6 gal/yr)
= 917,681 lb-VOC/year

Red Wine Storage Emissions:
Storage emissions are calculated as follows:

$PE1_{red} = E_s \times T \times W_R$

Where:
E_s = wine storage emission factor based on District FYI-114 (6/13/12). The existing tanks allow them to store up to 20% alcohol by volume. Thus, Es is equal to 0.175 lb-VOC/1,000 gal.
T = total post fermentation inter-tank transfers per batch of wine
= 8
W_R = 148.013×10^6 gal/yr (determined above)

$PE1_{red}$ = (0.175 lb-VOC/1,000 gal) × (8) × (148.013×10^6 gal/yr)
= 207,218 lb-VOC/year

Total PE1 for Red Wine Production:
Potential emissions from 100% red wine production scenario are then determined as follows:

$PE1_{red}$ = $PE1_{red\ fermentation}$ + $PE1_{red\ storage}$
= 917,681 lb-VOC/year + 207,218 lb-VOC/year
= 1,124,899 lb-VOC/year

Summary:
The facility's pre-project emissions potential for fermentation and storage operations is then taken to be the greater of the white or red emissions potential determined above.

PE1 = greater of $PE1_{white}$ or $PE1_{red}$
= **1,124,899 lb-VOC/year**

2. Potential to Emit (existing tanks plus new tanks from Phases 1 and 2 of the Project)

The potential annual VOC emissions from the existing fermentation and storage operations and the proposed tanks at this winery are determined as follows:

White Wine Fermentation

$W1 = C \times D_w \times M$ (limited by crusher capacity)
$W2 = P \times D_w \times M$ (limited by pressing capacity)
$W3 = (V_{FW} \times D_w)/W_{FW}$ (limited by white fermenter volume)
$W4 = (V_T \times D_w)/R_{TW}$ (limited by overall tank processing)

Where:

C = grape crushing capacity
= 13,200 tons/day
D_w = days in a white wine crush season
= 120 days
M = amount of juice produced per ton of grapes crushed
= 200 gal/ton
P = pressing capacity
= 8,400 tons/day
W_{FW} = white fermentation period
= 10 days
R_{TW} = total winery retention time for white wine
= 40 days + 10 days = 50 days
V_{FW} = total volume of white wine fermenters
= 55,433,318 gal
V_T = total winery cooperage
= 59,740,890 gal

Using the above parameters,

W1 = (13,200 x 120 x 200) = 316.80×10^6 gal/year
W2 = (8,400 x 120 x 200) = 201.60×10^6 gal/year
W3 = (55,433,318 x 120) / 10 = 665.20×10^6 gal/year
W4 = (59,740,890 x 120) / 50 = 143.378×10^6 gal/year

CBUS Ops Inc. requested to install seven new wine storage tanks under Phase 1 of the project and is requesting to install two additional new wine storage tanks under Phase 2 of the project. These tanks will result an increase facility's storage and fermentation capacities, and no changes to the facility's crushing and pressing capacities. Therefore, crushing capacity and pressing capacity (W1 and W2) are not considered from the analysis. Only the fermenter volume and overall tank processing (W3 and W4) are compared.

W_W = W4 (lesser of W3, W4)
= 143.378×10^6 gal/year

The potential white wine fermentation emissions would be:

$PE2_{white} = E_{fw} \times W_W$

Where:

E_{fw} = white wine emission factor
= 2.5 lb-VOC/1,000 gal (per District FYI-114)

$PE2_{white}$ = (2.5 lb-VOC/1,000 gal) × (143.378 × 10^6 gal/yr)
= 358,445 lb-VOC/year

White Wine Storage Emissions:
Storage emissions are calculated as follows:

$PE2_{white} = E_s \times T \times W_w$

Where:
E_s = wine storage emission factor based on District FYI-114 (6/13/12). The tanks are allowed to store up to 20% alcohol by volume. Thus, Es is equal to 0.175 lb-VOC/1,000 gal.
T = total post fermentation inter-tank transfers per batch of wine
= 8
W_w = 143.378 x 10^6 gal/year (determined above)

$PE2_{white}$ = (0.175 lb-VOC/1,000 gal) × (8) × (143.378 x 10^6 gal/year)
= 200,729 lb-VOC/year

Total PE2 for White Wine Production:
Potential emissions from 100% white wine production scenario are then determined as follows:

$PE2_{white}$ = $PE2_{white\ fermentation}$ + $PE2_{white\ storage}$
= 358,445 lb-VOC/year + 200,729 lb-VOC/year
= 559,174 lb-VOC/year

Red Wine Fermentation Emissions:

W1 = C × D_r × M (limited by crusher capacity)
W2 = P × D_r × M (limited by pressing capacity)
W3 = (V_{FR} × F × D_r)/R_{FR} (limited by red fermenter volume)
W4 = (V_T × D_r)/R_{TS} (limited by overall tank processing)

Where:
C = grape crushing capacity
= 13,200 tons/day
D_r = days in a red wine crush season
= 120 days
F = Fill factor for red wine fermentation
= 80%
M = amount of juice produced per ton of grapes crushed
= 200 gal/ton
P = pressing capacity
= 8,400 tons/day
R_{FR} = red fermentation period
= 5 days

R_{TW} = total winery retention time for white wine
= 40 days + 5 days = 45 days
V_{FW} = total volume of red wine fermenters
= 55,433,318 gal
V_T = total winery cooperage
= 59,740,890 gal

Using the above parameters,

W1 = (13,200 x 120 x 200) = 316.80×10^6 gal/year
W2 = (8,400 x 120 x 200) = 201.60×10^6 gal/year
W3 = (55,433,318 x 0.8 x 120) / 5 = $1,064.32 \times 10^6$ gal/year
W4 = (59,740,890 x 120) / 45 = 159.309×10^6 gal/year

CBUS Ops Inc. requested to install seven new wine storage tanks under Phase 1 of the project and is requesting to install two additional new wine storage tanks under Phase 2 of the project. These tanks will result an increase facility's storage and fermentation capacities, and no changes to the facility's crushing and pressing capacities. Therefore, crushing capacity and pressing capacity (W1 and W2) are not considered from the analysis. Only the fermenter volume and overall tank processing (W3 and W4) are compared.

W_R = W4 (lesser of W3, W4)
= 159.309×10^6 gal/year

The post-project potential red wine fermentation emissions would be:

$PE2_{red} = E_{fr} \times W_R$

Where:
E_{fr} = red wine emission factor
= 6.2 lb-VOC/1,000 gal (per District FYI-114)

$PE2_{red}$ = (6.2 lb-VOC/1,000 gal) × (159.309×10^6 gal/yr)
= 987,716 lb-VOC/year

Red Wine Storage Emissions:
Storage emissions are calculated as follows:

$PE2_{red} = E_s \times T \times W_R$

Where:
E_s = wine storage emission factor based on District FYI-114 (6/13/12). The tanks are allowed to store up to 20% alcohol by volume. Thus, Es is equal to 0.175 lb-VOC/1,000 gal.
T = total post fermentation inter-tank transfers per batch of wine
= 8
W_R = 159.309×10^6 gal/year (determined above)

$PE2_{red}$ = (0.175 lb-VOC/1,000 gal) × (8) × (159.309×10^6 gal/yr)
= 223,033 lb-VOC/year

Total PE2 for Red Wine Production:
Potential emissions from 100% red wine production scenario are then determined as follows:

$PE2_{red}$ = $PE2_{red\ fermentation}$ + $PE2_{red\ storage}$
= 987,716 lb-VOC/year + 223,033 lb-VOC/year
= 1,210,749 lb-VOC/year

Summary:
The facility's post-project emissions potential for fermentation and storage operations is then taken to be the greater of the white or red emissions potential determined above.

