“E”

Use Permit Application Packet

Oakville Farms Use Permit P14-00042
Planning Commission Hearing August 17, 2016

P-UP-App P14-00042
031-050-047

file № P14-00042-UP

A Tradition of Stewardship
A Commitment to Service

Napa County
Conservation, Development, and Planning Department
1195 Third Street, Suite 210, Napa, California, 94559 *phone* (707) 253-4417
web www.countyofnapa.org/cdp/ *email* cdp@countyofnapa.org

Use Permit Application

To be completed by Planning staff...

Application Type: Use Permit

Date Submitted: 2/20/2014 Resubmittal(s): _____ Date Complete: _____

Request: _____

*Application Fee Deposit: $5000.— Receipt No. 100673 Received by: LS / TA Date: 2/20/2014

**Total Fees will be based on actual time and materials*

To be completed by applicant...

Project Name: OAKVILLE FARMS

Assessor's Parcel №: 31-050-47 Existing Parcel Size: 40.98 ac.

Site Address/Location: 7810 Silverado Trail, Napa Valley, CA. 94558
No. Street City State Zip

Primary Contact: ☐ Owner ☐ Applicant ☐ Representative (attorney, engineer, consulting planner, etc.)

Property Owner: Joseph E. Steil, Trust, Carolyn Steil

Mailing Address: 7810 Silverado Trail, Napa Valley, CA. 94558
No. Street City State Zip

Telephone №(707) 944-9362 E-Mail: OakvilleFarms@gmail.com
cell 415-810-5211

Applicant (if other than property owner): _____

Mailing Address: _____
No. Street City State Zip

Telephone №(____) _____-_____ E-Mail: N/A

Representative (if applicable): _____

Mailing Address: _____
No. Street City State Zip

Telephone №(____) _____-_____ E-Mail: _____

Use Permit Information Sheet

Use

Narrative description of the proposed use (please attach additional sheets as necessary):

See Attached

What, if any, additional licenses or approvals will be required to allow the use?

District _____ Regional _____

State _____ Federal _____

Improvements

Narrative description of the proposed on-site and off-site improvements (please attach additional sheets as necessary):

N/A

Use Permit Application

P-UP-APP P14-00042
031-030-047

7810 Silverado Trail, Napa Valley, California 94558

Existing Conditions:

The property is located on the East side of Napa Valley on Silverado Trail and is in the Agricultural Watershed area for Napa County. The property consists of a primary dwelling with swimming pool, a secondary dwelling, a 14-stall prefabricated barn and a small well house. All structures are on file with Napa County. We have owned the property since March 1984 when we established our small horse facility for our own horses and horses of close friends.

The entrance to the property is a paved driveway approximately 40 feet wide at Silverado Trail and is flanked with stone walls approximately 50 feet in from Silverado Trail. The distance between the stone pillars is 20 feet. The driveway also serves as access to 3 additional residences (all part-time residents) and an easement and the access details are on file with Napa County. The access to the barn area is immediately to the left of the stone wall at the main entrance off Silverado Trail. The access road to the barn area is 16 to 30 feet wide and consists of ¾" to 1½" aggregate. There is a 16-foot wide utility farm gate at the entrance to the barn area for animal safety. Passed the gate the access road is a circular loop to & from the barn.

The Barn Area consists of a 14-stall BarnMaster prefabricated barn with a 20' center aisle (on file with Napa County). It is approximately 44' X 108'. The barn is not wired for electricity. Fire extinguishers are located at each end of the barn and one in the middle. They are 5-pound ABC type extinguishers. The barn area is for day use only. Adjacent to the barn is a sand arena that is approximately 70' X 150' and is surrounded by pipe fencing. Below the barn area is a second sand arena that is approximately 110' X 220' and surrounded by wood/pipe fencing. Being as the footing in the arenas is sand, there is little to no dust generated by use.

There is no lighting for the arenas. The arenas are for day use only. There are 12 pasture/paddock areas surrounded by wood/wire/pipe fencing and some have temporary shelters for rain/shade. The pastures are a great buffer zone against any potential fire dangers. Water is supplied from well to horses via automatic water floats in portable tubs or via hose to portable tubs. We utilize a port-a-potty and it is serviced at least twice a month. Our service provider is M & M Sanitary. We provide both trash and recycling service at the barn. We compost our manure on site. Occasionally, local farmers and

gardeners will ask to have some the composted manure for their gardens, as it is organic. Most horses are stabled outside and the barn is used for injuries and in inclement weather.

The Barn Area has been used for horse boarding & training since 1984. We currently offer horse boarding & training. We have no employees and do all the labor ourselves, as has been our practice for decades. We currently have 3 boarders – each with multiple horses. We have 3 horses of our own on the property. The maximum number of horses we have had on the property was 50 horses. We currently have 15 horses on site. Our comfortable maximum occupancy would be 30 horses.

We have 2 trainers who contract as independent contractors. Each trainer provides services for approximately 10 hours a week over 3 to 4 days per week each. Each lesson is approximately 45 minutes to one hour. Weekdays usually consist of 1 to 4 lessons after school. Saturday lessons usually consist of 4 to 6 lessons in the morning. Sunday lessons usually consist of 2 to 3 lessons in the morning. Instruction includes grooming and tacking of the horse, safety and riding.

We are a small operation.
Our own 3 horses are over 25 years old.
We are one of only a few equestrian facilities left in Napa Valley.
Our goal is to continue to offer equestrian services to the local community.
We were never aware that a Use Permit was required or we would have complied a long time ago.

Respectfully submitted,

Carolyn Steil

Carolyn Steil
2/20/2014

Water Supply/ Waste Disposal Information Sheet

Water Supply

Please attach completed Phase I Analysis sheet.

	Domestic	Emergency
Proposed source of water (e.g., spring, well, mutual water company, city, district, etc.):	well	pool
Name of proposed water supplier (if water company, city, district):	—	—
Is annexation needed?	☐ Yes ☐ No	☐ Yes ☐ No
Current water use:	_____ gallons per day (gal/d)	
Current water source:	well	
Anticipated future water demand:	no change gal/d	_____ gal/d
Water availability (in gallons/minute):	60 gal/m	_____ gal/m
Capacity of water storage system:	50 gal	_____ gal
Type of emergency water storage facility if applicable (e.g., tank, reservoir, swimming pool, etc.):	swimming pool	

Liquid Waste

Please attach Septic Feasibility Report

	Domestic	Other
Type of waste:	sewage	
Disposal method (e.g., on-site septic system, on-site ponds, community system, district, etc.):	SEPTIC	
Name of disposal agency (if sewage district, city, community system):		
Is annexation needed?	☐ Yes ☐ No	☐ Yes ☐ No
Current waste flows (peak flow):	_____ gal/d	_____ gal/d
Anticipated future waste flows (peak flow):	no change gal/d	_____ gal/d
Future waste disposal design capacity:	_____ gal/d	_____ gal/d

Solid Waste and Recycling Storage and Disposal

Please include location and size of solid waste and recycling storage area on site plans in accordance with the guidelines available at www.countyofnapa.org/dem.

Hazardous and/or Toxic Materials

If your facility generates hazardous waste or stores hazardous materials above threshold planning quantities (55 gallons liquid, 500 pounds solid or 200 cubic feet of compressed gas) then a hazardous materials business plan and/or a hazardous waste generator permit will be required.

Grading Spoils Disposal

Where will grading spoils be disposed of?
(e.g. on-site, landfill, etc. If off-site, please indicate where off-site): N/A

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: - 0 - x 3.05 one-way trips per employee = _____ daily trips.

Number of PT employees: - 0 - x 1.90 one-way trips per employee = _____ daily trips.

Average number of weekday visitors: 3 / 2.6 visitors per vehicle x 2 one-way trips = 2.3 daily trips.

Gallons of production: _____ / 1,000 x .009 truck trips daily[3] x 2 one-way trips = _____ daily trips.

Total = _____ **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (sum of visitor and truck trips x .38) = 0.87 **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): - 0 - x 3.05 one-way trips per employee = _____ daily trips.

Number of PT employees (on Saturdays): - 0 - x 1.90 one-way trips per employee = _____ daily trips.

Average number of Saturday visitors: 3 / 2. 8 visitors per vehicle x 2 one-way trips = 1.33 daily trips.

Total = _____ **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (visitor trips x .57) = 0.75 **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): _____ x 3.05 one-way trips per employee = _____ daily trips.

Number of PT employees (during crush): _____ x 1.90 one-way trips per employee = _____ daily trips.

Average number of Saturday visitors: _____ / 2. 8 visitors per vehicle x 2 one-way trips = _____ daily trips.

Gallons of production: _____ / 1,000 x .009 truck trips daily x 2 one-way trips = _____ daily trips.

Avg. annual tons of grape on-haul: _____ / 144 truck trips daily[4] x 2 one-way trips = _____ daily trips.

Total = - 0 - **daily trips.**

~~Largest Marketing Event- Additional Traffic~~

~~Number of event staff (largest event): 2 x 2 one-way trips per staff person~~ = 4.0 trips.

