

“G”

Wastewater Feasibility Study



Engineers and Geologists

J#1210

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15 September 2016

Transmitted via email: gonsalves@nmrdesign.com

Mr. Steve Gonsalves
Nichols, Melberg & Rossetto
555 Main Street, #300
Chico, CA 95928

**ROBERT BIALE VINEYARDS EXPANSION, 4038 BIG RANCH ROAD, NAPA CA
TASK 1 - WASTEWATER SYSTEM EVALUATION**

Dear Mr. Gonsalves,

In accordance with our scope of work, H&A performed a wastewater evaluation at Robert Biale Vineyards (RBV). The goal of this assessment was to determine if the present system provides sufficient capacity for the actual flow conditions so that system upgrades could be minimized or perhaps avoided when the winery production is increased from 40,000 (2001 use permit value) to 60,000 gallons per year. The findings of this assessment are detailed below.

Site Visit

On 19 February 2016, staff from Haling and Associates visited RBV.

The leachfield was inspected in conjunction with both Biale staff and Oakville Pump Service personnel. This provided a history of the field (no indications of surfacing effluent), and the correlation between inspection report observation port numbers and their physical locations. (See Attachment 1)

Copies of the system inspection reports were obtained from which historical leachfield ground water elevations at the observation ports were calculated, and pump cycle information obtained. (See Attachment 2)

The septic system pump was exercised and the vault dimensions determined. This provided the volume pumped per cycle, allowing the waste stream flow to be calculated when combined with the number of pump cycles per month. (See Attachment 3)

Copies of the best available as-built plans were obtained, both to confirm the pump vault model and size, and provide an understanding of the actual present system configuration (which is different than that shown in the design documents). (See Attachment 4)

Lastly, information concerning actual wine production quantities, number of employees and visitors, etc. was obtained for correlation to the waste stream information. This would allow the potential wastewater flow increase when wine production is expanded to be predicted. (See Attachments 5, 6, and 7)

Calculated Correlations

The wastewater flow data obtained in Attachment 3 provides the average flow for each time period (approximately 6 month intervals). Experience dictates that the actual flow curves should be continuous, moving smoothly from one average to another, with peaks above the average and periods below it. The step-wise data is plotted in Attachment 8, along with a more realistic estimated flow curve.

This flow curve was then compared in Attachment 9 with the wine production. It can be seen that the peaks of the wastewater flow correlate well with the dates of the crushes, prior to the excursion in 2014. It can also be seen that the levels of wastewater flow do not correlate with the wine production quantities (e.g. when production quantities rose sharply between 2011 and 2012 wastewater showed no significant change; while wine production thereafter varied by 20%, wastewater flow dropped by approximately twice that). This implies, (1) that the quantity of wastewater flow is not very dependent upon the amount of wine produced; (2) there was some event in 2013/2014 that generated excessive wastewater flows; and (3) staff/process efficiency has increased significantly in recent years.

An in-house investigation of these points revealed the following:

- There is a manual valve that must be switched at the end of the crush period to direct flow from the uncovered portion of the crush pad into the stormwater system. Otherwise it will continue to direct any post-crush rainwater collected into the septic system. It is quite possible that this valve was not turned after the 2013 harvest, accounting for the excess wastewater flows seen at that time.
- Biale employees have made a concerted effort to reduce their water usage. Specifically, in early 2015 a barrel steamer was purchased to reduce their process water consumption. This corresponds to the dramatic drop in wastewater flow indicated in Attachment 9.

The previous calculated average design flow was 1,100 gallons per day (See Attachment 10). An updated calculation utilizing present staffing and visitor information from Attachments 6 and 7 yields a current calculated design flow of 1,043 gpd and a proposed value of 1,209 gpd. This is lower than the value for the average current flow of 1,576 gpd obtained using the actual wastewater pump cycles recorded (after eliminating the 2014 excursion period). Therefore, this more realistic value was extrapolated to proposed levels by multiplying it by the ratio obtained from calculation (1,209/1,043) to yield a proposed design average wastewater flow of 1,827 gpd.

The historical leachfield groundwater elevation was plotted along with the wastewater flow curve and the area rainfall (See Attachment 11). A clear correlation can be seen between the groundwater elevations and the local rainfall. This is even more evident when it is realized that the elevation observations were only made at approximately 6 month intervals. This means that the affects of some rainy periods could be completely missed by the monitoring events. Looking at the data, it is our judgment that one such period was missed around December 2012. Therefore, an additional curve was added to clarify this obvious correlation.

The flow curve was then compared to the leachfield groundwater elevations in Attachment 11. The very significant decrease in wastewater flow attained in recent years had no appreciable impact on the groundwater elevation. Therefore, it is concluded that there is no apparent

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correlation. This indicates that the groundwater elevation is sensitive to rainfall, but not to the present levels of wastewater flow. Combined with the fact that the maximum historical wine production (56,000 gallons in 2012) has nearly reached the proposed winery expansion goal of 60,000 gallons, it appears that the present field would have no problems accommodating the facility expansion.

Summary and Conclusions

To recap:

- There is no history or evidence of effluent surfacing in the leachfield, even though the winery production levels have nearly reached the proposed winery expansion goals.
- The amount of wastewater produced is not strongly dependent on the wine production level.
- The leachfield groundwater elevations appear to be insensitive to the present amount of wastewater produced anyway, responding only to rainfall.

Hence H&A concludes that the present wastewater system would be sufficient to handle the proposed expanded facility.

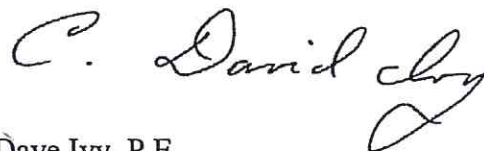
If you would like further information, please contact me (greg@Haling-Associates.com), or Dave Ivy (d.ivy@Haling-Associates.com) at (530) 342-6958.