PE2 = greater of $PE2_{white}$ or $PE2_{red}$
= **1,210,749 lb-VOC/year**

3. Potential to Emit (new tanks)

The potential emissions from new tanks would be calculated as the difference between the post project and pre project potential emissions based on physical capacity. Thus,

Potential Emissions Based on Physical Capacity of Wine Processing Equipment	
Category	Total (lb-VOC/yr)
Pre Project	1,124,899
Post Project	1,210,749
$PE2_{NewTanks}$	**85,850**

APPENDIX D
BACT Guideline 5.4.13 and Top-Down BACT Analysis

SJVAPCD Best Available Control Technology (BACT) Guideline 5.4.13*
Last Update 10/6/2009

Wine Storage Tank

Pollutant	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
VOC	1. Insulation or Equivalent**, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank; "gas-tight" tank operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation.	1. Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control 2. Capture of VOCs and carbon adsorption or equivalent (95% control) 3. Capture of VOCs and absorption or equivalent (90% control) 4. Capture of VOCs and condensation or equivalent (70% control)	

*** Tanks made of heat-conducting materials such as stainless steel may be insulated or stored indoors (in a completely enclosed building, except for vents, doors and other essential openings) to limit exposure ot diurnal temperature variations. Tanks made entirely of non-conducting materials such as concrete and wood (except for fittings) are considered self-insulating.*

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source**

Top-Down BACT Analysis for VOCs from Wine Storage Operations

Step 1 - Identify All Possible Control Technologies

The SJVUAPCD BACT Clearinghouse guideline 5.4.13, identifies achieved in practice and technologically feasible BACT for wine storage tanks as follows:

1) Insulation or Equivalent**, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank; "gas-tight" tank operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation.
2) Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control)
3) Capture of VOCs and carbon adsorption or equivalent (95% control)
4) Capture of VOCs and absorption or equivalent (90% control)
5) Capture of VOCs and condensation or equivalent (70% control)

***Tanks made of heat-conducting materials such as stainless steel may be insulated or stored indoors (in a completely enclosed building, except for vents, doors and other essential openings) to limit exposure to diurnal temperature variations. Tanks made entirely of non-conducting materials such as concrete and wood (except for fittings) are considered self-insulating.*

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Rank by Control Effectiveness			
Rank	Option	Control	Overall Capture & Control Efficiency[2]
1	2	Capture of VOCs and thermal or catalytic oxidation or equivalent	98%
2	3	Capture of VOCs and carbon adsorption or equivalent	95%
3	4	Capture of VOCs and absorption or equivalent	90%
4	5	Capture of VOCs and condensation or equivalent	70%
5	1	Insulation or Equivalent, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank; "gas-tight" tank operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation	0% Baseline (Achieved-in-Practice)

[2] Relative to "industry standard"

Step 4 - Cost Effectiveness Analysis

A cost-effective analysis is performed for each control technology which is more effective than meeting the requirements of District Rule 4694 plus tank insulation (achieved-in-practice BACT), as proposed by the facility.

Collection System Capital Investment (based on ductwork)

A common feature of all thermal or catalytic oxidation and carbon adsorption/absorption options is that they require installation of a collection system for delivering the VOCs from the tanks to the common control device.

Bases of Cost Information:

- The costs for the ductwork and the required clean-in-place system are based on information from the 2005 Eichleay Study and Projects C-1103740 and N-1133659. The 2005 Eichleay study was used in development of District Rule 4694 Wine Fermentation and Storage Tanks and includes substantial information on the costs and details of the potential application of VOC controls to wineries and addresses many of the technical issues of the general site specific factors for wineries.
- Based on the information provided by the facility, the four 652,000 gallon storage tanks proposed under Phase 1 and the two 652,000 gallon storage tanks proposed as Phase 2 under this project will be installed as one bank of tanks in the same general area, with the two 652,000 gallon storage tanks proposed under this project located just south of the four previously permitted 652,000 gallon storage tanks; therefore, all six tanks will be evaluated together for a more conservative BACT analysis for this project.
- The collection system will consist of stainless steel place ductwork (stainless steel is required due to food grade product status) with isolation valving, connecting the tanks to a common manifold system which ducts the combined vent to the common control device. The cost of dampers and isolation valving, installed in the ductwork, will be included in the cost estimate.
- A minimum duct size will be six inches in diameter at each 652,000 gallon tank to provide adequate strength for spanning between supports. The main header is also six inches in diameter for the six 652,000 gallon tanks.
- A ducting system for winery tanks must include a Clean-in-Place (CIP) system to maintain sanitation and quality of the product. The CIP system consists of spray nozzles placed in specific locations in the ductwork for injecting sterilizing solutions into the system. The cost of operation of the CIP system has not been estimated. Operation of a CIP system, using typical cleaning agents, will raise disposal and wastewater treatment costs. These costs may be significant.

Capital Cost of Ductwork for Six 652,000 Gallon Wine Storage Tanks

Connection from tanks to main duct = 6 tanks x ~42 feet x $61.30/foot = $15,448
Main duct to control device = 252 feet x $61.30/foot = $15,448
Unit installed cost for 6 inch butterfly valve = $2,125/valve x 6 valves = $12,750
Unit installed cost one foot removable spool = $500/tank x 6 tanks = $3,000
Knockout drum = $46,300
Duct support allowance = $4,000/tank x 6 tanks = $24,000

Pipe support allowance 90 foot pipe bridge = $90,000

Total = $15,448 + $15,448 + $12,750 + $3,000 + $46,300 + $24,000 + $90,000 = $224,058

Capital Cost of Ductwork for Six 652,000 gal Wine Storage Tanks	
Cost Description	Cost ($)
Duct Estimate from Eichleay Study 2005 Data	$224,058
Adjusting factor from 2005 dollars to 2015 dollars (3% inflation per year)	1.344
Inflation adjusted duct cost	$301,134
The following cost data is taken from EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001).	
Direct Costs (DC)	
Base Equipment Costs (Ductwork) See Above	$301,134
Instrumentation 10%	$30,113
Sales Tax 3.3125%[3]	$9,975
Freight 5%	$15,057
Purchased equipment cost	**$356,279**
Foundations & supports 8%	$28,502
Handling & erection 14%	$49,879
Electrical 4%	$14,251
Piping 2%	$7,126
Painting 1%	$3,563
Insulation 1%	$3,563
Direct installation costs	**$106,884**
Total Direct Costs	**$463,163**
Indirect Costs (IC)	
Engineering 10%	$35,628
Construction and field expenses 5%	$17,814
Contractor fees 10%	$35,628
Start-up 2%	$7,126
Performance test 1%	$3,563
Contingencies 3%	$10,688
Total Indirect Costs	**$110,447**
Total Capital Investment (TCI) (DC + IC)	**$573,610**

Capital Cost Clean-In-Place (CIP) System

A ducting system for winery tanks must have this system to maintain sanitation and quality of the product. The cost of operation of the CIP system has not been estimated. Operation of a CIP system, using typical cleaning agents, will raise disposal and wastewater treatment costs.

[3] Pollution control equipment may qualify for CA tax partial exemption. The exemption rate is 4.1875%, so the reduced sales tax rate is equal 3.3125% (7.500% - 4.1875%). http://www.boe.ca.gov/sutax/manufacturing_exemptions.htm#Purchasers

Clean-In-Place (CIP) System	
Cost Description	Cost ($)
2013 cost of CIP system	$200,000
The following cost data is based on the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002) (EPA/452/B-02-001).	
Direct Costs (DC)	
Base Equipment Costs (CIP System) See Above	$200,000
Instrumentation 10%	$20,000
Sales Tax 3.3125%	$6,625
Freight 5%	$10,000
Purchased equipment cost	**$236,625**
Foundations & supports 8%	$18,930
Handling & erection 14%	$33,128
Electrical 4%	$9,465
Piping 2%	$4,733
Painting 1%	$2,366
Insulation 1%	$2,366
Direct installation costs	**$70,988**
Total Direct Costs	**$307,613**
Indirect Costs (IC)	
Engineering 10%	$23,663
Construction and field expenses 5%	$11,831
Contractor fees 10%	$23,663
Start-up 2%	$4,733
Performance test 1%	$2,366
Contingencies 3%	$7,099
Total Indirect Costs	**$73,355**
Total Capital Investment (TCI) (DC + IC)	**$380,968**

Annualized Capital Costs of Ductwork and CIP System for Six 652,000 Gallon Wine Storage Tanks

Two CIP systems are required for a redundant ducting system.

Total capital costs = Ductwork + CIP System
= $614,161 + $380,968
= $995,129

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

Amortization Factor = $\left[\frac{0.1(1.1)^{10}}{(1.1)^{10}-1}\right]$ = 0.163 per District policy, amortizing over 10 years at 10%

Therefore,
Annualized Capital Investment = $995,129 x 0.163 = $162,206/yr

Collection of VOCs and control by thermal or catalytic oxidation (98% collection & control)

The balanced chemical equation for combustion of ethanol is shown below.

$C_2H_5OH + 3O_2 \rightarrow 3H_2O + 2CO_2$

Control by Thermal or Catalytic Oxidation for Six 652,000 Gallon Wine Storage Tanks

Based on maximum permitted daily throughput and the Potential to Emit for VOC from each tank, the maximum total flowrate of gas emitted from each of the 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project is calculated to be approximately 63.58 cfm, which results in a maximum total combined flowrate of 381.5 cfm for all six tanks (see Attachment 1 to the BACT Analysis). The total capital investment cost and installation costs including freight for a Regenerative Thermal Oxidizer (RTO) used in this evaluation is taken from the cost information provided by Adwest Technologies, Inc. on September 24, 2014 for an RTO handling 537 scfm, which was the smallest system they could provide. The information provided by Adwest Technologies, Inc. indicated gave a cost of $145,000 for the RTO and $22,900 for installation (including freight and startup).