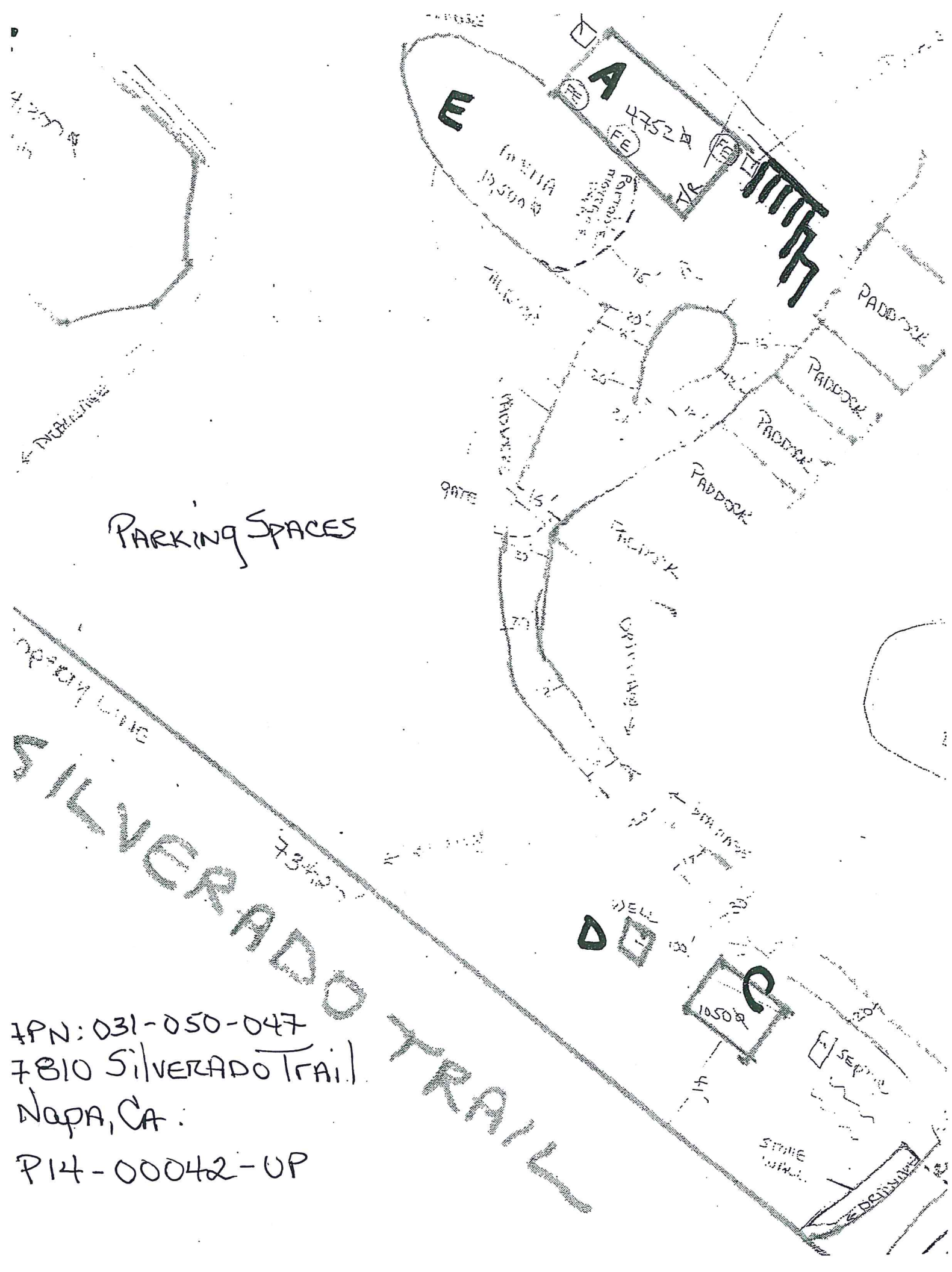
~~Number of visitors (largest event): 10 / 2.8 visitors per vehicle x 2 one-way trips~~ = 0.56 trips.

~~Number of special event truck trips (largest event): - 0 - x 2 one-way trips~~ = _____ trips.

Remove per Carolyn Steil 3/1/2016

[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).



APN: 031-050-047
7810 Silverado Trail
Napa, CA.
P14-00042-UP

Oakville Farms
7810 Silverado Trail
Napa Valley, California 94558

Sample Lesson Schedule

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Beloved	rest			X		X	
Charity	rest	X		X	X	X	
Honas	rest						
Ilish	rest	X	XX	X		X	
Roxy	rest				X	X	
Smokee	rest		X			X	
Templeton	rest	X		X		X	
Page	rest					X	
Thistle	rest					X	

Lessons are for 45 minutes to one hour each and include horsemanship, grooming, tacking of horse and riding.

2/6/2014

Addendum 1

22 April 2014

Oakville Farms of Napa Valley
7810 Silverado Trail
Napa, California 94558

Use Permit Application #P14-00042-UP

Re: Memorandum between Linda St. Claire and Peter Corelis dated 3/13/2014

Post-Construction Runoff Management:

1. Oakville Farms has had horses on the property since 1984. The Storm-water Runoff Management Plan has been in place since 1985-1986 when the barn was built. Ditches behind the barn, on the upside of the roads and by the large arena capture water runoff and deliver it to the culverts located on Silverado Trail. The rinsing of animals is kept to a minimum. The water is then absorbed into the ground. We are an organic barn and do not use soap products on the horses as it can be irritating. The rinsing area is over 400 feet from the well. Feeding is done in containers on mats and on the ground. Some of the larger paddocks have grazing available (seasonal). Most horses are stabled in paddocks with shelters. Paddocks are maintained and regularly cleaned of manure. Urine is absorbed into the ground. The paddock sites have been chosen bases on their suitability to create a dry, safe and harmonious place for the animals. Stalls are cleaned daily when in use. The property does not have any creeks or stream and the drainage ditches have been doing their jobs for over 25 years. The composting of manure is not near any of the drainage ditches. Local gardeners often collect compost for their gardens. Weed control is handled by horse or weed-eater. Chemicals are not used because of the potential toxicity to the animals.

Access Roads:

2. The driveway is a minimum of 20 feet wide with the exception of two small stretches. It narrows to16 feet for a length of 6 feet and it narrows to 18 feet for a length of 6 feet. See map. This is to accommodate culverts for drainage. At the main entrance to the property, the roadway is paved. The driveway to the barn is composed of compacted Class II ABS aggregate road base rock that is at least 8 inches thick. We often have 25 tons (50,000 lbs) of hay delivered, so the road was planned for supporting heavy weight.

3. There is a road that meets the same criteria for the common drive that goes from the main drive to the large arena. The road is a minimum of 13 feet wide plus a minimum of a 6 foot drivable soft shoulder and is composed of compacted Class II ABS Aggregate road base. See map.
4. The access roads do not require any improvements.
5. See map for parking space layout. Quantity of spaces to be determined.
6. A fire truck turnaround area is available in both arena areas. The upper arena is approximately 150' X 70' and the lower arena is approximately 110' X 220'. Both arenas have more than enough area to comply with standard turnaround requirements.

Re: Memorandum between Linda St. Claire and Kim Withrow dated 3/21/2014

1. The two septic systems on the property are not located near the areas where the horses are stabled. See map.
2. Manure is composted in a compatible Best Management Practice.
3. To be determined.
4. M & M Sanitary regularly services the portable toilet.

Respectfully submitted,

Carolyn Steil

Carolyn Steil

Checklist of Voluntary Greenhouse Gas Emission Reduction Measures

A Tradition of Stewardship
A Commitment to Service

An addendum to the Entitlement Application and a supplement for Initial Studies as required by CEQA

PROJECT NAME	OAKVILLE FARMS
PROJECT ADDRESS	7810 SILVERADO TRAIL
APPLICANT	STEIL
CONTACT INFO	OAKVILLEFARMS@gmail.com (email) 707-944-9312 (phone)

		yes	no	I don't know	
1	Have you designed to U.S.G.B.C.™ LEED™ or Build It Green™ standards? If yes, please include a copy of their required spreadsheets.				N/A
2	Do you have an integrated design team? if yes, please list:				N/A
3	SITE DESIGN				
3.1	Does your design encourage community gathering and is it pedestrian friendly?				
3.2	Are you building on existing disturbed areas?				N/A
3.3	Landscape Design				
3.31	native plants?	X			
3.32	drought tolerant plants?	X			
3.33	Pierce Disease resistant planting?				N/A
3.34	Fire resistant planting?	X			
3.35	Are you restoring open space and/or habitat?	X			
3.36	Are you harvesting rain water on site?		X		
3.37	planting large trees to act as carbon sinks?			X	
3.38	using permeable paving materials for drive access and walking surfaces?	X			
3.4	Does your parking lot include bicycle parking?	X			
3.5	Do you have on-site waste water disposal?	X			
3.6	Do have post-construction stormwater on site detention/filration methods designed?				
3.7	Have you designed in harmony with existing natural features, such as preserving existing trees or rock outcroppings?	X			
3.8	Does the project minimize the amount of site disturbance, such as minimizing grading and/or using the existing topography in the overall site design (such as cave design)?	X			
3.9	Is the structure designed to take advantage of natural cooling and passive solar aspects?	X			
4	ENERGY PRODUCTION & EFFICIENCY				
4.1	Does your facility use energy produced on site? If yes, please explain the size, location, and percentage of off-set:		X		
4.2	Does the design include thermal mass within the walls and/or floors?			X	
4.3	Do you intend to commission the performance of the building after it is built to ensure it performs as designed?			X	
4.4	Will your plans for construction include:				
4.41	High density insulation above Title 24 standards?				N/A
4.42	Zones for heating and cooling to provide for maximum efficiency?				
4.43	Energy Star™ or ultra energy efficient appliances?				
4.44	A "cool" (lightly colored or reflective) or a permeable/living roof?				
4.45	Timers/time-outs installed on lights (such as the bathrooms)?				
	If yes, please explain:				
5	WATER CONSERVATION				
5.1	Does your landscape include high-efficiency irrigation?	X			
5.2	Does your landscape use zero potable water irrigation?		X		
5.3	Is your project in the vicinity to connect to the Napa Sanitation reclaimed water?		X		
5.4	Will your facility use recycled water?		X		
5.41	If no, will you prepare for it by pre-installing dual pipes and/or purple lines?		X		
5.5	Will your plans for construction include:				
5.51	a meter to track your water usage?				N/A
5.52	ultra water efficient fixtures and appliances?				
5.53	a continuous hot water distribution method, such as an on-demand pump?				
5.54	a timer to insure that the systems are run only at night/early morning?				N/A