Sincerely,

HALING & ASSOCIATES

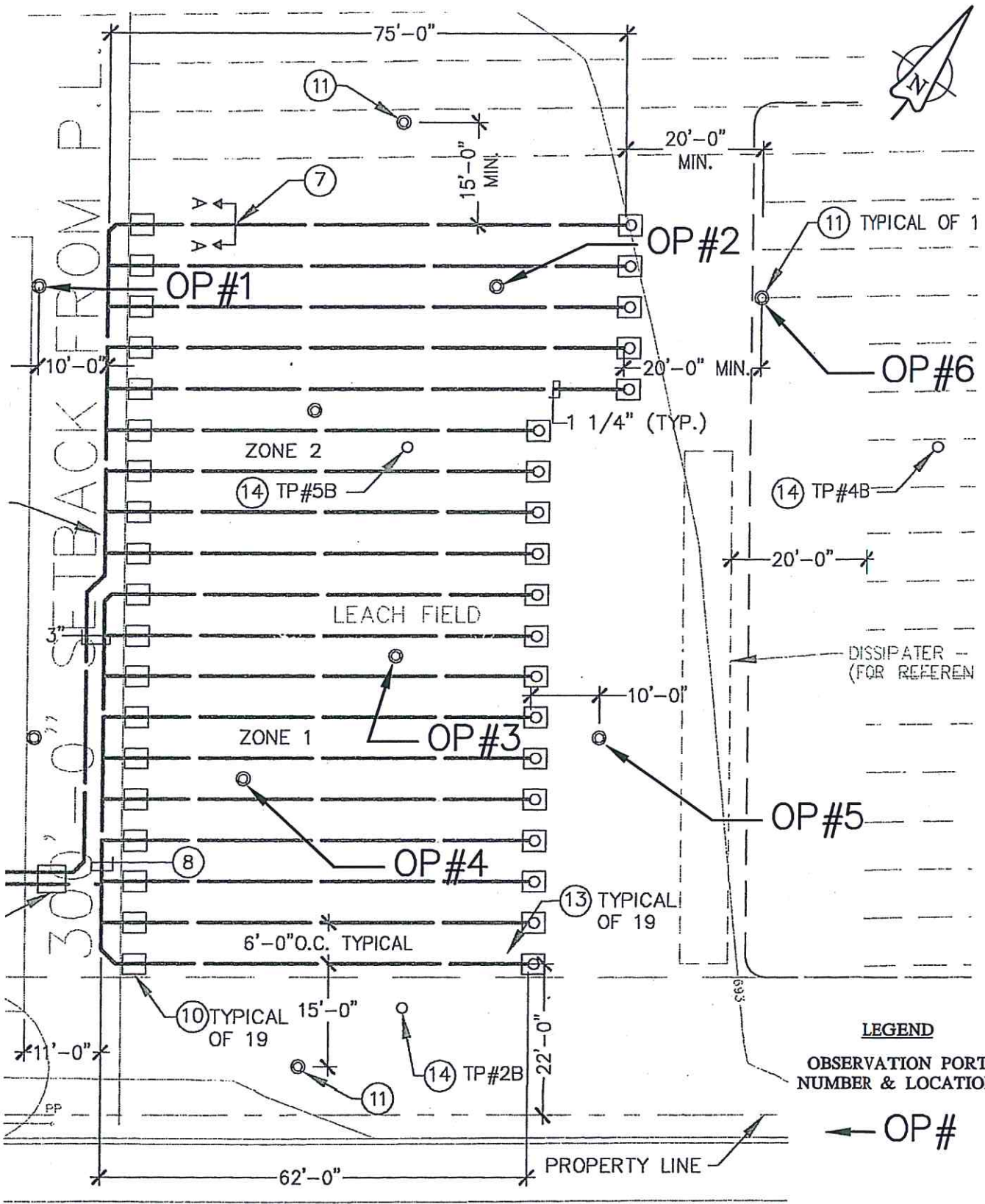


Greg Haling P.E.
Principal Engineer



Dave Ivy, P.E.
Sr. Project Engineer

- Attachment 1 RBV Leachfield Observation Port Locations Plan
- Attachment 2 Summary of RBV On-Site Wastewater Treatment System Inspection Reports
- Attachment 3 RBV Wastewater Flow Calculations
- Attachment 4 Current As-Built RBV On-Site Wastewater Treatment System Configuration
- Attachment 5 RBV Wastewater Production Basic Information Summary
- Attachment 6 Current Staffing, Robert Biale Vineyards
- Attachment 7 RBV Tasting Room Visitors
- Attachment 8 RBV Estimated Wastewater Flow Curve
- Attachment 9 RBV Crush Dates & Wine Production Compared to Wastewater Flow
- Attachment 10 Comparison Calcs of RBV Wastewater Flow to Past and Present Design Values
- Attachment 11 RBV Wastewater Flow Compared to Leachfield Groundwater Elev. and Rainfall



Base drawing by Zeponi Architect 03-20-03

NOT TO SCALE

LEGEND
 OBSERVATION PORT NUMBER & LOCATION
 ← OP#

H&A Haling & Associates
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PROJECT
ROBERT BIALE
VINEYARD

SHEET TITLE
OBSERVATION PORTS
LOCATIONS

JOB NO: 1210	ATTACH. 1 OF 11
DATE: SEP 2016	

Attachment 2 - SUMMARY OF RBV ON-SITE WASTEWATER TREATMENT SYSTEM INSPECTION REPORTS

Date	Depth to Water (in.)						Leachfield Elevation Estimate						
	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Max Elevation
8/24/2016	Dry	56	Dry	Dry	Dry	Dry	0	4	0	0	0	0	4
3/8/2016	42	30	39	12	37	34	18	30	21	48	23	26	48
9/29/2015	Dry	32	33	Dry	Dry	Dry	0	28	27	0	0	0	28
3/17/2015	Dry	39	36	N/A	Dry	45	0	21	24	-	0	15	24
10/28/2014	Dry	N/A	23	Dry	Dry	Dry	0	-	37	0	0	0	37
3/25/2014	Dry	Dry	Dry	20	Dry	N/A	0	0	0	40	0	-	40
9/10/2013	Dry	Dry	Dry	Dry	Dry	Dry	0	0	0	0	0	0	0
4/2/2013	Dry	Dry	Dry	Dry	Dry	Dry	0	0	0	0	0	0	0
9/27/2012	Dry	Dry	Dry	Dry	Dry	Dry	0	0	0	0	0	0	0
2/23/2012	Dry	Dry	42	Dry	Dry	43	0	0	18	0	0	17	18
9/16/2011	Dry	Dry	Dry	Dry	Dry	Dry	0	0	0	0	0	0	0

Date	Pump Cycle Counter		Pump Cycles between Observations		
	Pump 1	Pump 2	Pump 1	Pump 2	Total
8/24/2016	12,087	12,166	-	-	-
3/8/2016	11,782	11,864	305	302	607
9/29/2015	11,546	11,536	236	328	564
3/17/2015	11,034	11,011	512	525	1,037
10/28/2014	10,634	10,586	400	425	825
3/25/2014	9,679	9,610	955	976	1,931
9/10/2013	8,928	8,841	751	769	1,520
4/2/2013	8,465	8,374	463	467	930
9/27/2012	7,846	7,741	619	633	1,252
2/23/2012	7,338	7,233	508	508	1,016
9/16/2011	6,803	6,693	535	540	1,075

Note:

Wastewater Elevation Determined by assuming all ports are at the same elevation and a depth of 60 in (See Detail on sheet SP6.1 by Axiom Engineers)