Capital Investment Costs

Thermal or Catalytic Oxidation	
Cost Description	Cost ($)
Regenerative Thermal Oxidizer System	$145,500
The following cost data is based on the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000), Table 2.8 – Capital Cost Factors for Thermal and Catalytic Incinerators	
Direct Costs (DC)	
Base Equipment Costs (Regenerative Thermal Oxidizer System) See Above	$145,500
Instrumentation (included)	-
Sales Tax 3.3125%	$4,820
Freight and Startup (given above)	$22,900
Purchased equipment cost	**$173,220**
Foundations & Supports 8%	$13,858
Handling & Erection 14%	$24,251
Electrical 4%	$6,929
Piping 2%	$3,464
Painting 1%	$1,732
Insulation 1%	$1,732
Direct installation costs	**$51,966**
Total Direct Costs	**$181,881**

Thermal or Catalytic Oxidation	
Indirect Costs (IC)	
Engineering 10%	$17,322
Construction and field expenses 5%	$8,661
Contractor fees 10%	$17,322
Start-up (included above)	-
Performance test 1%	$1,732
Contingencies 3%	$5,197
Total Indirect Costs	**$50,234**
Total Capital Investment (TCI) (DC + IC)	**$232,115**

Estimated Total Capital Investment for RTO: $232,115

Amortization Factor = $\left[\frac{0.1(1.1)^{10}}{(1.1)^{10}-1}\right]$ = 0.163 per District policy, amortizing over 10 years at 10%

Therefore,
Annualized Capital Investment = $232,115 x 0.163 = $37,835

Operation and Maintenance Costs

The Direct annual costs include labor (operating, supervisory, and maintenance), maintenance materials, electricity, and fuel.

Maximum daily exhaust flow rate for one tank:
63.58 ft^3/min x 60 min/hr x 24 hr/day = 91,555 ft^3/day

The EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000) states the following:

> ***Step 2 - Verify that the oxygen content of the waste gas exceeds 20%***
> *There must be sufficient oxygen in the waste gas to support the combustion of the waste organics (including VOCs) and the auxiliary fuel, if auxiliary fuel is needed. It may be necessary to add auxiliary air if the oxygen content is less than about 20%.*

Based on the composition of the gas emitted from the tank and the amount of auxiliary fuel needed, approximately 6.4 scfm of auxiliary air is needed for each tank to maintain the concentration of oxygen in the gas sent to the oxidizer at greater than 20%.

Maximum daily flow rate and auxiliary air sent to oxidizer for one tank:
(63.58 ft^3/min + 6.4 ft^3/min) x 60 min/hr x 24 hr/day = 100,771 ft^3/day

Maximum daily VOC Emissions Rate for one tank: 197.6 lb-VOC/day-tank

Heat of Combustion for waste gas stream -dh(c):

heat of combustion –dHc for Ethanol = 11,587 Btu/lb
Daily VOC emissions per tank = 197.6 lb-VOC/day
Blower flow rate = 100,771 ft^3/day

-dh(c) = 197.6 lb-VOC/day x 11,587 Btu/lb / 100,771 ft^3/day
= 22.7 Btu/ft^3

Assuming the waste gas is principally air, with a molecular weight of 28.97 and a corresponding density of 0.0739 lb/scf, the heat of combustion per pound of incoming waste gas is:

-dh(c) = 22.7 Btu/ft^3 / 0.0739 lb/ft^3
= 307.2 Btu/lb

Fuel Flow Requirement

$$Q(fuel) = \frac{Pw \times Qw \times \{Cp \times [1.1Tf - Tw - 0.1Tr] - [-dh(c)]\}}{P(ef) \times [-dh(m) - 1.1\ Cp \times (Tf - Tr)]}$$

Where
Pw = 0.0739 lb/ft^3
Cp = 0.255 Btu/lb-°F
Qw = 63.58 scfm + 6.4 scfm
-dh(m) = 21,502 Btu/lb for methane
Tr = 77°F assume ambient conditions
P(ef) = 0.0408 lb/ft^3 m, methane at 77°F, 1 atm
Tf = 1,600°F
Tw = 1,150°F
-dh(c) = 307.2 Btu/lb

$$Q = \frac{0.0739 \times 69.98 \times (0.255 \times [1.1 \times 1{,}600 - 1{,}150 - 0.1 \times 77] - 307.2)}{0.0408 \times [21{,}502 - 1.1 \times 0.255 \times (1{,}600 - 77)]}$$
$$= -794 \div 860 = -0.92\ ft^3/min$$

As shown above, auxiliary fuel is not required to sustain combustion of the waste gas. However, some auxiliary fuel is still required to stabilize the burner flame. The EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000) indicates that approximately 5% of the total energy input should be provided by the auxiliary fuel to stabilize the burner flame. Based on this requirement, approximately 0.12 scfm of auxiliary natural gas fuel is to stabilize the burner flame. (See calculations below)

Sensible Heat Out
= 0.0739 lb/scf x (63.58 + 6.4 + 0.12) scf/min x 0.255 Btu/lb-°F x (1,600 – 77) °F = 2,012 Btu/min

Minimum Auxiliary Natural Gas Fuel Requirement
2,012 Btu/min x 0.05 = 101 Btu/min ÷ 21,502 Btu/lb-methane = 0.0047 lb-methane/min
0.0047 lb-methane/min ÷ 0.0408 lb-methane/scf = 0.12 scf methane/min

Fuel Costs

The cost for natural gas shall be based upon the average price of natural gas sold to "Industrial Consumers" in California for the years 2013 and 2014.[4]

2014	= \$7.73/thousand ft^3 total monthly average
2013	= \$6.57/thousand ft^3 total monthly average
Average for two years	= \$7.15/thousand ft^3 total monthly average

It will be assumed that each tank can have 40 turnovers per year and filling of each tank takes one complete day (24 hrs). Therefore, the natural gas cost for operating the RTO for all six tanks will be based on 240 days of operation (6 tanks x 40 fill/tank-year x 1 day/fill)

Fuel Cost = 0.12 cfm x 60 min/hr x 24 hr/day x 240 day/year x \$7.15/1,000 ft^3
= \$297/year

Electricity Requirement

$$\text{Power}_{fan} = \frac{1.17*10^{-4}\ Qw*\ \Delta P}{\epsilon}$$

Where

ΔP	=	Pressure drop across system = 19 in. H_2O
ϵ	=	Efficiency for fan and motor = 0.6
Qw	=	63.58 scfm + 6.4 scfm =70 scfm

$$\text{Power}_{fan} = \frac{1.17*10^{-4}*70\ cfm*1.5*\ 19\ in.\ H_2O}{0.60*0.90}$$
= 0.43 kW

Electricity Costs

Average cost of electricity to Industrial users in California[5]:
2014 = \$0.1193/kWh
2013 = \$0.1096/kWh
Average = \$0.1145/kWh

It will be assumed that each tank can have 40 turnovers per year and filling of each tank takes one complete day (24 hrs). Therefore, the electricity cost for operating the RTO for all six tanks will be based on 240 days of annual operation (6 tanks x 1 fill/day x 40 fills/tank-year)

Electricity Cost = 0.43 kW x 24 hr/day x 240 day/year x \$0.1145/kWh = \$284/year

[4] Energy Information Administration/Natural Gas; Average Price of Natural Gas Sold to Industrial Consumers by State, 2013 – 2014. http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SCA_a.htm

[5] Energy Information Administration/Electric Power; Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State, 2013- 2014. http://www.eia.gov/electricity/data.cfm#sales

Annual Costs (Based on: EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000), Table 2.10 - Annual Costs for Thermal and Catalytic Incinerators Example Problem. United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711. EPA/452/B-02-001) [6]

Annual Costs for Thermal or Catalytic Incinerator			
Operator	0.5 hr/shift	$18.5/hr x 0.5 hr/shift x 2 shift/day x 365 day/yr	$6,753
Supervisor	15% of operator		$1,013
Maintenance			
Maintenance Labor	0.5 h/shift	$18.5/hr x 0.5 hr/shift x 2 shift/day x 365 day/yr	$6,753
Maintenance Materials	100% of labor		$6,753
Utility			
Natural Gas			$297
Electricity			$284
Indirect Annual Cost (IC)			
Overhead	60% of Sum Labor & Material Costs	0.6 x ($6,753 + $1,013 + $6,753 + 6,753)	$12,763
Administrative Charge	2% TCI		$4,642
Property Taxes	1% TCI		$2,231
Insurance	1% TCI		$2,231
		Total Annual Costs:	**$43,720**

Total Annual Cost

Total Annual Cost = (Ductwork + CIP System) + Regenerative Thermal Oxidizer System + Annual Costs
= $162,206 + $37,835 + $43,720
= $243,761

Emission Reductions

Annual VOC Emission Reductions = Annual PE x 0.98
= 25,164 lb-VOC/year x 0.98
= 24,661lb-VOC/year
= 12.33 tons-VOC/year

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

Cost Effectiveness = $243,761/year ÷ 12.33 tons-VOC/year
= $19,770/ton-VOC

[6] http://epa.gov/ttn/catc/dir1/cs3-2ch2.pdf

The analysis demonstrates that the annualized purchase cost of the collection system ductwork, CIP system equipment, and regenerative thermal oxidizer system and the annual costs of a regenerative thermal oxidizer system result in costs that exceed the District's BACT Cost Effectiveness Threshold for VOC of $17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for the six 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project.