6 MATERIAL RECYCLING

	yes	no	I don't know
6.1 Are you using reclaimed materials? If yes, what and where:			
6.2 Are you using recycled construction materials-			
6.21 finish materials?			
6.22 aggregate/concrete road surfaces?		X	
6.23 fly ash/slag in foundation?			
6.3 Will your contractor be required to recycle and reuse construction materials as part of your contract?			
6.4 Does your facility provide access to recycle-			N/A
6.41 Kitchen recycling center?			
6.42 Recycling options at all trash cans?	X		
6.43 Do you compost green waste?	X		
6.44 Provide recycling options at special events?	X		

7 NATURAL RESOURCES

7.1 Will you be using certified wood that is sustainably harvested in construction?			
7.2 Will you be using regional (within 500 miles) building materials?			
7.3 Will you be using rapidly renewable materials, such as bamboo?			
7.4 Will you apply optimal value engineering (studs & rafters at 24" on center framing)?			N/A
7.5 Have you considered the life-cycle of the materials you chose?			

8 INDOOR AIR QUALITY

8.1 Will you be using low or no emitting finish and construction materials indoors-			
8.11 Paint?			
8.12 Adhesives and Sealants?			
8.13 Flooring?			N/A
8.14 Framing systems?			
8.15 Insulation?			
8.2 Does the design allow for maximum ventilation?			
8.3 Do you plan for a wood burning fireplace (US EPA Phase II certified)?	X		
8.4 Does your design include dayling, such as skylights?		X	
	X		

9 TRANSPORTATION DEMAND MANAGMENTMENT

9.1 After your project is complete, will you offer your employees incentives to carpool, bike, or use transit?			X
9.2 After your project is complete, will you allow your employees to telecommute or have alternative work schedules?			X
9.3 Does your project include design features that encourage alternatives modes of transportation, such as			
preferred parking for carpooling, ridesharing, electric vehicles?			
secured bicycle parking, safe bicycle access?	X		
loading zones for buses/large taxi services?			

9.4 How close is your facility to public transportation? .34 miles

10 Are there any superior environmental/sustainable features of your project that should be noted?
DAY FACILITY - & ELECTRICITY.

11 What other studies or reports have you done as part of preparing this application?
1
2
3
4

12 If your project involves an addition or modification to an existing building, are you planning to improve energy conservation of existing space (such as insulation, new windows, HVAC, etc.)? N/A
If yes, please describe:

13 Once your facility is in operation, will you:

13.1 calculate your greenhouse gas emissions?			
13.2 implement a GHG reduction plan?			
13.3 have a written plan to reduce your vehicle miles traveled of your operations and employee's commute?			

14 Does your project provide for education of green/sustainable practices?
If yes, please describe: WE ARE A GREEN/ORGANIC FARM.

15 Any comments, suggestions, or questions in regards to the County's efforts to reduce greenhouse gases?

Form filed out by: Carolyn Steil

Please feel free to include additional sheets of paper as necessary.

A Tradition of Stewardship
A Commitment to Service

Department of Public Works

1195 Third Street, Suite 201
Napa, CA 94559-3092
www.co.napa.ca.us/publicworks

Main: (707) 253-4351
Fax: (707) 253-4627

Donald G. Ridenhour, P.E.
Director

WATER AVAILABILITY ANALYSIS - PHASE ONE STUDY

Introduction: As an applicant for a permit with Napa County, It has been determined that Chapter 13.15 of the Napa County Code is applicable to approval of your permit. One step of the permit process is to adequately evaluate the amount of water your project will use and the potential impact your application might have on the static groundwater levels within your neighborhood. The public works department requires that a Phase 1 Water Availability Analysis (WAA) be included with your application. The purpose of this form is to assist you in the preparation of this analysis. You may present the analysis in an alternative form so long as it substantially includes the information required below. Please include any calculations you may have to support your estimates.

The reason for the WAA is for you, the applicant, to inform us, to the best of your ability, what changes in water use will occur on your property as a result of an approval of your permit application. By examining the attached guidelines and filling in the blanks, you will provide the information we require to evaluate potential impacts to static water levels of neighboring wells.

Step #1:

Provide a map and site plan of your parcel(s). The map should be an 8-1/2"x11" reproduction of a USGS quad sheet (1:24,000 scale) with your parcel outlined on the map. Include on the map the nearest neighboring well. The site plan should be an 8-1/2"x11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used. If more than one water source is available, indicate the interconnecting piping from the subject well to the areas of use. Attach these two sheets to your application. If multiple parcels are involved, clearly show the parcels from which the fair share calculation will be based and properly identify the assessor's parcel numbers for these parcels. Identify all existing or proposed wells

Step #2: Determine total parcel acreage and water allotment factor. If your project spans multiple parcels, please fill a separate form for each parcel.

Determine the allowable water allotment for your parcels:

Parcel Location Factors

The allowable allotment of water is based on the location of your parcel. There are 3 different location classifications. Valley floor areas include all locations that are within the Napa Valley, Pope Valley and Carneros Region, except for areas specified as groundwater deficient areas. Groundwater deficient areas are areas that have been determined by the public works department as having a history of problems with groundwater. All other areas are classified as Mountain Areas.

Please underline your location classification below (Public Works can assist you in determining your classification if necessary):

Valley Floor	**1.0 acre feet per acre per year**
Mountain Areas	**0.5 acre feet per acre per year**
MST Groundwater Deficient Area	**0.3 acre feet per acre per year**

Assessor's Parcel Number(s)	Parcel Size (A)	Parcel Location Factor (B)	Allowable Water Allotment (A) X (B)
31-050-47	40.98	Valley Floor	40.98

Step #3:

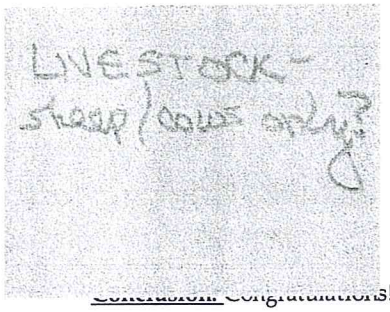
Using the guidelines in Attachment A, tabulate the existing and projected future water usage on the parcel(s) in acre-feet per year (af/yr). Transfer the information from the guidelines to the table below.

EXISTING USE:		PROPOSED USE:	
Residential	0.75 af/yr	Residential	0.75 af/yr
Farm Labor Dwelling	_____ af/yr	Farm Labor Dwelling	_____ af/yr
Winery	_____ af/yr	Winery	_____ af/yr
Commercial	_____ af/yr	Commercial	_____ f/yr
Vineyard*	_____ af/yr	Vineyard*	_____ af/yr
Other Agriculture	_____ af/yr	Other Agriculture	_____ af/yr
Landscaping	0.14 af/yr	Landscaping	0.14 af/yr
Other Usage (List Separately):		Other Usage (List Separately):	
Secondary Res.	0.30 af/yr	_____	0.30 af/yr
Livestock	0.41 af/yr	_____	0.41 af/yr
_____	_____ af/yr	_____	_____ af/yr
TOTAL:	1.46 af/yr	TOTAL:	_____ af/yr TOTAL:
	_____ gallons**	TOTAL:	_____ gallons**

Is the proposed use less than the existing usage? ☐ Yes ☐ No ☒ Equal

Step #4:

Provide any other information that may be significant to this analysis. For example, any calculations supporting your estimates, well test information including draw down over time, historical water data, visual observations of water levels, well drilling information, changes in neighboring land uses, the usage if other water sources such as city water or reservoirs, the timing of the development, etc. Use additional sheets if necessary.



Conclusion: Congratulations! Just sign the form and you are done! Public works staff will now compare your projected future water usage with a threshold of use as determined for your parcel(s) size, location, topography, rainfall, soil types, historical water data for your area, and other hydrogeologic information. They will use the above information to evaluate if your proposed project will have a detrimental effect on groundwater levels and/or neighboring well levels. Should that evaluation result in a determination that your project may adversely impact neighboring water levels, a phase two water analysis may be required. You will be advised of such a decision.