Attachment 3 - RBV WASTEWATER FLOW CALCULATIONS

Field Measurements

7.5 ft. Measured Distance Between Manholes
 7.8 ft. Pump start
 7.2 ft. Pump off

Jensen Precast HS-1500 Dimensions

7.7 ft. Distance Between Manholes [AutoCAD]
 10.16 ft. Length (10' - 2" Inside)
 5.16 ft. Width (5' - 2" Inside)

Volume Calculation

51.68 ft.² Water Surface Area of Pump Vault
 0.60 ft. Change in Water Level per Pump Cycle [7.8-7.2 ft]
 31.01 ft.³ Volume

232 gal.	Volume per Cycle
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Date	Number of cycles	Wastewater Volume (gal.)
8/24/2016	-	-
3/8/2016	607	140,789
9/29/2015	564	130,815
3/17/2015	1,037	240,524
10/28/2014	825	191,352
3/25/2014	1,931	447,881
9/10/2013	1,520	352,552
4/2/2013	930	215,706
9/27/2012	1,252	290,392
2/23/2012	1,016	235,653
9/16/2011	1,075	249,338

Attachment 5 - RBV WASTEWATER PRODUCTION BASIC INFORMATION SUMMARY

Employees

10.75 Employees - Full Time - Maximum Full Time Equivalency
 4.2 Employees - Part Time - Maximum Full Time Equivalency
15 Employees - Total - Maximum Full Time Equivalency
 (See Attachment 6 - Current Staffing, RBV)

Visitors

2 Events Per Year
 300 Visitors Per Event
 9700 Visitors Per Year (See Attachment 7 - RBV Tasting Room Visitors)
 10300 Total Visitors Per Year
 Note: Total Visitors per Year Includes the Visitors that Attend
 the two events per year

Crush Dates

8/19/2015 Start of Crush
 10/15/2015 End of Crush
 57 Total Days of Crush

Crush Dates	Wine Production
2015	43090
2014	50220
2013	53165
2012	56110
2011	46965
Avg Gallons=	49910

Attachment 6 - CURRENT STAFFING
ROBERT BIALE VINEYARDS

CURRENT STAFFING
ROBERT BIALE VINEYARDS
(Key Persons Offsite 25% of Time)

Name	Full Time or Part Time	Avg. No. Days at Winery Per Week	Full Time Equivalency (FTE)	Actual Days at Winery							Totals	Average	
				Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday			
Bob Biale	FT	5	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Steve Capovilla	FT	5	1	1	1	1	1	1	1	1	1	1	1
Jeanie Coleman	FT	5	1	1	1	1	1	1	1	1	1	1	1
Jerry Davis	FT	5	1	1	1	1	1	1	1	1	1	1	1
Chris Dearden	FT	5	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Tres Goetting	FT	5	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Richard Hurwitz	FT	5	1	1	1	1	1	1	1	1	1	1	1
Jenn Lee	FT	5	1	1	1	1	1	1	1	1	1	1	1
Dave Pramuck	FT	5	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Maggie Pramuck	FT	5	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Andrea Sanchez	FT	5	1	1	1	1	1	1	1	1	1	1	1
Dave Todd	FT	5	1	1	1	1	1	1	1	1	1	1	1
Totals			10.75	8.75	9.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75
Average						10.15						2	1.50
Christina Apostolopoulos	PT	1	0.2	1									
Bill Gresham	PT	0	0										
Erick Lopez Hernandez	PT	2	0.4		1	1							
Raul Ramirez	PT	2	0.4		1	1							
Michael Martin	PT	2	0.4										
Aline McGee	PT	4	0.8	1								1	1
Thomas Molinari	PT	3	0.6	1	1	1							
Alyssa Segura	PT	3	0.6	1									
Tom Skinner	FT	4	0.8									1	1
Jim Trimble	PT	0	0									1	1
Totals			4.2	4	4	4	4	4	4	4	4	3	3
Average						3.00						2	3.00

Attachment 7 - ROBERT BIALE VINEYARDS
TASTING ROOM VISITORS

ROBERT BIALE VINEYARDS- TASTING ROOM

July 2015

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Wednesday	12	4	0	8	5	1	19%	6.5%
2	Thursday	33	5	12	16	11	2	19%	6.5%
3	Friday	67	15	2	50	33	1	3%	6.5%
4	Saturday	48	4	0	44	29	2	7%	6.5%
5	Sunday	17	0	4	13	9	1	12%	6.5%
6	Monday	31	2	3	26	17	1	6%	6.5%
7	Tuesday	28	4	8	16	11	0	0%	6.5%
8	Wednesday	18	6	8	4	3	1	38%	6.5%
9	Thursday	19	1	0	18	12	1	8%	6.5%
10	Friday	32	14	3	15	10	3	30%	6.5%
11	Saturday	54	9	0	45	30	2	7%	6.5%
12	Sunday	34	0	0	34	23	2	9%	6.5%
13	Monday	13	5	0	8	5	2	38%	6.5%
14	Tuesday	7	0	0	7	5	0	0%	6.5%
15	Wednesday	25	4	0	21	14	1	7%	6.5%
16	Thursday	14	0	0	14	9	0	0%	6.5%
17	Friday	25	8	0	17	11	1	9%	6.5%
18	Saturday	54	11	2	41	27	2	7%	6.5%
19	Sunday	42	8	0	34	23	2	9%	6.5%
20	Monday	26	18	0	8	5	1	19%	6.5%
21	Tuesday	6	0	2	4	3	1	38%	6.5%
22	Wednesday	29	9	2	18	12	2	17%	6.5%
23	Thursday	23	4	7	12	8	1	13%	6.5%
24	Friday	39	9	8	22	15	0	0%	6.5%
25	Saturday	58	10	4	44	29	5	17%	6.5%
26	Sunday	30	13	0	17	11	0	0%	6.5%
27	Monday	28	3	2	23	15	0	0%	6.5%
28	Tuesday	11	0	5	6	4	2	50%	6.5%
29	Wednesday	12	3	0	9	6	0	0%	6.5%
30	Thursday	30	10	2	18	12	2	17%	6.5%
31	Friday	60	16	13	31	21	13	63%	6.5%
		925	195	87	643	429	52	12%	6.5%

Weekend Total	435	Weekend Day Avg.	43.50
Weekday Totals	490	Weekday Day Avg.	23.33
Weekends w/ Friday	591	Weekend Day Avg.	42.21
Weekday Totals	334	Weekday Day Avg.	19.65