Collection of VOCs and control by carbon adsorption (95% collection and control)

Control by Carbon Adsorption for Six 652,000 Gallon Wine Storage Tanks

Based on maximum permitted daily throughput and the Potential to Emit for VOC from each tank, the maximum total flowrate of gas emitted from each of the 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project is calculated to be approximately 63.58 cfm, which results in a maximum total combined flowrate of 381.5 cfm for all six tanks.

As mentioned in the BACT analysis for District Project N-1143697, on February 3, 2015 David Drewelow of Drewelow Remediation Equipment, Inc. provided a cost estimate of $20,000 to $25,000 for a 50 cfm carbon containment system, including an inline filter, blower, exhaust silencer and air to air heat exchanger. On the same day (February 3, 2015) David Drewelow also provided a cost estimate of $80,000 to $85,000 for a 1,000 cfm carbon containment system, including a gas/liquid separator, an inline filter, blower, exhaust silencer and air to air heat exchanger. Interpolating between these estimates results in a cost estimate of $40,937 to $45,937 for a carbon containment system that can handle 381.5 cfm; therefore, for purposes of this analysis a cost of $43,437 will be used for the equipment for a carbon adsorption system that can handle the total exhaust from all six tanks.

Carbon Adsorption

Capitol Cost for hardware for the carbon adsorption system: $43,437

A tank is needed for the steam regenerated carbon bed. Two beds will generally be needed to enable operation of one bed while the other is being regenerated.

The carbon bed operated with steam to regenerate the bed produces a water alcohol mixture. The waste stream or disposal costs have not been analyzed in this project.

Carbon Capital Cost

Annual VOC Emission Reductions = PE x 0.95
= 25,164 lb-VOC/year x 0.95
= 23,906 lb-VOC/year
= 11.95 tons-VOC/year

Assume a working bed capacity of 20% for carbon (weight of vapor per weight of carbon)

Carbon required = 23,906 lb-VOC/year x 1/0.20 = 119,530 lb-carbon

David Drewelow also provided a cost of $1.25/lb of carbon which does not include any delivery or servicing fees. Therefore, carbon capital cost = $1.25/lb x 119,530 lb carbon = $149,413

Carbon Adsorption	
Cost Description	Cost ($)
Carbon Adsorption System Cost	$43,437
Water alcohol tank cost	$40,000
Adsorption + water alcohol tank cost	$83,437
Carbon Capital Cost (see above)	$119,530
The following cost data is based on the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002) (EPA/452/B-02-001).	
Direct Costs (DC)	
Base Equipment Costs (Carbon Adsorption System + Carbon) See Above	$202,967
Instrumentation 10%	$20,297
Sales Tax 3.3125%	$6,723
Freight 5%	$10,148
Purchased equipment cost	**$240,135**
Foundations & supports 8%	$19,211
Handling & erection 14%	$33,619
Electrical 4%	$9,605
Piping 2%	$4,803
Painting 1%	$2,401
Insulation 1%	$2,401
Direct installation costs	**$72,040**
Total Direct Costs	**$312,175**
Indirect Costs (IC)	
Engineering 10%	$24,014
Construction and field expenses 5%	$12,007
Contractor fees 10%	$24,014
Start-up 2%	$4,803
Performance test 1%	$2,401
Contingencies 3%	$7,204
Total Indirect Costs	**$74,443**
Total Capital Investment (TCI) (DC + IC)	**$386,618**

Annualized Capital Costs

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

In accordance with the District BACT Policy (APR-1305), the equipment life is generally assumed to be 10 years unless it is demonstrated that an alternative equipment life is more representative of the specific operation. In the case of the carbon adsorption system, the carbon used in the system has a shorter economic life than the rest of the system. Therefore annualized cost of the carbon must be calculated separately than the rest of the system.

Annualized Cost for Carbon for System

The EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999)[7] states, "*A typical life for the carbon is five years. However, if the inlet contains VOCs that are very difficult to desorb, tend to polymerize, or react with other constituents, a shorter carbon lifetime— perhaps as low as two years—would be likely.*"

Per the EPA Air Pollution Control Cost Manual, the annualized cost of the carbon for the adsorption system may be calculated as follows:

$$CRC_C = CRF_C\ (1.08\ C_C + C_{CI})$$

where:

CRC_C = capitol recovery cost for the carbon ($/yr)
CRF_C = capital recovery factor for the carbon
1.083125 = taxes and freight factor
C_C = initial cost of carbon ($)
C_{CI} = carbon replacement labor cost ($) (Per EPA Air Pollution Control Cost Manual $0.05/lb-carbon replaced in 1999 dollars)

Assuming the maximum carbon life of five years and a 10% interest rate the capitol recovery cost for the carbon =

$$\left[\frac{0.1(1.1)^5}{(1.1)^5 - 1}\right] = 0.264 \text{ over 5 years at 10\% interest}$$

Therefore, the annualized cost of the carbon =
0.264(1.083125 x $149,413 + 119,530 lb-carbon x $0.05/lb-carbon) = $44,302

Annualized Cost for Other Equipment for the Carbon Adsorption System

The EPA Air Pollution Control Cost Manual, states, "*For adsorbers, the system lifetime is typically ten years, except for the carbon, which, as stated above, typically needs to be replaced after five years. Therefore, when figuring the system capital recovery cost, one should base it on the installed capital cost less the cost of replacing the carbon (i.e., the carbon cost plus the cost of labor necessary to replace it).*"

Per the EPA Air Pollution Control Cost Manual, the annualized cost of the carbon for the adsorption system may be calculated as follows:

$$CRC_S = [TCI - (1.083125\ C_C + C_{CL})]\ CRF_S$$

where:

CRC_S = capital recovery cost for adsorption system ($/yr)

[7] EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999). United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711. EPA/452/B-02-001. http://epa.gov/ttn/catc/dir1/cs3-1ch1.pdf

TCI = total capital investment ($)
1.08 = taxes and freight factor
C_C = initial cost of carbon ($)
C_{CL} = carbon replacement labor cost ($) (Per EPA Air Pollution Control Cost Manual $0.05/lb-carbon replaced in 1999 dollars)
CRF_S = capital recovery factor for the adsorption system

In accordance with District BACT Policy, assuming a system life of 10 years a 10% interest rate the capitol recovery cost for the carbon =

$$\left[\frac{0.1(1.1)^{10}}{(1.1)^{10}-1}\right] = 0.163 \text{ over 10 years at 10\% interest}$$

Therefore, the annualized cost of the carbon adsorption system (except for the carbon) = [$386,618 - (1.083125 x $149,413 + 119,530 lb-carbon x $0.05/lb-carbon)] x 0.163 = $35,666

Annualized Cost of Carbon + Carbon Adsorption Equipment
$44,302 + $35,666 = $79,968

Total Operation and Maintenance Costs

The annual operation and maintenance costs for the carbon adsorption system are based on the information given in the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999)[7]. No value will be given for the ethanol that may be potentially recovered since this ethanol could actually result in additional disposal costs, which will also not be quantified in this analysis.

Annual Steam Costs

Per EPA Air Pollution Control Cost Manual, the steam requirement ranges from approximately 3 to 4 lbs of steam/lb of adsorbed VOC and can be calculated as follows:

$C_S = 3.50 \times 10^{-3} m_{voc} e_s p_S$

where:

C_S = cost of steam ($/yr)
m_{voc} = VOC inlet loading (lbs/hr)
e_s = system operating hours (hr/yr)
p_S = steam price ($/thousand lbs)

Per the EPA Air Pollution Control Cost Manual, cost of steam can be estimated as 120% of the fuel cost ($/MMBtu).