Signature: Carolyn Attil **Date:** 2.5.14 **Phone:** 415.810.5211
707-944-9312

2/5/14

LANDSCAPING - Water USAGE

						WEEK
LAWN -	30 min	3½	d/w			140.
Around pool / Pool DECK	30 min	7	d/w	20 lg 22 SM 6 spray	1 gal/D ¼ gal/D ¼ gal/DAY	38.5 168.
Parking AREA	30 min	3½	d/w	3 lg 7 spray	1 gal/D 4 gal/DAY	10.5 98.
Front door AREA	30mm	3½	d/w	5 spray	4 gal/DAY	70.
	8 mm	7	d/w	10 sm. 8 SM	¼ gal/D. ¼ gal/D	8.75 14.
DECK						
My garden	30 min	3½	d/w	spray	10¢ gal/D	35.
Oleanders	1 hr	2	d/w	25	1 gal/D	50.
Olives	1 hr	1	d/w	35	4 gal/D	140.
Barn	30 m	3	d/w	15	1 gal/D	45.
Cottage	30 m	3	d/w	25	½ gal/D	37.5
						845.25

850 x 52 = 44,200.

Spring/Summer/Fall usage

usage ↓ in winter

= 0.135644641

acre feet.

Addendum 2

8 October 2014

Oakville Farms of Napa Valley
7810 Silverado Trail
Napa, California 94558

Use Permit Application #P14-00042-UP

Water Usage:

As per the Phase 1 Water Availability Analysis it is determined that this parcel has an Allowable Water Allotment of 40.98 acre-feet per year. Existing water usage has been calculated as 1.46 acre-feet per year including 0.41 acre-feet per year for livestock/horses as per the Estimated Water Use Guidelines provided in the Use Permit Package. We are currently using less than 4% of our allotted water and do not see a change in the near future.
Attached is an article by David Marshall, VDM from the University of Delaware Cooperative Extension dated June 2004, stating that the average horse consumes 8 to 10 gallons of water a day, but recommends providing 20 gallons of day per horse to account for variables. Water consumed (10 gallons per day per horse based on 30 horses) would be 109,500 gallons per year. Water provided would be 219,000. Water consumed equals .335 acre-feet per year and water provided equals 0.67 acre-feet per year. These quantities of water are within the Allowable Water Allotment for the property.

Respectfully submitted,

Carolyn Steil

Carolyn Steil

COOPERATIVE EXTENSION
NIVERSITY OF DELAWARE
llege of Agriculture & Natural Resources

Revision Date: June 2004
David Marshall, VMD
Delaware Equine Extension Veterinarian

Horse Health Depends on Water

"Let your food be your first medicine" is an adage attributed to Hippocrates, the father of medicine. While he did not mention water, we know that water is essential to promote good health in horses. In fact, water—the often forgotten food—may be the "best medicine" for a number of specific ailments.

A horse's body contains between 65 to 75 percent water. The 10 percent variation can be accounted for by differences in age and amount of body fat and muscle mass. Essential for all body metabolic activities, water is required for a number of vital physiological processes, including normal utilization and digestion of all nutrients, regulation of body temperature, muscle contraction with strength, joint lubrication and waste elimination.

What are the normal water requirements for horses? Maintenance water requirements can vary dramatically from one horse to another. For example, a horse on a fresh, early-green-growth pasture may need very little water, because they get much of their daily water requirement from the fresh grass. However, the water content of pasture grass is highly variable, making it an unreliable source of daily water.

I hear you asking: Okay, Doc, setting aside all the possible variations, just how much water does my horse need a day? The typical adult horse at 1,000 to 1,200 pounds needs 8 to 10 gallons of water each day, yet I suggest you provide the animal 20 gallons of water daily. Giving a horse access to 20 gallons of water per day supplies that built-in margin for safe equine care.

Strenuous exercise in hot climates increases the daily water requirements 2 to 3 times (or more) over maintenance. Horses at work can lose 2 to 3 gallons of water in sweat per hour; this water must be replaced continuously while performing that work. As for a nursing mare, she will produce 3 gallons of milk per day, increasing her daily water requirements by at least 3 gallons each day.

Okay, Doc, what's the best method for providing a horse's daily water, or how do horses actually prefer to have water given to them? A recent study using three different methods of water supply investigated drinking preferences in a group of horses. Accustomed to drinking from buckets and two different types of automated waterers, these horses drank more water per day when given water in buckets. I'm not pushing the bucket method here. We use automatic waterers at the University of Delaware, and I have used them for my own horses. Yet the research indicates clear advantages in delivering water to horses in buckets or troughs.

What horses prefer, however, does not always add up to increased water intake. For example, in very cold weather, when drinking water temperatures approach freezing, a horse's water intake will decrease. This decrease in daily water intake may lead to problems, frequently impaction colic. Early recommendations to promote increased water intake were to provide the horse with a bucket of warmed water along side its regular water. We discovered the horse preferred drinking from the cold water over the warm water, and continued to drink too little water per day. When we took away the cold water, leaving only the warm, the horse drank the warm water, actually consuming a greater quantity of water per day. So next winter, to increase your horse's daily water intake, warm up its water (warm to 60-70 degrees F.), and remove cold water sources.

We know that horses prefer water from a bucket, trough, or stream. What about free access to water versus water limited to one or two times per day? Some horse owners give their horses access to water only one or two times daily. Horses can adapt to this practice. Even in nature, wild horses typically only visit the "watering hole" one or two time a day, and in some cases, only every other day. First, understand that this is an adaptation. By that I mean it takes horses time (maybe weeks) to learn to drink all of their daily water at one or two drinking opportunities per day. Second, wild horses eat fresh grass, not hay. Fresh grass contains far more water than hay, thus decreasing the horse's need for drinking water.

A horse's stomach is small, holding just 2 to 3 gallons of food or water. Horses need 8 to 10 gallons of water per day—a need that increases with exercise, heat or lactation to as much as 18 to 24 gallons per day. You don't have to be a math whiz—a working horse, a lactating mare or a horse living in a hot environment cannot fit enough water into its stomach at one or two drinking opportunities.

Equally important to consider is the horse in training or work. Working horses require water continuously throughout their day. How long is it safe to work a horse before allowing a water break before resuming work? It depends on factors of which environmental temperature looms large. On the hot, humid days of July and August, provide water opportunities every 30 minutes. Never go longer than 1 to 2 hours, even on cool spring and fall days. If you continue to move your "hot" horses, they may drink freely as much as they desire with no adverse consequences. On the other hand, if you plan to stop activity with your horse, while it is "hot"(for example, putting a "hot" horse in a stall), do not allow the animal to drink more than a gallon at a time every 5 to10 minutes until it has cooled or is no longer thirsty. If you keep horses moving when they are hot from work, even at a walk, problems such as colic or founder do not occur from permitting the horse access to free choice, cool water. Cool water does not mean ice water. When given a choice, horses prefer water somewhere between 45 to 70 degrees F.

Horses need clean water. Ponds are always suspect as water sources for horses and livestock. In this day and age, even streams are suspect. Water sources must be free from pollution by sewage, runoff or fertilizer/herbicide contamination. Ideally, a water source should be evaluated for purity by scientific analysis. Among the many drinking contaminants, potentially dangerous microbiological contamination can occur.

Urinary excretion of *Leptospira* bacteria by rodents can pollute water, causing abortion in mares and illness in foals and adults. *E. coli* bacteria from fecal contamination continue to be a major

It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age, or national origin.

problem. A severe microbiological food poisoning in the horse and mule that I saw far too frequently when I was in practice was botulism poisoning. One potential source of contamination with botulism toxin can occur in a horse's water as toxin is released when a rodent carcass ends up in the horse's or mule's drinking water. The rodent stretches to get a drink from a bucket or trough, slips into the water and drowns. The dead carcass releases botulism toxin that poisons and kills the drinking animal. Because this (and other contaminates) can find their way into a water bucket or water trough throughout the year, check your horse's water sources daily, and clean containers frequently.

In the next column, I will write about water as a defense against poor health in equines; I will cover heat stroke, heat exhaustion, dehydration and other problems prevented and/or treated by water.

David L. Marshall, V.M.D.
University of Delaware
Cooperative Extension Equine Veterinarian
June 2004

Extension Bulletin

Horse Health Depends on Water

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NAPA COUNTY UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION

BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	1	EPA ID # (Hazardous Waste Only)	2
BUSINESS NAME (Same as Facility Name of DBA-Doing Business As)	CAKVILLE FARMS		3
BUSINESS SITE ADDRESS	7810 SILVERADO TRAIL		103
BUSINESS SITE CITY	NAPA VALLEY 104	CA ZIP CODE 94558	105
CONTACT NAME	CAROLYN STILL 106	PHONE 707.944.9812	107

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page.

Does your facility…	If Yes, please complete these pages of the UPCF….	
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☐ YES ☒ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	◯ YES ✓ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	◯ YES ✓ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
D. ABOVE GROUND PETROLEUM STORAGE Own or operate ASTs above these thresholds: Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	◯ YES ✓ NO 8	NO FORM REQUIRED TO CUPAs
E. HAZARDOUS WASTE Generate hazardous waste?	◯ YES ✓ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	◯ YES ✓ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	◯ YES ✓ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	◯ YES ✓ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	◯ YES ✓ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	◯ YES ✓ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	◯ YES ✓ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	◯ YES ✓ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

UPCF Rev. (12/2007)

Planning, Building & Environmental Services - Hillary Gitelman, Director
1195 Third Street, Napa, CA 94559 - (707) 253-4417 - www.countyofnapa.org

A Tradition of Stewardship
A Commitment to Service

Project name & APN: OAKVILLE FARMS 031-050-047
Project number if known:
Contact person: CAROLYN STEIL
Contact email & phone number: OAKVILLEFARMS@gmail.com 707-944-9312
Today's date: 2-5-2014

/oluntary Best Management Practices Checklist for Development Projects

apa County General Plan Policy CON-65 (e) and Policy CON-67 (d) requires the consideration of Greenhouse Gas (GHG) missions in the review of discretionary projects and to promote and encourage "green building" design. The below Best lanagement Practices (BMPs) reduce GHG emissions through energy and water conservation, waste reduction, efficient ansportation, and land conservation. The voluntary checklist included here should be consulted early in the project and be onsidered for inclusion in new development. It is not intended, and likely not possible for all projects to adhere to all of the MPs. Rather, these BMPs provide a portfolio of options from which a project could choose, taking into consideration cost, co-enefits, schedule, and project specific requirements. Please check the box for all BMPs that your project proposes to include nd include a separate narrative if your project has special circumstances.