ROBERT BIALE VINEYARDS- TASTING ROOM

August 2015

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Saturday	58	2	0	56	37	2	5%	6.5%
2	Sunday	32	4	0	28	19	1	5%	6.5%
3	Monday	18	6	4	8	5	1	19%	6.5%
4	Tuesday	20	4	0	16	11	1	9%	6.5%
5	Wednesday	29	12	0	17	11	3	26%	6.5%
6	Thursday	9	0	0	9	6	1	17%	6.5%
7	Friday	20	9	0	11	7	3	41%	6.5%
8	Saturday	58	6	0	52	35	3	9%	6.5%
9	Sunday	30	2	0	28	19	3	16%	6.5%
10	Monday	19	2	3	14	9	2	21%	6.5%
11	Tuesday	20	4	4	12	8	2	25%	6.5%
12	Wednesday	20	0	0	20	13	2	15%	6.5%
13	Thursday	5	4	0	1	1	2	300%	6.5%
14	Friday	28	10	0	18	12	5	42%	6.5%
15	Saturday	50	13	5	32	21	5	23%	6.5%
16	Sunday	34	7	5	22	15	2	14%	6.5%
17	Monday	27	11	2	14	9	2	21%	6.5%
18	Tuesday	17	4	0	13	9	2	23%	6.5%
19	Wednesday	15	2	0	13	9	2	23%	6.5%
20	Thursday	13	0	2	11	7	0	0%	6.5%
21	Friday	35	17	0	18	12	4	33%	6.5%
22	Saturday	52	9	0	43	29	0	0%	6.5%
23	Sunday	33	4	0	29	19	5	26%	6.5%
24	Monday	27	6	6	15	10	2	20%	6.5%
25	Tuesday	27	10	7	10	7	2	30%	6.5%
26	Wednesday	13	6	2	5	3	2	60%	6.5%
27	Thursday	29	4	4	21	14	2	14%	6.5%
28	Friday	19	6	2	11	7	2	27%	6.5%
29	Saturday	42	9	0	33	22	2	9%	6.5%
30	Sunday	47	21	0	26	17	2	12%	6.5%
31	Monday	7	0	3	4	3	2	75%	6.5%
		853	194	49	610	407	69	17%	6.5%

Weekend Total	436	Weekend Day Avg.	43.60
Weekday Totals	417	Weekday Day Avg.	19.86
Weekends w/ Friday	538	Weekend Day Avg.	38.43
Weekday Totals	315	Weekday Day Avg.	18.53

ROBERT BIALE VINEYARDS- TASTING ROOM

September 2015

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Tuesday	11	2	0	9	6		0%	6.5%
2	Wednesday	12	2	0	10	7		0%	6.5%
3	Thursday	29	2	4	23	15		0%	6.5%
4	Friday	43	14	0	29	19		0%	6.5%
5	Saturday	63	17	0	46	31		0%	6.5%
6	Sunday	78	20	11	47	31		0%	6.5%
7	Monday	38	13	0	25	17		0%	6.5%
8	Tuesday	16	0	0	16	11		0%	6.5%
9	Wednesday	18	4	0	14	9		0%	6.5%
10	Thursday	47	0	6	41	27		0%	6.5%
11	Friday	42	4	4	34	23		0%	6.5%
12	Saturday	67	27	0	40	27		0%	6.5%
13	Sunday	33	10	2	21	14		0%	6.5%
14	Monday	50	10	0	40	27		0%	6.5%
15	Tuesday	87	0	2	85	57		0%	6.5%
16	Wednesday	19	6	0	13	9		0%	6.5%
17	Thursday	46	2	8	36	24		0%	6.5%
18	Friday	41	9	0	32	21		0%	6.5%
19	Saturday	0	0	0	0	-			6.5%
20	Sunday	48	10	4	34	23		0%	6.5%
21	Monday	18	1	0	17	11		0%	6.5%
22	Tuesday	18	6	2	10	7		0%	6.5%
23	Wednesday	19	5	2	12	8		0%	6.5%
24	Thursday	46	18	0	28	19		0%	6.5%
25	Friday	56	18	0	38	25		0%	6.5%
26	Saturday	75	31	6	38	25		0%	6.5%
27	Sunday	24	2	4	18	12		0%	6.5%
28	Monday	19	6	2	11	7		0%	6.5%
29	Tuesday	14	4	0	10	7		0%	6.5%
30	Wednesday	13	4	0	9	6		0%	6.5%
31	Thursday				0	-			6.5%
		1090	247	57	786	524	0	0%	6.5%

Weekend Total	469	Weekend Day Avg.	46.90
Weekday Totals	621	Weekday Day Avg.	31.05
Weekends w/ Friday	608	Weekend Day Avg.	46.77
Weekday Totals	482	Weekday Day Avg.	28.35

ROBERT BIALE VINEYARDS- TASTING ROOM

October 2015

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Thursday	41	17	2	22	15		0%	6.5%
2	Friday	81	6	0	75	50		0%	6.5%
3	Saturday	75	28	0	47	31		0%	6.5%
4	Sunday	61	25	0	36	24		0%	6.5%
5	Monday	26	7	0	19	13		0%	6.5%
6	Tuesday	22	0	2	20	13		0%	6.5%
7	Wednesday	24	12	0	12	8		0%	6.5%
8	Thursday	31	10	0	21	14		0%	6.5%
9	Friday	42	0	2	40	27		0%	6.5%
10	Saturday	90	11	4	75	50		0%	6.5%
11	Sunday	56	17	4	35	23		0%	6.5%
12	Monday	36	9	2	25	17		0%	6.5%
13	Tuesday	17	4	0	13	9		0%	6.5%
14	Wednesday	31	3	5	23	15		0%	6.5%
15	Thursday	29	6	4	19	13		0%	6.5%
16	Friday	58	12	1	45	30		0%	6.5%
17	Saturday	73	16	4	53	35		0%	6.5%
18	Sunday	33	13	0	20	13		0%	6.5%
19	Monday	17	6	5	6	4		0%	6.5%
20	Tuesday	4	2	0	2	1		0%	6.5%
21	Wednesday	24	4	7	13	9		0%	6.5%
22	Thursday	32	10	2	20	13		0%	6.5%
23	Friday	37	6	2	29	19		0%	6.5%
24	Saturday	70	37	0	33	22		0%	6.5%
25	Sunday	36	3	0	33	22		0%	6.5%
26	Monday	20	6	0	14	9		0%	6.5%
27	Tuesday	12	1	0	11	7		0%	6.5%
28	Wednesday	32	4	1	27	18		0%	6.5%
29	Thursday	27	8	3	16	11		0%	6.5%
30	Friday	51	12	11	28	19		0%	6.5%
31	Saturday	48	21	2	25	17	95	570%	6.5%
		1236	316	63	857	571	95	17%	6.5%

Weekend Total	542	Weekend Day Avg.	60.22
Weekday Totals	694	Weekday Day Avg.	31.55

Weekends w/ Friday	811	Weekend Day Avg.	57.93
Weekday Totals	425	Weekday Day Avg.	25.00