Based on the Energy Information Administration (EIA) Website (http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_SCA_a.htm) the average industrial price for natural gas in California in the year 2013 was 7.73 per thousand cubic feet and in the year 2014 and was 7.73 per thousand cubic feet for the year 2013 was $6.57/per thousand cubic

feet, resulting in an average cost of $7.15/per thousand cubic feet for these two years. Therefore the cost of steam can be estimated as follows:

C_S = 3.50 lb-steam/lb-VOC x 25,164 lb-VOC/yr x ($7.15 x 1.20)/(1,000 lb-steam) = $756/yr

The total quantity of steam (Q_S) required is calculated as follows

Q_S = 3.50 lb-steam/lb-VOC x 25,164 lb-VOC/yr = 88,074 lb-steam/yr

Annual Cooling Water Costs

$C_{cw} = 3.43 \times C_S/p_S \times p_{cw} = 3.43 \times Q_S \times p_{cw}$

where:

C_{cw} = cooling water cost ($/yr)
p_{cw} = cooling water price ($/thous. gal.) (Per EPA Air Pollution Control Cost Manual, if the cooling water price is unavailable, use $0.15 to $0.30/1,000 gallons cooling water in 1999 dollars)

Therefore, the cooling water cost can be estimated as follows:

C_{cw} = 3.43 gal-cooling water/lb-steam x 88,074 lb-steam/yr x $0.225/(1,000 gallons cooling water) = $68/yr

The total volume of cooling water (V_{cw}) required annually is calculated as follows

V_{cw} = 3.43 gal-cooling water/lb-steam x 88,074 lb-steam/yr = 302,094 gal-cooling water/yr

Electricity Costs

Electricity Use of System Fan

Per the EPA Air Pollution Control Cost Manual, the electricity use of the system fan can be calculated using the following equations:

$\Delta P_b/t_b = 0\ 03679\ v_b + 1.107 \times 10^{-4}\ v_b^2$

where:

$\Delta P_b/t_b$ = pressure drop through bed (inches of water/foot of carbon)
v_b = superficial bed velocity (ft/min)

$hp_{sf} = 2.50 \times 10^{-4}\ Q\ \Delta P_s$

where:

hp_{sf} = electric hp of system fan
Q = gas volumetric flow through system (acfm) (~ 63.58 scfm/per tank, given above)
ΔP_s = total system pressure drop = (ΔP_b + 1)

$kWh_{sf} = 0.746\ kW/hp \times hp_{sf} \times e_s$

where:

kWh_{sf} = Annual electricity use of system fan (kWh/yr)
e_s = system operating hours (hr/yr)

The EPA document Carbon Adsorption for Control of VOC Emissions: Theory and Full Scale System Performance (June 1988)[8] states, "*Generally carbon adsorber bed depth range from 1.5 to 3.0 feet. A bed depth of at least 1.5 feet is used to insure that the bed is substantially deeper than the MTZ ...*"

Therefore, the carbon bed depth will conservatively be assumed to be 2 ft. The example problem in the EPA Air Pollution Control Cost Manual used a superficial bed velocity (v_b) of 75 ft/min. Using these values, the pressure drop through the carbon bed is estimated as follows:

$\Delta P_b = [0\ 03679\ (75) + 1.107 \times 10^{-4}\ (75)^2] \times 2 = 6.76$ in. water

It will be assumed that each tank can have 40 turnovers per year and filling of each tank takes one complete day (24 hrs). Therefore, the annual time of operation of the system fan will be based on 5,760 hours (6 tanks x 40 fill/tank-year x 24 hrs/fill)

Based on the equations given above, the annual electricity use of the system fan is estimated as follows:

$kWh_{sf} = 0.746\ kW/hp \times [2.50 \times 10^{-4} \times 63.58 \times (6.76 + 1)]\ hp \times 5{,}760\ hr/yr =$ <u>530 kWh/yr</u>

<u>Electricity Use of Bed Drying/Cooling Fan</u>

Per the EPA Air Pollution Control Cost Manual, the electricity use of the bed drying/cooling fan during regeneration of the carbon bed is calculated in the same manner as the system fan. However, while pressure drop for the bed fan would still be ΔP_b, the gas flow and operating times of system fan and bed fan would be different. The annual electricity use of the bed fan can be estimated as follows:

$kWh_{cf} = 0.746\ kW/hp \times (2.50 \times 10^{-4} \times Q_{cf} \times \Delta P_s)\ hp \times e_{cf}$

where:

kWh_{cf} = annual electricity use of bed fan (kWh/yr)
Q_{cf} = gas volumetric flow through system when bed fan operates (acfm)
e_{cf} = operating hours of bed drying/cooling fan (hr/yr)

The total volume of air provided annually (ft^3/yr) by the bed drying/cooling fan during regeneration would be equal to the following:

[8] EPA Carbon Adsorption for Control of VOC Emissions: Theory and Full Scale System Performance (June 1988), Section. United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711. EPA-450/3-88-012.

$V_{cf\text{-}air} = Q_{cf} \times 60$ (min/hr) $\times \theta_{cf}$

where:

$V_{cf\text{-}air}$ = total volume of air provided annually by bed fan (ft^3/yr)

Therefore, $V_{cf\text{-}air}$/(60 min/hr) = $Q_{cf} \times \theta_{cf}$; and
$kWh_{cf} = 0.746$ kW/hp x $(2.50 \times 10^{-4} \times \Delta P_s)$ hp/(ft^3-min) x $V_{cf\text{-}air}$/(60 min/hr)

The EPA Air Pollution Control Cost Manual states, "*For typical adsorber operating conditions, the drying/cooling air requirement would be 50 to 150 ft^3/lb carbon, depending on the bed moisture content, required temperature drop, and other factors.*" Taking the midpoint of this range (100 ft^3-air/lb-carbon), as shown in the EPA Air Pollution Control Cost Manual example problem, the total volume of air ($V_{cf\text{-}air}$) provided by the bed drying/cooling fan is calculated as follows:

$V_{cf\text{-}air}$ = 100 ft^3-air/lb-carbon x 119,530 lb-carbon/yr = 11,953,000 ft^3/yr

Therefore, annual electricity use of the bed fan can be estimated as follows:

kWh_{cf} = 0.746 kW/hp x $(2.50 \times 10^{-4} \times 7.76)$ hp/(ft^3-min) x 11,953,000 ft^3/yr/(60 min/hr)
= <u>288 kWh/yr</u>

<u>Electricity Use of Cooling Water Pump</u>

Per the EPA Air Pollution Control Cost Manual, the cooling pump hp requirement can be calculated using the following equation:

$hp_{cwp} = (2.52 \times 10^{-4}\ q_{cw}\ H\ s)/\eta$

where:

hp_{cwp} = cooling water pump horsepower requirement
q_{cw} = cooling water flow (gal/min)
H = required head (nominally 100 feet of water per EPA Air Pollution Control Cost Manual Air Pollution Control Cost Manual)
s = specific gravity of fluid relative to water at 60°F
η = combined pump-motor efficiency (63% based on per EPA Air Pollution Control Cost Manual Air Pollution Control Cost Manual example problem)

The electricity use of the cooling pump can be estimated as follows:

$kWh_{cwp} = 0.746$ kW/hp x $hp_{cwp} \times \theta_{cwp}$

where:

kWh_{cwp} = annual electricity use of cooling pump (kWh/yr)
θ_{cwp} = cooling pump operating hours (hr/yr)

The total volume of cooling water pumped annually (gal/yr) by the cooling water pump would be equal to the following:

$V_{cw} = q_{cw} \times 60$ (min/hr) $\times e_{cf}$

where:

V_{cw} = total volume of cooling water pumped annually (gal/yr) (302,094 gal-cooling water/yr, given above)

Therefore, $V_{cw}/(60$ min/hr$) = q_{cw} \times e_{cwp}$; and
$kWh_{cwp} = 0.746$ kW/hp x $(2.52 \times 10^{-4}$ H s/$\eta)$ hp/(gal-min) x $V_{cw}/(60$ min/hr)

Using the values given above, kWh_{cwp} is estimated as follows:
0.746 kW/hp x [$(2.52 \times 10^{-4} \times 100 \times 1)/0.63$] hp/(gal-min) x (302,094 gal/yr/(60 min/hr)
= 150 kWh/yr

Total Estimated Amount of Electricity used by Adsorption Carbon System (kWh/yr)
= $kWh_{sf} + kWh_{cf} + kWh_{cwp}$
= 530 kWh/yr + 288 kWh/yr + 150 kWh/yr = 968 kWh/yr

Estimated Cost of Electricity used by Adsorption Carbon System ($/yr)
The Energy Information Administration (EIA) website (http://www.eia.gov/electricity/data.cfm#sales)[Error! Bookmark not defined.] gives the following average retail price for industrial electricity in California for the years 2014 and 2013:
2014 = $0.1193/kWh
2013 = $0.1096/kWh
Average = $0.1145/kWh

Estimated Cost of Electricity used by Carbon Adsorption System
= 968 kWh/yr x $0.1145/kW-hr = $111/yr