Practices with Measurable GHG Reduction Potential

The following measures reduce GHG emissions and if needed can be calculated. They are placed in descending order based on the amount of emission reduction potential.

lready Doing	Plan To Do	ID #	BMP Name
☐	☐	BMP-1	**Generation of on-site renewable energy**

If a project team designs with alternative energy in mind at the conceptual stage it can be integrated into the design. For instance, the roof can be oriented, sized, and engineered to accommodate photovoltaic (PV) panels. If you intend to do this BMP, please indicate the location of the proposed PV panels on the building elevations or the location of the ground mounted PV array on the site plan. Please indicate the total annual energy demand and the total annual kilowatt hours produced or purchased and the potential percentage reduction of electrical consumption. Please contact staff or refer to the handout to calcuate how much electrical energy your project may need.

☐	☐	BMP-2	**Preservation of developable open space in a conservation easement**

Please indicate the amount and location of developable land (i.e.: under 30% slope and not in creek setbacks or environmentally sensitive areas for vineyards) conserved in a permanent easement to prohibit future development.

Already Doing | Plan To Do

☒ ☐ **BMP-3 Habitat restoration or new vegetation (e.g. planting of additional trees over 1/2 acre)**

Napa County is famous for its land stewardship and preservation. Restoring areas within the creek setback reduces erosion potential while planting areas that are currently hardscape (such as doing a bio-retention swale rather than underground storm drains) reduces storm water and helps the groundwater recharge. Planting trees can also increase the annual uptake of CO2e and add the County's carbon stock.

We maintain the natural vegitation on the property.

☐ ☐ **BMP-4 Alternative fuel and electrical vehicles in fleet**

N/A

The magnitude of GHG reductions achieved through implementation of this measure varies depending on the analysis year, equipment, and fuel type replaced.

Number of total vehicles -0-

Typical annual fuel consumption or VMT

Number of alternative fuel vehicles

Type of fuel/vehicle(s)

Potential annual fuel or VMT savings

☐ ☐ **BMP-5 Exceed Title 24 energy efficiency standards: Build to CALGREEN Tier 2**

N/A

The California Building Code update effective January 1, 2011 has new mandatory green building measures for all new construction and has been labeled CALGREEN. CALGREEN provides two voluntary higher levels labeled CALGREEN Tier I and CALGREEN Tier II. Each tier adds a further set of green building measures that go above and beyond the mandatory measures of the Code. In both tiers, buildings will use less energy than the current Title 24 California Energy Code. Tier I buildings achieve at least a 15% improvement and Tier 2 buildings are to achieve a 30% improvement. Both tiers require additional non-energy prerequisites, as well as a certain number of elective measures in each green building category (energy efficiency, water efficiency, resource conservation, indoor air quality and community).

☐ ☐ **BMP-6 Vehicle Miles Traveled (VMT) reduction plan**

N/A

Selecting this BMP states that the business operations intend to implement a VMT reduction plan reducing annual VMTs by at least 15%.

Tick box(es) for what your Transportation Demand Management Plan will/does include:

- ☐ employee incentives
- ☐ employee carpool or vanpool
- ☐ priority parking for efficient transporation (hybrid vehicles, carpools, etc.)
- ☐ bike riding incentives
- ☐ bus transportation for large marketing events
- ☐ Other:

Estimated annual VMT

Potential annual VMT saved

% Change

Already Doing	Plan To Do		
☐	☐	**BMP-7**	**Exceed Title 24 energy efficiency standards: Build to CALGREEN Tier 1** *See description below under BMP-5.*
☒	☐	**BMP-8**	**Solar hot water heating** *Solar water heating systems include storage tanks and solar collectors. There are two types of solar water heating systems: active, which have circulating pumps and controls, and passive, which don't. Both of them would still require additional heating to bring them to the temperature necessary for domestic purposes. They are commonly used to heat swimming pools.* Bubble cover for pool / no heater
☒	☐	**BMP-9**	**Energy conserving lighting** *Lighting is approximately 25% of typical electrical consumption. This BMP recommends installing or replacing existing light bulbs with energy-efficient compact fluorescent (CF) bulbs or Light Emitting Diode (LED) for your most-used lights. Although they cost more initially, they save money in the long run by using only 1/4 the energy of an ordinary incandescent bulb and lasting 8-12 times longer. Typical payback from the initial purchase is about 18 months.*
☐	☐	**BMP-10**	**Energy Star Roof/Living Roof/Cool Roof** *Most roofs are dark-colored. In the heat of the full sun, the surface of a black roof can reach temperatures of 158 to 194 °F. Cool roofs, on the other hand, offer both immediate and long-term benefits including reduced building heat-gain and savings of up to 15% the annual air-conditioning energy use of a single-story building. A cool roof and a green roof are different in that the green roof provides living material to act as a both heat sink and thermal mass on the roof which provides both winter warming and summer cooling. A green (living) roof also reduces storm water runoff.*
☐ N/A	☐	**BMP-11**	**Bicycle Incentives** *Napa County Zoning Ordinance requires 1 bicycle rack per 20 parking spaces (§18.110.040). Incentives that go beyond this requirement can include on-site lockers for employees, showers, and for visitor's items such as directional signs and information on biking in Napa. Be creative!*
☐ N/A	☐	**BMP-12**	**Bicycle route improvements** *Refer to the Napa County Bicycle Plan (NCPTA, December 2011) and note on the site plan the nearest bike routes. Please note proximity, access, and connection to existing and proposed bike lanes (Class I: Completely separated right-of-way; Class II: Striped bike lane; Class III: Signed Bike Routes). Indicate bike accessibility to project and any proposed improvements as part of the project on the site plan or describe below.*

Already Doing	Plan To Do		
☐ N/A	☐	**BMP-13**	**Connection to recycled water** *Recycled water has been further treated and disinfected to provide a non-potable (non-drinking water) water supply. Using recycled water for irrigation in place of potable or groundwater helps conserve water resources.*
☒	☐	**BMP-14**	**Install Water Efficient fixtures** *WaterSense, a partnership program by the U.S. Environmental Protection Agency administers the review of products and services that have earned the WaterSense label. Products have been certified to be at least 20 percent more efficient without sacrificing performance. By checking this box you intend to install water efficient fixtures or fixtures that conserve water by 20%.*
☒	☐	**BMP-15**	**Low-impact development (LID)** *LID is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product. There are many practices that have been used to adhere to these principles such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. Please indicate on the site or landscape plan how your project is designed in this way.*
☒	☐	**BMP-16**	**Water efficient landscape** *If your project is a residential development proposing in excess of 5,000 sq. ft. or a commercial development proposing in excess of 2,500 sq. ft. The project will be required to comply with the Water Efficient Landscape Ordinance (WELO).* *Please check the box if you will be complying with WELO or If your project is smaller than the minimum requirement and you are still proposing drought tolerant, zeroscape, native plantings, zoned irrigation or other water efficient landscape.*
☒	☐	**BMP-17**	**Recycle 75% of all waste** *Did you know that the County of Napa will provide recycling collectors for the interior of your business at no additional charge? With single stream recycling it is really easy and convenient to meet this goal. To qualify for this BMP, your business will have to be aggressive, proactive and purchase with this goal in mind.*

Already Doing	Plan To Do	
☒	☐	**BMP-18 Compost 75% food and garden material**

The Napa County food composting program is for any business large or small that generates food scraps and compostable, including restaurants, hotels, wineries, assisted living facilities, grocery stores, schools, manufacturers, cafeterias, coffee shops, etc. All food scraps (including meat & dairy) as well as soiled paper and other compostable - see http://www.naparecycling.com/foodcomposting for more details.

☐ N/A	☐	**BMP-19 Implement a sustainable purchasing and shipping programs**

Environmentally Preferable Purchasing (EPP) or Sustainable Purchasing refers to the procurement of products and services that have a reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. By selecting this BMP, you agree to have an EPP on file for your employees to abide by.

☒	☐	**BMP-20 Planting of shade trees within 40 feet of the south side of the building elevation**

Well-placed trees can help keep your building cool in summer. If you choose a deciduous tree after the leaves drop in autumn, sunlight will warm your building through south and west-facing windows during the colder months. Well-designed landscaping can reduce cooling costs by 20%. Trees deliver more than energy and cost savings; they are important carbon sinks. Select varieties that require minimal care and water, and can withstand local weather extremes. Fruit or nut trees that produce in your area are great choices, providing you with local food as well as shade. Please use the site or landscape plan to indicate where trees are proposed and which species you are using.