ROBERT BIALE VINEYARDS- TASTING ROOM

November 2015

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Sunday	18	10	1	7	5		0%	6.5%
2	Monday	15	0	0	15	10		0%	6.5%
3	Tuesday	27	2	3	22	15		0%	6.5%
4	Wednesday	29	3	4	22	15		0%	6.5%
5	Thursday	30	2	2	26	17		0%	6.5%
6	Friday	58	16	0	42	28		0%	6.5%
7	Saturday	65	17	16	32	21		0%	6.5%
8	Sunday	82	22	0	60	40		0%	6.5%
9	Monday	25	2	5	18	12		0%	6.5%
10	Tuesday	17	2	0	15	10		0%	6.5%
11	Wednesday	38	12	16	10	7		0%	6.5%
12	Thursday	18	7	2	9	6		0%	6.5%
13	Friday	50	12	2	36	24		0%	6.5%
14	Saturday	36	20	0	16	11		0%	6.5%
15	Sunday	40	14	0	26	17		0%	6.5%
16	Monday	24	3	3	18	12		0%	6.5%
17	Tuesday	19	6	4	9	6		0%	6.5%
18	Wednesday	28	22	1	5	3		0%	6.5%
19	Thursday	19	6	0	13	9		0%	6.5%
20	Friday	14	6	0	8	5		0%	6.5%
21	Saturday	52	27	0	25	17		0%	6.5%
22	Sunday	35	17	0	18	12		0%	6.5%
23	Monday	23	10	0	13	9		0%	6.5%
24	Tuesday	16	0	0	16	11		0%	6.5%
25	Wednesday	22	12	0	10	7		0%	6.5%
26	Thursday	0	0	0	0	-			6.5%
27	Friday	55	14	4	37	25		0%	6.5%
28	Saturday	55	16	0	39	26		0%	6.5%
29	Sunday	28	15	0	13	9		0%	6.5%
30	Monday	12	1	1	10	7		0%	6.5%
31	Tuesday				0	-			6.5%
		950	296	64	590	393	0	0%	6.5%

Weekend Total	448	Weekend Day Avg.	49.78
Weekday Totals	502	Weekday Day Avg.	23.90

Weekends w/ Friday	570	Weekend Day Avg.	47.50
Weekday Totals	380	Weekday Day Avg.	21.11

ROBERT BIALE VINEYARDS- TASTING ROOM

December 2015

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Tuesday	3	3	0	0	-			6.5%
2	Wednesday	10	1	0	9	6		0%	6.5%
3	Thursday	14	0	3	11	7		0%	6.5%
4	Friday	26	9	10	7	5		0%	6.5%
5	Saturday	63	17	0	46	31		0%	6.5%
6	Sunday	26	2	10	14	9		0%	6.5%
7	Monday	13	0	0	13	9		0%	6.5%
8	Tuesday	13	2	4	7	5		0%	6.5%
9	Wednesday	4	4	0	0	-			6.5%
10	Thursday	9	5	0	4	3		0%	6.5%
11	Friday	20	2	0	18	12		0%	6.5%
12	Saturday	59	27	0	32	21		0%	6.5%
13	Sunday	30	13	8	9	6		0%	6.5%
14	Monday	20	10	0	10	7		0%	6.5%
15	Tuesday	14	4	0	10	7		0%	6.5%
16	Wednesday	5	3	0	2	1		0%	6.5%
17	Thursday	9	0	0	9	6		0%	6.5%
18	Friday	8	2	0	6	4		0%	6.5%
19	Saturday	30	12	2	16	11		0%	6.5%
20	Sunday	29	16	0	13	9		0%	6.5%
21	Monday	10	4	0	6	4		0%	6.5%
22	Tuesday	20	3	2	15	10		0%	6.5%
23	Wednesday	13	4	0	9	6		0%	6.5%
24	Thursday	0	0	0	0	-			6.5%
25	Friday	0	0	0	0	-			6.5%
26	Saturday	72	24	0	48	32		0%	6.5%
27	Sunday	43	16	0	27	18		0%	6.5%
28	Monday	26	9	5	12	8		0%	6.5%
29	Tuesday	34	19	0	15	10		0%	6.5%
30	Wednesday	44	17	0	27	18		0%	6.5%
31	Thursday	0	0	0	0	-			6.5%
		667	228	44	395	263	0	0%	6.5%

Weekend Total	352	Weekend Day Avg.	44.00
Weekday Totals	315	Weekday Day Avg.	13.70

Weekends w/ Friday	406	Weekend Day Avg.	33.83
Weekday Totals	261	Weekday Day Avg.	13.74

ROBERT BIALE VINEYARDS- TASTING ROOM

January 2016

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Friday	0	0	0	0	-			6.5%
2	Saturday	26	18	0	8	5		0%	6.5%
3	Sunday	14	6	0	8	5		0%	6.5%
4	Monday	20	9	0	11	7		0%	6.5%
5	Tuesday	4	0	0	4	3		0%	6.5%
6	Wednesday	3	0	0	3	2		0%	6.5%
7	Thursday	6	2	2	2	1		0%	6.5%
8	Friday	8	0	3	5	3		0%	6.5%
9	Saturday	32	21	0	11	7		0%	6.5%
10	Sunday	31	8	0	23	15		0%	6.5%
11	Monday	8	2	2	4	3		0%	6.5%
12	Tuesday	7	0	6	1	1		0%	6.5%
13	Wednesday	18	8	1	9	6		0%	6.5%
14	Thursday	13	3	2	8	5		0%	6.5%
15	Friday	43	4	2	37	25		0%	6.5%
16	Saturday	43	16	2	25	17		0%	6.5%
17	Sunday	30	8	0	22	15		0%	6.5%
18	Monday	22	7	5	10	7		0%	6.5%
19	Tuesday	5	1	0	4	3		0%	6.5%
20	Wednesday	8	0	2	6	4		0%	6.5%
21	Thursday	14	6	3	5	3		0%	6.5%
22	Friday	14	4	3	7	5		0%	6.5%
23	Saturday	40	11	3	26	17		0%	6.5%
24	Sunday	43	10	2	31	21		0%	6.5%
25	Monday	6	4	2	0	-			6.5%
26	Tuesday	4	2	0	2	1		0%	6.5%
27	Wednesday	9	2	4	3	2		0%	6.5%
28	Thursday	11	3	2	6	4		0%	6.5%
29	Friday	10	2	5	3	2		0%	6.5%
30	Saturday	24	13	0	11	7		0%	6.5%
31	Sunday	38	17	0	21	14		0%	6.5%
		554	187	51	316	211	33	16%	6.5%

Weekend Total	321	Weekend Day Avg.	32.10
Weekday Totals	233	Weekday Day Avg.	11.10

Weekends w/ Friday	396	Weekend Day Avg.	26.40
Weekday Totals	158	Weekday Day Avg.	9.88