Total Annual Costs for Carbon Adsorption

Total Annual Costs for Carbon Adsorption			
Operator	0.5 hr/shift	$18.5/hr x 0.5 hr/shift x 2 shift/day x 365 day/yr	$6,753
Supervisor	15% of operator		$1,013
Maintenance			
Maintenance Labor	0.5 h/shift	$18.5/hr x 0.5 hr/shift x 2 shift/day x 365 day/yr	$6,753
Maintenance Materials	100% of labor		$6,753
Utilities			
Steam			$756
Cooling Water			$68
Electricity			$111
Indirect Annual Cost (IC)			
Overhead	60% of Sum Labor & Material Costs	0.6 x ($6,753 + $1,013 + $6,753 + 6,753)	$12,763
Administrative Charge	2% TCI		$7,732
Property Taxes	1% TCI		$3,866
Insurance	1% TCI		$3,866
		Total Annual Costs:	**$50,434**

Total Annual Cost

Total Annual Cost = (Ductwork + CIP System) + Carbon Adsorption System Cost + Annual Costs
= $162,206 + $79,968 + $50,434
= $292,608

Emission Reductions

Annual VOC Emission Reductions = PE x 0.95
= 25,164 lb-VOC/year x 0.95
= 23,906 lb-VOC/year
= 11.95 tons-VOC/year

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

Cost Effectiveness = $292,608/year ÷ 11.95 tons-VOC/year
= $24,486/ton-VOC

The analysis demonstrates that the annual costs of the collection system ductwork, CIP system equipment, and carbon adsorption system, result in costs that exceed the District's BACT Cost Effectiveness Threshold for VOC of $17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for the six 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project.

Collection of VOCs and control by absorption (90% collection and control)

Control by Absorption for Proposed Six 652,000 Gallon Wine Storage Tanks

The total capital investment costs for the absorption system used in this evaluation are based on the information given in Project N-1133659, which was finalized on November 26, 2014. The water scrubber absorption system in Project N-1133659 was evaluated for the control of 24 56,000 gallon control wine fermentation tanks with a maximum flow rate of 288.6 scfm from each tank. Each unit can control the emissions from one tank and a total of 18 reactor units were proposed to control 75% of the maximum tank emissions at one time. The maximum total flowrate of gas emitted from each of the 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project is calculated to be approximately 63.58 cfm, which results in a maximum total combined flowrate of 381.5 cfm for all six tanks. This is approximately 132% the flowrate handled by one unit under Project N-1133659. However, for more conservative calculations, this one condensation unit will be assumed to be sufficient to control the emissions from the tanks for purposes of this analysis.

Capital Cost Water Scrubber

1 Reactor Unit = $60,000 each
Portable Pumping Skids = $7,500 each
Total = $60,000 + $7,500 = $67,500

Total Adjusted Capital Cost = $67,500 x 1 unit
= $67,500

Water Scrubber	
Cost Description	Cost ($)
Refrigerated Scrubber System (1 Unit)	$67,500
The following cost data is based on the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002) (EPA/452/B-02-001).	
Direct Costs (DC)	
Base Equipment Costs (Scrubber System) See Above	$67,500
Instrumentation ($2,000 per unit)	$2,000
Sales Tax 3.3125%	$2,236
Freight (included)	-
Purchased equipment cost	**$71,736**
Foundations & supports (not required)	-
Handling & erection 2%	$1,435
Electrical 1%	$ 717
Piping 1%	$ 717
Painting (not required)	-
Insulation (not required)	-
PLC & Programming[9]	$10,000
Recovered Ethanol Storage Tank (installed)	$40,000
Direct installation costs	**$52,869**
Total Direct Costs (TDC)	**$124,605**
Indirect Costs (IC)	
Engineering (5% of TDC)	$6,230
Construction and field expenses (2% of TDC)	$2,492
Permits (Building Department) (Allowance)	$10,000
Contractor fees (2% of TDC)	$2,492
Start-up (1% of TDC)	$1,246
Source Testing (1 unit x $15,000/unit)	$15,000
Owner Cost Allowance/Contingency (3% of TDC)	$2,152
Total Indirect Costs	**$39,612**
Subtotal Capital Investment (SCI)	**$164,217**
Project Contingency (20% of SCI)	$32,843
Total Capital Investment (TCI) (DC + IC)	**$197,060**

[9] From Project N-1133659, PLC & Programming for 18 units = $180,000, or $10,000/unit

Annualized Capital Costs

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

Amortization Factor = $\left[\frac{0.1(1.1)^{10}}{(1.1)^{10}-1}\right]$ = 0.163, amortizing over 10 years at 10%

Therefore,
Annualized Capital Investment = $197,060 x 0.163 = $32,121

Wastewater Disposal Costs

The water scrubber will generate ethanol-laden wastewater containing 11.32 tons (22,648 lbs) of ethanol annually (25,164 lb/year (uncontrolled emissions) x 0.90 ÷ 2000). Assuming a 10% solution, approximately 34,211 gallons of waste water (22,648 lb-ethanol x 1 gal/6.62 lb ÷ 0.10) will be generated annually. Based on information from NohBell Corporation, an allowance of $0.08 per gallon is applied for disposal costs.

Annual disposal costs = 34,211 gallons x $0.08/gallon = $2,737

Annual Costs

Annual Costs for Water Scrubber			
Direct Annual Cost (DC)			
Operating Labor			
Operator	2 hr/day x 1 unit x 365 days = 730 hr/year	$18.50/h	$13,505
Supervisor	15% of operator		$2,026
Maintenance			
Labor	1% of TCI		$1,971
Wastewater Disposal			
	10% Solution = 34,211 gal	$0.08/gal	$2,737
Utility			
Electricity	1 unit x 2.5 hp x 0.746 kW/hp x 5,760 hr/yr = 10,742 kWh/yr	$0.1145/kWh	$1,230
Total DC			$21,469
Indirect Annual Cost (IC)			
Overhead	60% of Labor Cost	0.6 x ($13,505 + $2,026 + $1,971)	$10,501
Administrative Charge	2% TCI		$3,941
Property Taxes	1% TCI		$1,971
Insurance	1% TCI		$1,971
Annual Source Test	One representative test/year @ $15,000		$15,000
Total IC			$33,384
Annual Cost (DC + IC)			**$54,853**

Total Annual Cost = (Ductwork + CIP System) + Scrubber System Annualized Cost + Annual Operating Costs
= $162,206 + $32,121 + $54,853
= $249,180

Emission Reductions

Annual VOC Emission Reductions = PE x 0.90
= 25,164 lb-VOC/year x 0.90
= 22,648 lb-VOC/year
= 11.32 tons-VOC/year

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

Cost Effectiveness = $249,180/year ÷ 11.32 tons-VOC/year
= $22,012/ton-VOC

The analysis demonstrates that the annualized purchase cost of the collection system ductwork and CIP system equipment, the water scrubber system, and annual operating costs result in costs that exceed the District's BACT Cost Effectiveness Threshold for VOC of $17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for the six 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project.

Collection of VOCs and control by condensation (70% collection and control)

Control by Condensation for Proposed Six 652,000 Gallon Wine Storage Tanks

The total capital investment costs and operating costs for a condensation system used in this evaluation are based on the information given in District project N-1133659, which was finalized on November 26, 2014. The scrubber under project N-1133659 was evaluated for the control of 84,864 pounds of VOC emissions. The total potential to emit for the six 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project is 25,164 lb-VOC/yr, which is approximately 30% of the emissions evaluated for control under Project N-1133659.

Generally, when estimating costs from a known value, the rule of six-tenths is used to account for economy of scale. However, since the control device required for this project is smaller than the control device in the base project, the cost for the control device in this project will be scaled linearly. Scaling linearly results in lower capital cost and lower cost effectiveness. Therefore, the capital and installation costs provided in the cost estimate will be adjusted by a factor of 0.30 for purposes of this analysis. In addition, no value will be given for the ethanol that is recovered from the condensation system since the recovered ethanol has not been conclusively demonstrated to have a value in practice and could actually result in additional costs for disposal.

The total capital cost provided in project N-1133659 is $1,901,272 for 4 units controlling 84,864 lbs-VOC. Therefore, the total capital cost for an equivalent system for this project is estimated to be $570,382.