☐	☐	**BMP-21 Electrical Vehicle Charging Station(s)**

As plug-in hybrid electric vehicles (EV) and battery electric vehicle ownership is expanding, there is a growing need for widely distributed accessible charging stations. Please indicate on the site plan where the station will be.

☐	☐	**BMP-22 Public Transit Accessibility**

Refer to http://www.ridethevine.com/vine and indicate on the site plan the closest bus stop/route. Please indicate if the site is accessed by transit or by a local shuttle. Provide an explanation of any incentives for visitors and employees to use public transit. Incentives can include bus passes, informational hand outs, construction of a bus shelter, transportation from bus stop, etc.

NEAREST BUS STOP: OAKVILLE CROSSROAD & HWY 29
APPROX 3+ MILES AWAY.

Already Doing	Plan To Do		
☐	☐	**BMP-23**	
N/A		**Site Design that is oriented and designed to optimize conditions for natural heating, cooling, and day lighting of interior spaces, and to maximize winter sun exposure; such as a cave.** *The amount of energy a cave saves is dependent on the type of soil, the microclimate, and the user's request for temperature control. Inherently a cave or a building burned into the ground saves energy because the ground is a consistent temperature and it reduces the amount of heating and cooling required. On the same concept, a building that is oriented to have southern exposure for winter warmth and shading for summer cooling with an east-west cross breeze will naturally heat, cool, and ventilate the structure without using energy. Please check this box if your design includes a cave or exceptional site design that takes into consideration the natural topography and sitting. Be prepared to explain your approach and estimated energy savings.*	
☐	☐	**BMP-24**	**Limit the amount of grading and tree removal**
N/A			*Limiting the amount of earth disturbance reduces the amount of CO2 released from the soil and mechanical equipment. This BMP is for a project design that either proposes a project within an already disturbed area proposing development that follows the natural contours of the land, and that doesn't require substantial grading or tree removal.*
☐	☐	**BMP-25**	**Will this project be designed and built so that it could qualify for LEED?**
N/A		**BMP-25 (a)** ☐	**LEED™ Silver** (check box BMP-25 and this one)
		BMP-25 (b) ☐	**LEED™ Gold** (check box BMP-25, BMP-25 (a), and this box)
		BMP-25 (c) ☐	**LEED™ Platinum** (check all 4 boxes)

Practices with Un-Measured GHG Reduction Potential

☐	☒	**BMP-26**	**Are you, or do you intend to become a Certified Green Business or certified as a "Napa Green Winery"?** *As part of the Bay Area Green Business Program, the Napa County Green Business Program is a free, voluntary program that allows businesses to demonstrate the care for the environment by going above and beyond business as usual and implementing environmentally friendly business practices. For more information check out the Napa County Green Business and Winery Program at www.countyofnapa.org.*
☐	☐	**BMP-27**	**Are you, or do you intend to become a Certified "Napa Green Land"?**
N/A			*Napa Green Land, fish friendly farming, is a voluntary, comprehensive, "best practices" program for vineyards. Napa Valley vintners and growers develop farm-specific plans tailored to protect and enhance the ecological quality of the region, or create production facility programs that reduce energy and water use, waste and pollution. By selecting this measure either you are certified or you are in the process of certification.*

Already Doing	Plan To Do		
☒	☐	**BMP-28**	**Use of recycled materials** *There are a lot of materials in the market that are made from recycled content. By ticking this box, you are committing to use post-consumer products in your construction and your ongoing operations.*
☒	☐	**BMP-29**	**Local food production** *There are many intrinsic benefits of locally grown food, for instance reducing the transportation emissions, employing full time farm workers, and improving local access to fresh fruits and vegetables.*
☒	☐	**BMP-30**	**Education to staff and visitors on sustainable practices** *This BMP can be performed in many ways. One way is to simply put up signs reminding employees to do simple things such as keeping the thermostat at a consistent temperature or turning the lights off after you leave a room. If the project proposes alternative energy or sustainable winegrowing, this BMP could include explaining those business practices to staff and visitors.*
☐ N/A	☐	**BMP-31**	**Use 70-80% cover crop** *Cover crops reduce erosion and the amount of tilling which is required, which releases carbon into the environment.*
☐	☐	**BMP-32**	**Retain biomass removed via pruning and thinning by chipping the material and reusing it rather than burning on-site** *By selecting this BMP, you agree not to burn the material pruned on site.*
☐ N/A	☐	**BMP-33**	**Are you participating in any of the above BMPS at a 'Parent' or outside location?**
☐	☐	**BMP-34**	**Are you doing anything that deserves acknowledgement that isn't listed above?**

Comments and Suggestions on this form?

NAPA COUNTY POST-CONSTRUCTION RUNOFF MANAGEMENT REQUIREMENTS
APPENDIX A – APPLICABILITY CHECKLIST

Post-Construction Runoff Management Applicability Checklist	County of Napa Department of Public Works 1195 Third Street Napa, CA 94559 (707) 253-4351 for information

Project Address:	Assessor Parcel Number(s):	Project Number: *(for County use Only)*
7810 Silverado Trail Napa, CA. 94558	031-050-047	

Instructions: Structural projects requiring a use permit, building permit, and/or grading permit must complete the following checklist to determine if the project is subject to the Post-Construction Runoff Management Requirements. In addition, the impervious surface worksheet on the reverse page must also be completed to calculate the amount of new and reconstructed impervious surfaces proposed by your project. This form must be completed, signed, and submitted with your permit application(s). Definitions are provided in the Post-Construction Runoff Management Requirements policy. **Note:** If multiple building or grading permits are required for a common plan of development, the total project shall be considered for the purpose of filling out this checklist.

POST-CONSTRUCTION STORMWATER BMP REQUIREMENTS (Parts A and B)

- ✓ If any answer to Part A are answered "yes" your project is a "Priority Project" and is subject to the Site Design, Source Control, and Treatment Control design standards described in the Napa County Post-Construction Runoff Management Requirements.
- ✓ If all answers to Part A are "No" and any answers to Part B are "Yes" your project is a "Standard Project" and is subject to the Site Design and Source Control design standards described in the Napa County Post-Construction Runoff Management Requirements.
- ✓ If every question to Part A and B are answered "No", your project is exempt from post-construction runoff management requirements.

Part A: Priority Project Categories

Does the project meet the definition of one or more of the priority project categories?

1.	Residential with 10 or more units	Yes (No)
2.	Commercial development greater than 100,000 square feet	Yes (No)
3.	Automotive repair shop	Yes (No)
4.	Retail Gasoline Outlet	Yes (No)
5.	Restaurant	Yes (No)
6.	Parking lots with greater than 25 spaces or greater than 5,000 square feet	Yes (No)

*Refer to the definitions section for expanded definitions of the priority project categories.

Part B: Standard Project Categories

Does the project propose:

1.	A facility that requires a NPDES Permit for Stormwater Discharges Associated with **Industrial** Activities?	Yes (No)
2.	New or redeveloped impervious surfaces 10,000 square feet or greater, excluding roads?	Yes (No)
3.	Hillside residential greater than 30% slope	Yes (No)
4.	Roadway and driveway construction or reconstruction which requires a Grading Permit	Yes (No)
5.	Installation of new storm drains or alteration to existing storm drains?	Yes (No)
6.	Liquid or solid material loading and/or unloading areas?	Yes (No)
7.	Vehicle and/or equipment fueling, washing, or maintenance areas, excluding residential uses?	Yes (No)
8.	Commercial or industrial waste handling or storage, excluding typical office or household waste?	Yes (No)

Note: To find out if your project is required to obtain an individual General NPDES Permit for Stormwater discharges Associated with Industrial Activities, visit the State Water Resources Control Board website at, www.swrcb.ca.gov/stormwtr/industrial.html

NAPA COUNTY POST-CONSTRUCTION RUNOFF MANAGEMENT REQUIREMENTS
APPENDIX A – APPLICABILITY CHECKLIST

Impervious Surface Worksheet

Project phasing to decrease impervious surface area shall not exempt the project from Post-Construction Runoff Management requirements. A new development or redevelopment project must comply with the requirements if it is part of a larger common plan of development that would result in the creation, addition and/or reconstruction of one acre or more of impervious surface. (For example, if 50% of a subdivision is constructed and results in 0.9 acre of impervious surface, and the remaining 50% of the subdivision is to be developed at a future date, the property owner must comply with the Post-Construction Runoff Management requirements.

Type of Impervious Surface	Impervious Surface (Sq Ft)			Total New and Reconstructed Impervious Surfaces (Sq Ft)
	Pre-Project (if applicable)	New (Does not replace any existing impervious area)	Reconstructed (Replaces existing impervious area)	
Buildings, Garages, Carports, other Structures with roofs				
Patio, Impervious Decking, Pavers and Impervious Liners				
Sidewalks and paths				
Parking Lots				
Roadways and Driveways,				
Off-site Impervious Improvements				
Total Area of Impervious Surface (Excluding Roadways and Driveways)				-0-

Incorrect information on proposed activities or uses of a project may delay your project application(s) or permit(s).

I declare under penalty of perjury, that to the best of my knowledge, the information presented herein is accurate and complete.