ROBERT BIALE VINEYARDS- TASTING ROOM

February 2016

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Monday	2	0	2	0	-			6.5%
2	Tuesday	16	0	5	11	7		0%	6.5%
3	Wednesday	2	0	0	2	1		0%	6.5%
4	Thursday	15	10	2	3	2		0%	6.5%
5	Friday	31	9	4	18	12		0%	6.5%
6	Saturday	69	13	8	48	32		0%	6.5%
7	Sunday	35	12	6	17	11		0%	6.5%
8	Monday	18	10	3	5	3		0%	6.5%
9	Tuesday	10	3	2	5	3		0%	6.5%
10	Wednesday	12	0	2	10	7		0%	6.5%
11	Thursday	14	4	2	8	5		0%	6.5%
12	Friday	37	15	6	16	11		0%	6.5%
13	Saturday	62	33	0	29	19		0%	6.5%
14	Sunday	54	30	0	24	16		0%	6.5%
15	Monday	32	15	0	17	11		0%	6.5%
16	Tuesday	15	3	0	12	8		0%	6.5%
17	Wednesday	6	2	0	4	3		0%	6.5%
18	Thursday	15	7	0	8	5		0%	6.5%
19	Friday	26	5	0	21	14		0%	6.5%
20	Saturday	47	13	0	34	23		0%	6.5%
21	Sunday	44	27	2	15	10		0%	6.5%
22	Monday	11	6	0	5	3		0%	6.5%
23	Tuesday	14	4	4	6	4		0%	6.5%
24	Wednesday	8	3	0	5	3		0%	6.5%
25	Thursday	13	10	0	3	2		0%	6.5%
26	Friday	31	16	2	13	9		0%	6.5%
27	Saturday	58	28	6	24	16		0%	6.5%
28	Sunday	29	6	0	23	15		0%	6.5%
29	Monday	19	2	4	13	9		0%	6.5%
					0	-			6.5%
					0	-			6.5%
		745	286	60	399	266	0	0%	6.5%

Weekend Total	398	Weekend Day Avg.	49.75
Weekday Totals	347	Weekday Day Avg.	16.52
Weekends w/ Friday	523	Weekend Day Avg.	43.58
Weekday Totals	222	Weekday Day Avg.	13.06

ROBERT BIALE VINEYARDS- TASTING ROOM

March 2016

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Tuesday	9	2	2	5	3		0%	6.5%
2	Wednesday	16	2	11	3	2		0%	6.5%
3	Thursday	17	1	2	14	9		0%	6.5%
4	Friday	46	15	15	16	11		0%	6.5%
5	Saturday	54	14	3	37	25		0%	6.5%
6	Sunday	25	15	0	10	7		0%	6.5%
7	Monday	6	0	0	6	4		0%	6.5%
8	Tuesday	11	0	0	11	7		0%	6.5%
9	Wednesday	13	0	0	13	9		0%	6.5%
10	Thursday	13	5	4	4	3		0%	6.5%
11	Friday	21	10	0	11	7		0%	6.5%
12	Saturday	16	4	4	8	5		0%	6.5%
13	Sunday	28	12	0	16	11		0%	6.5%
14	Monday	23	5	2	16	11		0%	6.5%
15	Tuesday	18	8	3	7	5		0%	6.5%
16	Wednesday	15	0	0	15	10		0%	6.5%
17	Thursday	18	2	2	14	9		0%	6.5%
18	Friday	46	4	11	31	21		0%	6.5%
19	Saturday	64	13	0	51	34		0%	6.5%
20	Sunday	34	11	2	21	14		0%	6.5%
21	Monday	19	0	1	18	12		0%	6.5%
22	Tuesday	22	2	7	13	9		0%	6.5%
23	Wednesday	7	5	0	2	1		0%	6.5%
24	Thursday	26	10	3	13	9		0%	6.5%
25	Friday	15	5	4	6	4		0%	6.5%
26	Saturday	65	24	5	36	24		0%	6.5%
27	Sunday	0	0	0	0	-			6.5%
28	Monday	14	6	4	4	3		0%	6.5%
29	Tuesday	16	7	2	7	5		0%	6.5%
30	Wednesday	14	0	8	6	4		0%	6.5%
31	Thursday	27	3	0	24	16		0%	6.5%
		718	185	95	438	292	0	0%	6.5%

Weekend Total	286	Weekend Day Avg.	35.75
Weekday Totals	432	Weekday Day Avg.	18.78

Weekends w/ Friday	414	Weekend Day Avg.	34.50
Weekday Totals	304	Weekday Day Avg.	16.00

ROBERT BIALE VINEYARDS- TASTING ROOM

April 2016

1.5

TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Friday	31	14	0	17	11		0%	6.5%
2	Saturday	47	15	3	29	19		0%	6.5%
3	Sunday	46	21	4	21	14		0%	6.5%
4	Monday	21	5	0	16	11		0%	6.5%
5	Tuesday	12	2	0	10	7		0%	6.5%
6	Wednesday	16	6	4	6	4		0%	6.5%
7	Thursday	11	0	0	11	7		0%	6.5%
8	Friday	35	13	1	21	14		0%	6.5%
9	Saturday	62	25	11	26	17		0%	6.5%
10	Sunday	46	16	0	30	20		0%	6.5%
11	Monday	12	4	2	6	4		0%	6.5%
12	Tuesday	9	3	0	6	4		0%	6.5%
13	Wednesday	23	2	5	16	11		0%	6.5%
14	Thursday	16	8	0	8	5		0%	6.5%
15	Friday	45	8	12	25	17		0%	6.5%
16	Saturday	8	0	8	0	-			6.5%
17	Sunday	30	10	0	20	13		0%	6.5%
18	Monday	24	5	0	19	13		0%	6.5%
19	Tuesday	24	8	0	16	11		0%	6.5%
20	Wednesday	16	10	0	6	4		0%	6.5%
21	Thursday	19	2	3	14	9		0%	6.5%
22	Friday	50	4	0	46	31		0%	6.5%
23	Saturday	97	24	4	69	46		0%	6.5%
24	Sunday	56	26	0	30	20		0%	6.5%
25	Monday	21	8	0	13	9		0%	6.5%
26	Tuesday	13	1	4	8	5		0%	6.5%
27	Wednesday	12	2	2	8	5		0%	6.5%
28	Thursday	23	14	0	9	6		0%	6.5%
29	Friday	45	25	0	20	13		0%	6.5%
30	Saturday	72	10	2	60	40		0%	6.5%
					0	-			6.5%
		942	291	65	586	391	0	0%	6.5%

Weekend Total	464	Weekend Day Avg.	51.56
Weekday Totals	478	Weekday Day Avg.	22.76

Weekends w/ Friday	670	Weekend Day Avg.	47.86
Weekday Totals	272	Weekday Day Avg.	17.00