Capital Cost Refrigerated Condenser

Condensation Units	
Cost Description	Cost ($)
Cost of Refrigerated Condenser system (~ 1.2 Units)	$570,382
The following cost data is based on the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002) (EPA/452/B-02-001).	
Direct Costs (DC)	
Base Equipment Costs (Condenser) See Above	$570,382
Instrumentation (included)	-
Sales Tax 3.225% (included)	-
Freight (included)	-
Purchased equipment cost	**$570,382**
Labor (estimate based on Project N-1133659)	$24,480
Installation Expense (estimate based on Project N-1133659)	$17,753
Subcontracts (estimate based on Project N-1133659)	$5,400
PLC/Programming[10]	$10,000
Direct installation costs	**$57,633**
Total Direct Costs (TDC)	**$628,015**
Indirect Costs (IC)	
Engineering (5% of TDC)	$31,401
Permits (Building Department) (Allowance)[11]	$2,500
Initial Source Testing (1 units x $15,000/unit)	$15,000
Owner's Cost (Allowance)	$30,000
Total Indirect Cost	**$78,901**
Subtotal Capital Investment (SCI)	**$706,916**
Project Contingency (20% of SCI)	**$141,383**
Total Capital Investment (TCI) (DC + IC + Contingency)	**$848,299**

Annualized Capital Costs

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

Amortization Factor = $\left[\frac{0.1(1.1)^{10}}{(1.1)^{10}-1}\right]$ = 0.163, amortizing over 10 years at 10%

Therefore,
Annualized Capital Investment = $848,299 x 0.163 = $138,273

[10] From Project N-1133659, PLC & Programming for 4 units = $40,000, or $10,000/unit
[11] From Project N-1133659 Permits for 4 units = $10,000, or $2,500/unit

Annual Costs

Annual Costs for Condensation Units			
Direct Annual Cost (DC)			
Operating Labor			
Operator	1 hr/shift x 2 shifts/day x 1 unit x 365 days = 730 hr/year	$18.50/h	$13,505
Supervisor	15% of operator		$2,026
Maintenance			
Labor	1% of TCI		$8,483
Chiller (Glycol)			
	25,164 lb/year (uncontrolled PE) x 0.70 + 2000 = 8.81 ton-EtOH/yr	$270/ton-EtOH	$2,379
Utility			
Electricity	Cost of Electricity for Operation of Chiller included in Chiller Estimate above; Cost of Electricity for fans/pumps for movement of vapor to condensation unit not estimated	$0.1145/kWh	$0
Total DC			$26,393
Indirect Annual Cost (IC)			
Overhead	60% of Labor Cost	0.6 x ($13,505 + $2,026 + $8,483)	$14,408
Administrative Charge	2% TCI		$16,966
Property Taxes	1% TCI		$8,483
Insurance	1% TCI		$8,483
Annual Source Test	One representative test/year @ $15,000		$15,000
Total IC			$63,340
Annual Cost (DC + IC)			**$89,733**

Total Annual Cost = (Ductwork + CIP System) + Condenser System Annualized Cost + Annual Operating Costs
= $162,206 + $138,273 + $89,733
= $249,180

Emission Reductions

Annual VOC Emission Reductions = PE x 0.70
= 25,164 lb-VOC/year x 0.70
= 17,615 lb-VOC/year
= 8.81 tons-VOC/year

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

Cost Effectiveness = $249,180/year ÷ 8.81 tons-VOC/year
= $28,284/ton-VOC

The analysis demonstrates that the annualized purchase cost of the collection system ductwork and CIP system equipment, the condenser system, and annual operating costs result in costs that exceed the District's BACT Cost Effectiveness Threshold for VOC of $17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for the six 652,000 gallon wine storage tanks proposed under Phase 1 and Phase 2 of this project.

Step 5 - Select BACT

All identified feasible options with control efficiencies higher than the option proposed by the facility have been shown to not be cost effective. The facility has proposed Option 1, insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank, "gas tight" tank operation and achieve and maintain a continuous storage temperature not exceeding 75 °F within 60 days of completion of fermentation. These BACT requirements will be listed on the permits as enforceable conditions.

Attachment 1 to the BACT Analysis
Flowrate from Wine Storage Tanks

Wine Storage Tanks

Description						
			6	Units		
The working volume of the tank is (in gallons)			652,000	Gallons		
The Idea gas law applies PV= NRT						
P equals the absolute atmosphere pressure			1.00	Atm		
N equals the number of Lb-moles of the vapor space gas				Lb-Moles		
V = the volume				Cubic Feet		
T = the absolute temperature in Degrees Rankine			520.00	Deg R		
				Atm x Cubic foot/Deg R x		
R= Gas Law Constant			0.73	LB-mole		
Density of Dry Air at 60 Deg F			0.08	Lb/cubic foot		
Molecular Weight of N2			28.01			
Molecular Weight of D2			31.99			
Molecular Weight of Alcohol			46.02			
Molecular Weight of Water			18.02			
Percent of Air that is N2 Source Hand Book Chemistry and Physics			0.78			
Percent of Air that is O2 Source Hand Book Chemistry and Physics			0.21			
Molecular Weight of Air			28.58			
Moles of air displaced assuming air does not dissolve into the wine.			230.07	Lb-moles		
AMW (Yellow cells information for the storage emissions tab)			28.882			
Molar Fraction Alcohol in Vapor			0.3879			
Daily Maximum Emissions in Pounds/Day of alcohol			197.6			
Weight of water exiting tank from Tank 4.0 model			122.07	Lb's		
Weight of alcohol exiting tank from Tank 4.0 model			197.60	Lb's		
Moles of alcohol exiting the tank from Tanks 4.0 model			4.29	Lb-moles		
Moles of water exiting the tank from Tanks 4.0 model			6.77	Lb-moles		
Total number of moles leaving the tank			241.14			
Cubic feet of gas leaving the tank per ideal gas law			91,560.79	Cubic feet		
The tank is filled in 24 hours or			1,440.00	Minutes		
Gas flow rate on filling			63.58	CFM	476	GPM
Gas composition on a molar bases					2,854	Total GPM into the tank farm
	Air		0.9541	%		
	Water		0.0281	%		
	Alcohol		0.0178	%		
		Sum	1.0000			
Gas composition on a weight bases						
	Air		0.9536	%		
	Water		0.0177	%		
	Alcohol		0.0287	%		
		Sum	1.0000			

1) The gas flow rate (shown in the brown cells) is for one tank at a maximum fill rate. It is assumed that one tank can be filled in a 24 hour period and emptied in a 24 hour period. Each turn fills the tank to its maximum working volume and then empties it. The process can be repeated the every two days.

2) It is assume the emission control equipment would only be needed in the filling process. The estimated flow rate of the pumps is shown below. A typical pumps runs at about 100 TOH and is about 65 to 70% efficient, and if pumping distances are short may move down the curve to pump more at a lower TDH.

3 There will be only one main duct since we believe the pumping could be stopped while the main duct is cleaned. A CIP system is included for this project. it is assumed that 6 tanks could be filling at one time.

# of Pumps	Design GPM into Tank Farm	Combined CFM	Duct speed by Eichleay (feet per second)	Duct Diameter for the Main inches	Use duct size shown beiow for all storage main line for structural rigidity.
6.0	2,854	381.50	40.00	5.40	6.00

1) Assume Ideal Gas at Atm pressure

2) The Tanks 4.0 daily emission value is based on turning the tank 1 time every two days during the month of July. This mean the Tank is filled in 24 hours and then emptied in 24 hours. This process can be repeated every two days. During the emptying process zero emissions are emitted.

Source Hand Book of Chemistry and Physics 91 Edition Air Properties

Deg F	Deg K	Density of Air at 280 of Air KG/ Cubic Meter	0ensity at 300 0eg K of Air KG/ Cubic Meter	Density at 288.7 Deg K or 60 Deg F	Density at 60 Deg F in Lb per cubic foot	Cubic Meter/Cubi c Foot	Pound/Kg
60.000	288.706	1.25	1.16	1.21	0.08	0.03	2.20

		Daily Emissions from Tanks		Output from Tank 4.0 total emissions no speciation								
ATC Permit #	Tank ID	% by Volume Alcohol	AMW Average	Total lb Alcohol & Water Vapor Emitted (lb/day)	Molecular Weight of Alcohol	Molecular Weight of Water	Alcohol as Molar % Total Emissions (alcohol + water vapor)	Water Vapor as Molar % Total Emissions (alcohol + water vapor)	Max Daily Alcohol Emissions (lb/day)	lb-Water Vapor Emitted (lb/day)	Max lb-Mols Alcohol Emitted (lb-mol/day)	Max lb-Mols Water Vapor Emitted (lb-mol/day)
N-2321-801-0	1701	20.0%	28.882	319.66	46.02	18.02	38.79%	61.21%	197.6	122.07	4.294	6.774
N-2321-802-0	1702	20.0%	28.882	319.66	46.02	18.02	38.79%	61.21%	197.6	122.07	4.294	6.774
N-2321-803-0	1703	20.0%	28.882	319.66	46.02	18.02	38.79%	61.21%	197.6	122.07	4.294	6.774
N-2321-804-0	1704	20.0%	28.882	319.66	46.02	18.02	38.79%	61.21%	197.6	122.07	4.294	6.774
N-2321-834-0	1705	20.0%	28.882	319.66	46.02	18.02	38.79%	61.21%	197.6	122.07	4.294	6.774
N-2321-835-0	1706	20.0%	28.882	319.66	46.02	18.02	38.79%	61.21%	197.6	122.07	4.294	6.774