Name of Owner or Agent (Please Print):	Title:
CAROLYN STEIL	OWNER
Signature of Owner or Agent:	Date:
Carolyn Steil	2.5.14

NAPA COUNTY CONSTRUCTION SITE RUNOFF CONTROL REQUIREMENTS
APPENDIX A – PROJECT APPLICABILITY CHECKLIST

Construction Site Runoff Control Applicability Checklist	County of Napa Department of Public Works 1195 Third Street, Suite 201 Napa, CA 94559 (707) 253-4351 www.co.napa.ca.us/publicworks

Project Address:	Assessor Parcel Number(s):	Project Number: *(for County use Only)*
7810 Silverado Trail Napa Valley, CA. 94558	031-050-047	

INSTRUCTIONS

Structural projects that require a building and/or grading permit must complete the following checklist to determine if the project is subject to Napa County's Construction Site Runoff Control Requirements. This form must be completed and submitted with your permit application(s). Definitions are provided in the Napa County Construction Site Runoff Control Requirements policy. **Note:** If multiple building or grading permits are required for a common plan of development, the total project shall be considered for the purpose of filling out this checklist.

DETERMINING PROJECT APPLICABILITY TO THE CONSTRUCTION SITE RUNOFF CONTROL REQUIREMENTS

- ✓ If the answer to question 1 of Part A is "Yes" your project is subject to Napa County's Construction Site Runoff Control requirements and must prepare a Stormwater Pollution Prevention Plan (SWPPP). The applicant must also comply with the SWRCB's NPDES General Permit for Stormwater Associated with Construction Activity and must provide a copy of the Notice of Intent (NOI) and Waste Discharge Identification (WDID).
- ✓ If the answer to question 1 of Part A is "No", but the answer to any of the remaining questions is "Yes" your project is subject to Napa County's Construction Site Runoff Control requirements and must prepare a Stormwater Quality Management Plan (SQMP).
- ✓ If every question to Part A is answered "No" your project is exempt from Napa County's Construction Site Runoff Control Requirements, but must comply will all construction site runoff control standard conditions attached to any building or grading permit (see Appendix D of the Napa County Construction Site Runoff Control Requirements).
- ✓ If any of the answers to the questions in Part A is "Yes", complete the construction site prioritization in Part B below.

OVER

NAPA COUNTY CONSTRUCTION SITE RUNOFF CONTROL REQUIREMENTS
APPENDIX A – PROJECT APPLICABILITY CHECKLIST

Part A: Determine Construction Phase Stormwater Requirements

Would the project meet any of these criteria during construction?

1. Propose any soil disturbance of one acre or more? ..... Yes (No)
2. Does the project propose any soil disturbance greater than 10,000 square feet?..... Yes (No)
3. Does the project propose grading, earth moving, or soil disturbance on slopes 15% or greater?..... Yes (No)
4. Does the project propose earthmoving of 50 cubic yards or more?..... Yes (No)
5. Does the project propose soil disturbance within 50 feet of a stream, ditch, swale, curb and gutter, catch basin or storm drain that concentrates and transports stormwater runoff to a "receiving water" (i.e., Waters of the State defined as all waters, including but not limited to, natural streams, creeks, rivers, reservoirs, lakes, ponds, water in vernal pools, lagoons, estuaries, bays, the Pacific Ocean, and ground water)? Yes (No)

Part B: Determine Construction Site Priority

Projects that are subject to the Construction Site Runoff Control Requirements must be designated with a priority of high, medium, or low. This prioritization must be completed with this form, noted on the plans, and included in the SWPPP or SQMP. Indicate the project's priority in one of the checked boxes using the criteria below. The County reserves the right to adjust the priority of projects both before and during construction.

Note: The construction priority does NOT change construction Best Management Practice (BMP) requirements that apply to projects. The construction priority does affect the frequency of inspections that will be conducted by County staff and associated fees.

Select the highest priority category applicable to the project.

☐ High Priority
- a) Projects with soil disturbance of one acre or greater.
- b) Projects on slopes of 30% or greater.
- c) Projects proposing new storm drains.

☐ Medium Priority
- a) Projects on slopes from 5% to 29%.
- b) Projects with soil disturbance between 10,000 sq. ft and one acre.
- c) Projects with earthmoving of 50 cubic yards or more.

☐ Low Priority
- a) Projects with soil disturbance within 50 feet stream, ditch, swale, curb and gutter, catch basin or storm drain that concentrates and transports stormwater runoff to a "receiving water".

Name of Owner or Agent (Please Print):	Title:
CAROLYN STEIL	OWNER
Signature of Owner or Agent: Carolyn Steil	Date: 2.5.14

Animal Care and Handling Facilities

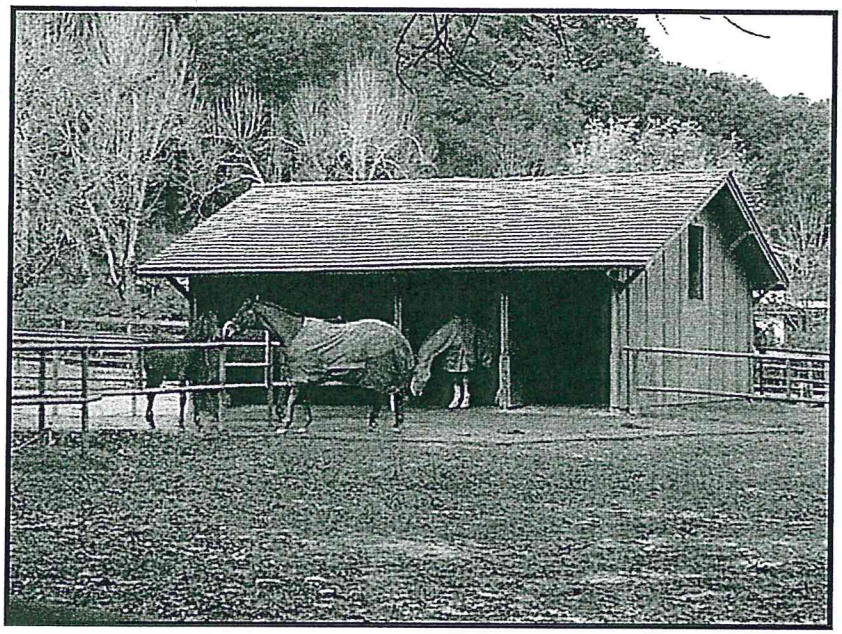

Photo Credit: Geoff Brosseau

Description

This category covers two types of animal care and handling facilities:

Small animal facilities and facilities in urbanized areas including:

- Kennels
- Veterinarians
- Racetracks

Horse keeping facilities including:

- Boarding stables
- Equestrian centers
- Small farms
- Suburban horse owners

Typically these types of facilities will have access to pasture and be near or include waterways.

This category does not include concentrated animal feeding operations (CAFO) as defined by USEPA regulations.

Pollutant Sources

The following are sources of pollutants:

- Animal washing
- Feeding / grazing
- Urine / feces and manure deposits
- Unpaved or non-vegetated areas

CASQA
California Stormwater Quality Association

Pollutants can include:

- Coliform bacteria
- Nutrients
- Sediment

Approach

Minimize exposure of rain and runoff to animal care and handling areas by using cover and containment. In and around these areas, use good housekeeping to minimize the generation of pollutants. Make stormwater pollution prevention BMPs a part of standard operating procedures and the employee training program.

Source Control BMPs

The best management practices are listed by activity or area.

Small Animal Facilities and Facilities in Urbanized Areas

- Regularly sweep and clean animal keeping areas to collect and properly dispose of droppings, uneaten food, and other potential stormwater pollutants.
- Do not hose down to storm drains or to receiving water those areas that contain potential stormwater pollutants.
- Do not allow any wash waters to be discharged to storm drains or to receiving water without proper treatment.
- If animals are kept in unpaved and uncovered areas, the ground must either have vegetative cover or some other type of ground cover such as mulch.
- If animals are not leashed or in cages, the area where animals are kept must be surrounded by a fence or other means that prevents animals from moving away from the controlled area where BMPs are used.

Horse Keeping Facilities

Site Design

- Site barns, corrals, manure storage, and other high-use areas on higher ground when possible or on the portion of property that drains away from creeks and channels. Do not site facilities or pasture on land where the slope is 30% or more.
- Locate the following areas at least 50 feet away from creeks, intermittent streams, drains, domestic wells, septic tank or leach field sites:
- Animal washing
- Arenas and riding rings
- Stalls, paddocks, and turnouts
- Pasture and equestrian courses
- Land application of manure and compost
- Locate bins and stockpiles at least 150 feet away from creeks, intermittent streams, drains, domestic wells, and septic tank or leach field sites.
- Separate barnyards, paddocks, and manure storage areas from waterways with vegetated buffers or pasture to act as a natural filter.

- Keep "clean water clean." Use grassed ditches, berms, or subsurface drains and properly sized roof gutters and downspouts to divert clean runoff around barnyard manure and sediment.
- Divert contaminated runoff from manured areas away from waterways and to low-gradient vegetated buffers.
- Construct or repair trails, arenas, roads, parking areas, ditches, and culverts to drain water but not sediment.
- Use fencing to keep horses away from environmentally sensitive areas and protect stream banks. Keep fencing and gates in good repair at all times.

Horse Access to Waterways

- Provide animals with other sources of water and shade.
- Design stream crossings to minimize erosion.
- Prevent trampling of streamside vegetation.