ROBERT BIALE VINEYARDS- TASTING ROOM

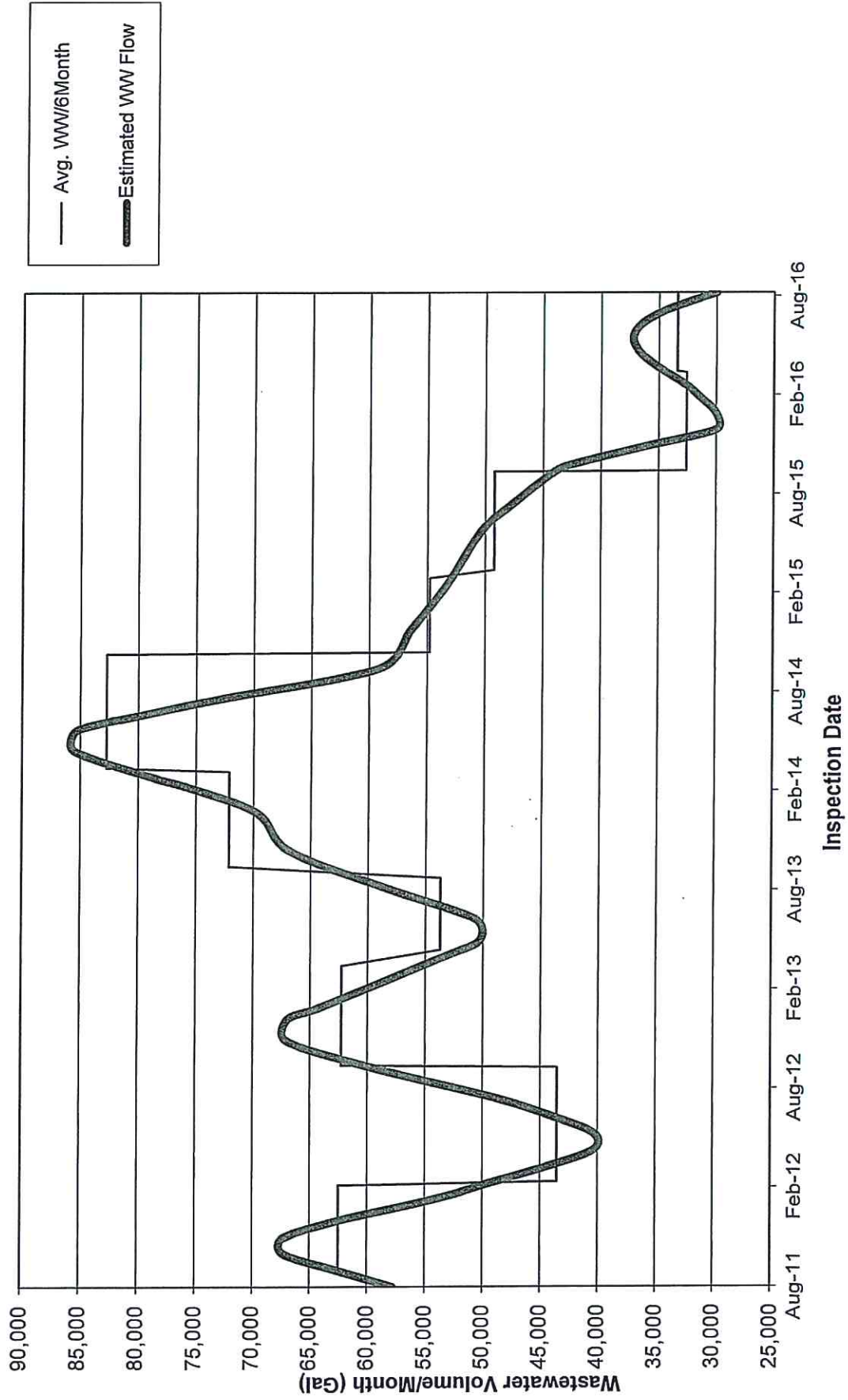
May 2016

1.5

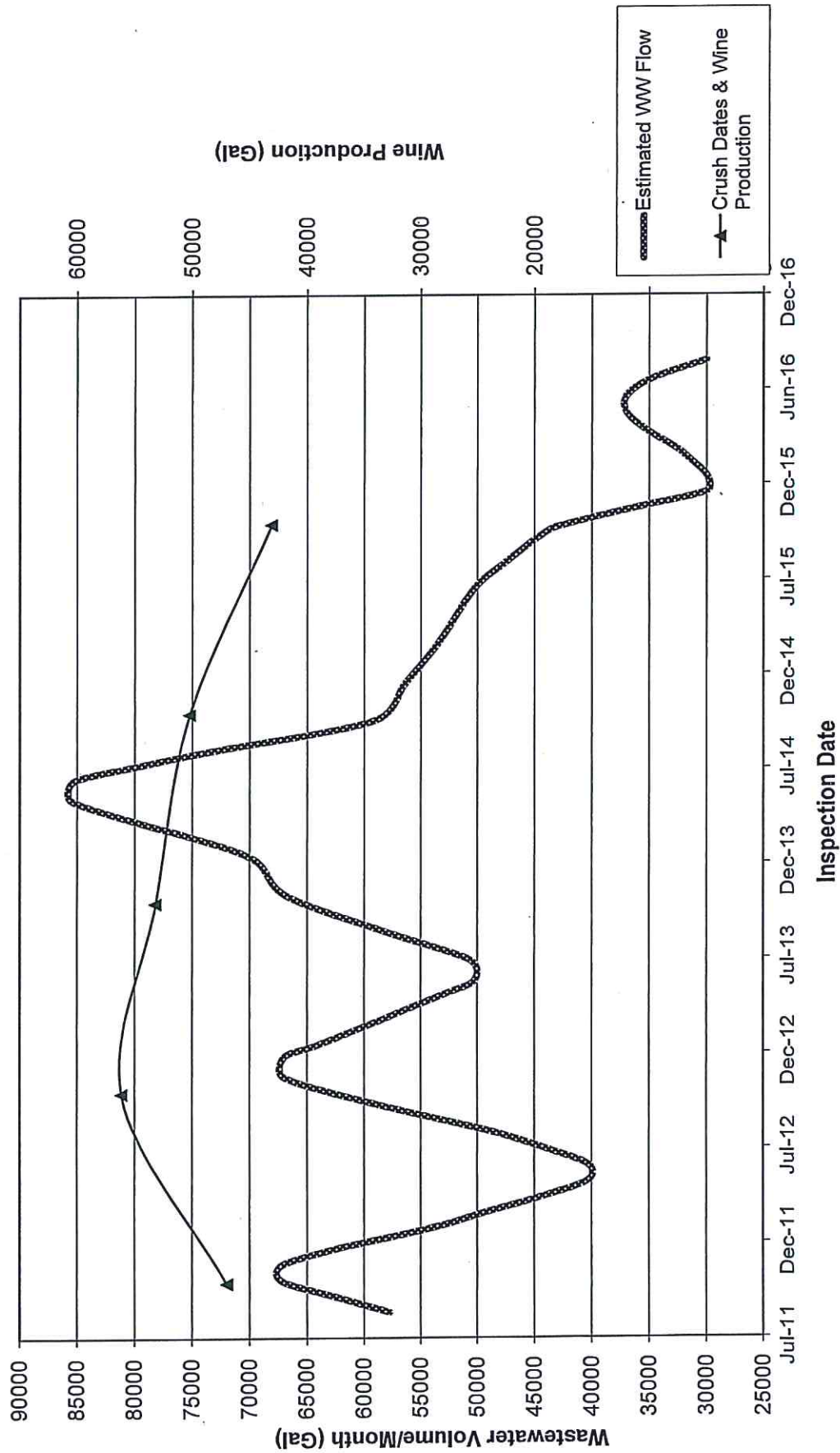
TASTING ROOM VISITORS							CONVERSION RATE		
DATE	DAY	TOTAL VISITS	WINE CLUB	TRADE	NET PROSP	Potential	NEW CLUBS	CONV	CONV GOAL
1	Sunday	55	35	5	15	10		0%	6.5%
2	Monday	11	1	2	8	5		0%	6.5%
3	Tuesday	19	1	5	13	9		0%	6.5%
4	Wednesday	10	2	0	8	5		0%	6.5%
5	Thursday	28	4	4	20	13		0%	6.5%
6	Friday	34	17	6	11	7		0%	6.5%
7	Saturday	72	11	8	53	35		0%	6.5%
8	Sunday	35	13	2	20	13		0%	6.5%
9	Monday	20	3	4	13	9		0%	6.5%
10	Tuesday	22	6	4	12	8		0%	6.5%
11	Wednesday	31	7	16	8	5		0%	6.5%
12	Thursday	35	5	6	24	16		0%	6.5%
13	Friday	36	13	3	20	13		0%	6.5%
14	Saturday	71	14	5	52	35		0%	6.5%
15	Sunday	53	15	6	32	21		0%	6.5%
16	Monday	16	6	1	9	6		0%	6.5%
17	Tuesday	19	9	0	10	7		0%	6.5%
18	Wednesday	24	0	6	18	12		0%	6.5%
19	Thursday	29	5	0	24	16		0%	6.5%
20	Friday	46	9	7	30	20		0%	6.5%
21	Saturday	57	24	4	29	19		0%	6.5%
22	Sunday	46	16	8	22	15		0%	6.5%
23	Monday	17	2	3	12	8		0%	6.5%
24	Tuesday	18	2	0	16	11		0%	6.5%
25	Wednesday	20	8	0	12	8		0%	6.5%
26	Thursday	22	8	2	12	8		0%	6.5%
27	Friday	34	9	1	24	16		0%	6.5%
28	Saturday	34	16	2	16	11		0%	6.5%
29	Sunday	51	23	7	21	14		0%	6.5%
30	Monday	32	8	0	24	16		0%	6.5%
31	Tuesday	23	4	6	13	9		0%	6.5%
		1020	296	123	601	401	0	0%	6.5%