		Annual Emissions from Tanks		Output from Tank 4.0 total emissions no speciation								
ATC Permit #	Tank ID	% by Volume Alcohol	AMW Average	Total lb Alcohol & Water Vapor Emitted (lb/year)	Molecular Weight of Alcohol	Molecular Weight of Water	Alcohol as Molar % Total Emissions (alcohol + water vapor)	Water Vapor as Molar % Total Emissions (alcohol + water vapor)	Max Daily Alcohol Emissions (lb/yr)	lb-Water Vapor Emitted (lb/yr)	Max lb-Mols Alcohol Emitted (lb-mol/yr)	Max lb-Mols Water Vapor Emitted (lb-mol/yr)
N-2321-801-0	1701	20.0%	28.882	6,785.56	46.02	18.02	38.79%	61.21%	4,194	2,591.29	91.140	143.801
N-2321-802-0	1702	20.0%	28.882	6,785.56	46.02	18.02	38.79%	61.21%	4,194	2,591.29	91.140	143.801
N-2321-803-0	1703	20.0%	28.882	6,785.56	46.02	18.02	38.79%	61.21%	4,194	2,591.29	91.140	143.801
N-2321-804-0	1704	20.0%	28.882	6,785.56	46.02	18.02	38.79%	61.21%	4,194	2,591.29	91.140	143.801
N-2321-834-0	1705	20.0%	28.882	6,785.56	46.02	18.02	38.79%	61.21%	4,194	2,591.29	91.140	143.801
N-2321-835-0	1706	20.0%	28.882	6,785.56	46.02	18.02	38.79%	61.21%	4,194	2,591.29	91.140	143.801
								Total Pounds	25,166			
								Total Tons	12.58			

APPENDIX E
Compliance Certification

San Joaquin Valley
Air Pollution Control District

TITLE V COMPLIANCE CERTIFICATION FORM

Received
OCT 21 2013
SJVUAPCD

I. TYPE OF PERMIT ACTION (Check appropriate box)

(4) 650K GAL AND (20) 108,000 gallon SS tanks

[ ] ADMIN. MODIFICATION [X] MINOR. MODIFICATION [ ] SIGNIFICANT MODIFICATION

COMPANY NAME: CBUS Ops Inc.(DBA Woodbridge Winery)	FACILITY ID: N – 2321
1. Type of Organization: [X] Corporation [ ] Sole Ownership [ ] Government [ ] Partnership [ ] Utility	
2. Owner's Name: CONSTELLATION BRANDS U.S. OPERATIONS INC.	
3. Agent to the Owner: JOSH SCHULZE	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial each circle for confirmation):

Based on information and belief formed after reasonable inquiry, the source identified in this application will continue to comply with the applicable federal requirement(s) which the source is in compliance as identified in the Compliance Plan.

Based on information and belief formed after reasonable inquiry, the source identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term as identified in the Compliance Plan, on a timely basis.

Based on information and belief formed after reasonable inquiry, the source identified in this application is not in compliance at the time of permit issuance with the applicable federal requirement(s),as identified in the Compliance Plan, and I have attached a compliance schedule.

Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

Based on information and belief formed after reasonable inquiry, Information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature of Responsible Official

10/4/13
Date

JOSH SCHULZE
Name of Responsible Official (please print)

GENERAL MANAGER
Title of Responsible Official (please print)

APPENDIX F
Draft ATC Permits

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: N-2321-801-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CBUS OPS INC (DBA WOODBRIDGE WINERY)
MAILING ADDRESS: P O BOX 1260
WOODBRIDGE, CA 95258-1260

LOCATION: 5950 E WOODBRIDGE ROAD
ACAMPO, CA 95220

EQUIPMENT DESCRIPTION:
MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1701 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
N-2321-801-1 : Apr 9 2015 2:35PM – NORMANR : Joint Inspection NOT Required

6. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

7. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

8. The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit

9. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit

10. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit

11. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

12. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

13. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit

14. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit

15. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit

16. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

17. The operator shall maintain records of the calculated 12-month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12-month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit

18. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit

19. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

20. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-2321-802-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CBUS OPS INC (DBA WOODBRIDGE WINERY)
MAILING ADDRESS: P O BOX 1260
WOODBRIDGE, CA 95258-1260

LOCATION: 5950 E WOODBRIDGE ROAD
ACAMPO, CA 95220

EQUIPMENT DESCRIPTION:
MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1702 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
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6. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

7. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

8. The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit

9. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit

10. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit

11. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

12. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

13. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit

14. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit

15. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit

16. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

17. The operator shall maintain records of the calculated 12-month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12-month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit

18. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit

19. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

20. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: N-2321-803-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CBUS OPS INC (DBA WOODBRIDGE WINERY)
MAILING ADDRESS: P O BOX 1260
WOODBRIDGE, CA 95258-1260

LOCATION: 5950 E WOODBRIDGE ROAD
ACAMPO, CA 95220

EQUIPMENT DESCRIPTION:
MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1703 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
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6. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

7. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

8. The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit

9. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit

10. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit

11. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

12. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

13. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit

14. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit

15. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit

16. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

17. The operator shall maintain records of the calculated 12-month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12-month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit

18. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit

19. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

20. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-2321-804-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CBUS OPS INC (DBA WOODBRIDGE WINERY)
MAILING ADDRESS: P O BOX 1260
WOODBRIDGE, CA 95258-1260

LOCATION: 5950 E WOODBRIDGE ROAD
ACAMPO, CA 95220

EQUIPMENT DESCRIPTION:
MODIFICATION OF 652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1704 WITH PRESSURE/VACUUM VALVE AND INSULATION: REDUCE MAXIMUM PERMITTED ANNUAL THROUGHPUT TO 26,080,000 GALLONS PER YEAR

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-2321-804-1 : Apr 9 2015 2:35PM – NORMANR : Joint Inspection NOT Required

6. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

7. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

8. The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit

9. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit

10. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit

11. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit

12. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit

13. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit

14. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit

15. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit

16. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

17. The operator shall maintain records of the calculated 12-month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12-month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit

18. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit

19. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit

20. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: N-2321-834-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: CBUS OPS INC (DBA WOODBRIDGE WINERY)
MAILING ADDRESS: P O BOX 1260
WOODBRIDGE, CA 95258-1260

LOCATION: 5950 E WOODBRIDGE ROAD
ACAMPO, CA 95220

EQUIPMENT DESCRIPTION:
652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1705 WITH PRESSURE/VACUUM VALVE AND INSULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
6. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
N-2321-834-0 : Apr 9 2015 2:35PM -- NORMANR : Joint Inspection NOT Required

7. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
8. The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
10. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit
11. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit
12. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit
13. Total annual VOC emissions from wine storage operations may be determined using the total annual wine throughput and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the annual wine throughput; or using the throughputs for different batches of wine and batch-specific storage emissions factors, calculated using the equation(s) specified within this permit, based on the ethanol content of each batch. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: EF = a * P^2 + b*P + c; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. For concentrations up to and including 24 volume % (when the ethanol content of wine is 20 volume %, P is equivalent to 0.20), a = -0.38194, b = 0.97917 and c = 0. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The operator shall determine and record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
16. Daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
17. The operator shall maintain records of the calculated 12-month rolling wine ethanol content and storage throughput rate (ethanol percentage by volume and gallons per 12-month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
18. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit
19. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rule 2201] Federally Enforceable Through Title V Permit
20. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201, and 4694] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

DRAFT

PERMIT NO: N-2321-835-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: CBUS OPS INC (DBA WOODBRIDGE WINERY)
MAILING ADDRESS: P O BOX 1260
WOODBRIDGE, CA 95258-1260

LOCATION: 5950 E WOODBRIDGE ROAD
ACAMPO, CA 95220

EQUIPMENT DESCRIPTION:
652,000 GALLON STAINLESS STEEL ENCLOSED TOP WINE STORAGE TANK 1706 WITH PRESSURE/VACUUM VALVE AND INSULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. This wine storage tank shall be used exclusively for wine storage operations only and not for fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
6. The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO

DRAFT

Arnaud Marjollet, Director of Permit Services
N-2321-835-0 : Apr 9 2015 2:35PM -- NORMANR : Joint Inspection NOT Required

7. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
8. The weighted annual average ethanol content of wine stored in this tank, calculated on a twelve month rolling basis, shall not exceed 20 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
9. The maximum daily wine throughput in this tank shall not exceed 652,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
10. The maximum annual wine throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 26,080,000 gallons per year. [District Rule 2201] Federally Enforceable Through Title V Permit
11. Total annual VOC emissions from all wine fermentation and wine storage operations at this facility shall not exceed 1,167,178 lb/year, calculated on a twelve (12) month rolling basis. [District Rule 2201] Federally Enforceable Through Title V Permit
12. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit
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