Weekend Total	540	Weekend Day Avg.	49.09
Weekday Totals	480	Weekday Day Avg.	24.00
Weekends w/ Friday	656	Weekend Day Avg.	46.86
Weekday Totals	364	Weekday Day Avg.	21.41

Attachment 8 - ROBERT BIALE VINEYARD ESTIMATED WASTEWATER FLOW



Attachment 9 - RBV CRUSH DATES & WINE PRODUCTION COMPARED TO WASTEWATER FLOW



Attachment 10 - COMPARISON CALCULATIONS FOR RBV WASTEWATER FLOW TO PAST AND PRESENT DESIGN VALUES

Previous Peak Wastewater Design Flow

1,100 g.p.d.	Design Average Wastewater [Bartelt Engineering April 2001]
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Proposed Design Annual Wastewater Design Flow

Event Guests

300 ea.	Guests per Event
2 ea.	Events per year
3.5 gal./guest	Gallons per event guests
2,100 gal./year	Annual Flow for Event Guests

Walk-in Guests

10,300 ea./year	Walk in Guests per year
2.2 gal./guest	Gallons per Walk in Guests
22,660 gal./year	Annual Flow for Walk in Guests

Employees

15 ea.	Employees
14.5 g.p.d	Design Flow for Employees
5 days	Days per Work Week
52 weeks	Weeks per year
56,550 gal./year	Annual Flow for Employees

Wine Production

49,910 gal./year	Current Average Wine Production
60,000 gal./year	Proposed Wine Production
6 gal./gal.	Design Ratio of Wastewater to Wine Production
299,460 gal./year	Current Annual Design Wastewater from Wine Production
360,000 gal./year	Proposed Annual Design Wastewater from Wine Production

Total Calculated Annual Wastewater

380,770 gal./year	Calculated Current Total Annual Wastewater Production
441,310 gal./year	Calculated Proposed Total Annual Wastewater Production
1,043 g.p.d.	Calculated Current Annual Average Daily Wastewater Flow
1,209 g.p.d.	Calculated Proposed Annual Average Daily Wastewater Flow

Average Annual Wastewater Per Day From WW Pump Cycle Count Record - Without 2014 Excursion

<u>Total Record Period</u>		<u>Dates Between Excursion Inspections</u>	
9/16/2011 date	Inspection Date	9/10/2013 date	
8/24/2016 date	Inspection Date	10/28/2014 date	
1,804 days	Time between Readings	413 days	Days During Excursion
		1,391 days	Days Excluding Excursion
			<u>Pump Cycles During 2014 Excursion</u>
9/16/2011 date	Inspection Date	9/10/2013 date	Inspection Date
6,803 #	Pump 1 Cycles	8,928 #	Pump 1 Cycles
6,693 #	Pump 2 Cycles	8,841 #	Pump 2 Cycles
8/24/2016 date	Inspection Date	10/28/2014 date	Inspection Date
12,087 #	Pump 1 Cycles	10,634 #	Pump 1 Cycles
12,166 #	Pump 2 Cycles	10,586 #	Pump 2 Cycles
	<u>Delta</u>		<u>Delta</u>
5,284 #	Pump 1 Cycles	1,706 #	Pump 1 Cycles
5,473 #	Pump 2 Cycles	1,745 #	Pump 2 Cycles
10,757 #	Total Pump Cycles	3,451 #	Excursion Pump Cycles
7,306 #	Adjusted Pump Cycles [Total Pump Cycles Minus Excursion Pump Cycles]		
2,191,800 gal.	Total Volume Displaced During Wastewater Record Period		
1,576 g.p.d.	Average Wastewater Flow per Day (Without 2014 Excursion)		
1,827 gal.	Proposed Average Wastewater Flow per Day (1576 x 1209 / 1043)		

Attachment 11 - RBV WASTEWATER FLOW COMPARED TO LEACHFIELD GROUNDWATER ELEVATIONS AND RAINFALL