Grazing Management

- Focus on protecting the pasture's soil and vegetative cover. Prevent bare areas from forming.
- Establish healthy and vigorous pastures with at least 3 inches of leafy material present.
- Subdivide grazing areas into three or more units of equal size, which can be grazed in rotation.
- Clip tall weeds and old grass to control weeds and stimulate grass growth.
- Rotate animals to clean pasture when grass is grazed down to 3-4 inches.
- Let pasture regrow to 8-10 inches before allowing regrazing.
- Manage grazing so that a cover of dry residual vegetation protects soil from the first rains.
- Keep animals away from wet fields when possible.
- During heavy rainfall, consider indoor feeding.
- Use manure and soiled bedding sparingly to fertilize pastures and croplands.
- Use turnout paddocks as "sacrifice areas" to preserve pastures.

Horse Waste Management

- Clean up manure and soiled bedding regularly, especially during wet weather.
- After cleanup, during the arid summer, water the areas where horses frequently deposit manure to promote decomposition.
- Store horse waste in sturdy, insect-resistant, and seepage-free units that have an impervious surface bottom and a cover to prevent leaching and runoff, such as:
- Plastic garbage cans with lids
- Fly-tight wooden or concrete storage sheds
- Composters
- Pits or trenches lined with an impermeable layer

- Do not dump horse waste on the edge or directly into stream channels.
- Compost. Keep compost piles moist, and well aerated to promote decomposition.
- Give away composted material to local greenhouses, nurseries and botanical gardens.
- Transport manure to topsoil companies or composting centers.
- Fertilize pastures, cropland, and lawns with manure and soiled bedding. Do not apply fertilizer just before or during rainstorms.

Chemical Management

- Use Integrated Pest Management (IPM) or less-toxic methods for insect and weed control.
- Use chemical insecticides and herbicides as a last resort. Always properly store and dispose of chemical pesticides.
- Do not let horse wash water drain directly into waterways.

Treatment Control BMPs

For information on inspecting and maintaining treatment controls, see Section 4 of this Handbook.

For information on designing treatment controls, see Section 5 of the New Development and Redevelopment Planning Handbook.

More Information

Council of Bay Area Resource Conservation Districts, 1998. Horse Owners Guide to Water Quality Protection (http://www.baysavers.org/projects/equinefacilities.html).

National Marine Fisheries Service, Southwest Region, 2001. Guidelines for Salmonid Passage at Stream Crossings (http://swr.nmfs.noaa.gov/habitat.htm).

References

City of Davis, undated. Best Management Practices: BMP Facts – Pesticide Management, Partners for a Clean Davis.

City of Los Angeles, 1996. Stormwater Best Management Practices (BMPs), Horse Owners & Equine Industry, Safe Environmental Habits and Procedures for: Boarding Stables, Equestrian Centers, Small Farms, Urban Horse Owners.

Council of Bay Area Resource Conservation Districts, 1998. Equine Facilities Assistance Program Fact Sheets. (http://www.baysavers.org/projects/equinefacilities.html)

Council of Bay Area Resource Conservation Districts, 1998. Horse Owners Guide to Water Quality Protection. (http://www.baysavers.org/projects/equinefacilities.html)

King County Surface Water Management Division, 1995. Stormwater Pollution Control Manual. Best Management Practices for Businesses.
(http://dnr.metrokc.gov/wlr/dss/spcm.htm)

National Marine Fisheries Service, Southwest Region, 2001. Guidelines for Salmonid Passage at Stream Crossings (http://swr.nmfs.noaa.gov/habitat.htm).

Stanford Management Company, 1999. Recommended Best Management Practices for Management of Animal Waste, Compost and Sediment On Creeks.

With an expanding urban environment, horse owners must diligently protect water quality and present a good image to their neighbors.

What is voluntary compliance?

Both State and Federal laws set standards for handling of animal waste to provide protection of surface and underground water resources. Currently, regulatory and enforcement agencies encourage owners and managers of animal feeding or confinement operations, as well as individual horse owners, to follow a program of "voluntary compliance" to achieve these "clean water" standards without more formal regulatory action.

Voluntary compliance *means voluntarily undertaking the necessary and appropriate management practices to minimize the release of pollutants into local waters without the necessity of obtaining site-specific waste discharge requirements.* Horse owners and facility managers should evaluate the effectiveness of their existing erosion control, stormwater management, and waste management practices to minimize transport of pollutants. Voluntary compliance allows the horse community the opportunity to demonstrate responsible stewardship of natural resources while avoiding stricter enforcement of regulations. Voluntary compliance does not mean that water quality concerns can be ignored.

Council of Bay Area
Resource Conservation Districts
1301 Redwood Way, Suite 170
Petaluma, CA 94954
(707) 794-1242 X 123

Working with horse owners to protect natural resources.

Horse owners can eliminate the need for any further regulation by taking responsibility to manage horse waste, limit erosion, control stormwater runoff and protect aquatic habitat.

For more information contact:

Local Resource Conservation District (RCD):
Alameda County RCD (925) 371-0154
Contra Costa RCD (925) 672-6522
Dixon RCD (707) 678-1655
Guadalupe-Coyote RCD (408) 288-5888
Loma Prieta RCD (408) 847-4171
Marin County RCD (415) 663-1170
Napa County RCD (707) 252-4189
San Mateo County RCD (650) 712-8938
Southern Sonoma County RCD (707) 794-1242

Local USDA Natural Resources Conservation Service Office (707) 794-1242

Local U.C. Cooperative Extension office

CA Dept. of Fish and Game (707) 944-5500

S.F. Regional Water Quality Control Board (510) 622-2300

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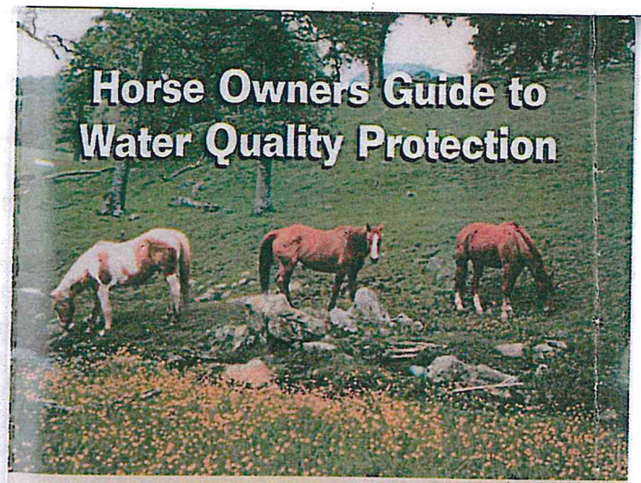
Horse Owners Guide to Water Quality Protection



Conservation practices that protect water quality at horse facilities add to a horse property's value, promote horse health, build good relations between neighbors, and discourage further regulation.

While horses contribute only a small fraction of the total pollutants entering local waterways, horse owners and facility managers bear the responsibility to minimize water pollution through:

1. Facility design and siting
2. Horse waste management
3. Stormwater runoff management
4. Pasture and paddock care
5. Protection of waterbodies

Implementation of conservation practices does not need to be costly. Often a slight change in operations will achieve the desired result. How can horse waste and erosion affect water quality? How well are you as a horse owner protecting water quality? What more can you do?

Horses in the wild may roam up to twenty-five miles a day for food, water and shelter. Their continual movement disperses manure and urine and allows for regrowth of vegetation. However, with domestic horses, thoughtful owners provide food and shelter, and, consequently, relatively large numbers of horses can be kept in a small area. If not carefully managed, horse waste and sediment from horse facilities could enter waterways or infiltrate ground water to create conditions detrimental to drinking water supplies, recreational activities, and the environment.

What can horse owners do to minimize adverse water quality impacts?

Be informed and proactive. Analyze possible water quality impacts of your operations before and during rains. Learn how to perform simple water quality monitoring tests. Implement conservation practices if necessary. Carefully consider potential water quality problems before expanding your facility. Schedule a workday at your stables to install roof gutters, improve drainage channels, set up a new manure storage system, or revegetate a creek. Volunteer to maintain public trails. Encourage your friends and horse clubs to do the same.

Remember, any complaint about horses reflects on all horse owners. Realize that not everyone loves horses. Consider yourself an ambassador for horses by good stewardship of land and water resources. Care of natural resources in your local area will initiate an expanding ripple.

How can horse waste impair water quality?

Although horse wastes (manure, urine and soiled bedding) are organic, biodegradable materials, many of their biological and chemical properties can be detrimental to fish, insects, and other aquatic life if those wastes get into local waterbodies.

All aquatic life depends on the small amount of **dissolved oxygen** that naturally exists in water. The atmosphere contains 20% oxygen, but water saturated with oxygen contains only 11 parts per million (ppm) at 50°F, and even less, 9 ppm, at 70°F. The addition of any decomposable organic material to water stimulates the growth of aerobic bacteria that break down, or consume the organic matter. The respiratory demand of the resultant bacterial population can become large enough to overwhelm the water's oxygen dynamics, leaving little or no dissolved oxygen for other aquatic life.

Many of the **nutrients** ingested by animals, not just horses, return to the environment in feces and urine. On land, moisture and atmospheric oxygen support the bacterial conversion of these wastes to nutrients available for plants. However, when carried by stormwater runoff to streams and lakes, excessive amounts of these same nutrients can stimulate unwanted **algae blooms**. Algae produce oxygen by photosynthesis, but only during sunny times of the day do they produce more oxygen than they consume. Thus, algal respiration, like the bacterial decomposition of organic material, uses up dissolved oxygen in water.

Ammonia is an intermediate byproduct of bacterial conversion of urea, a principal constituent of urine and other nitrogenous materials excreted by animals. A very small amount of ammonia dissolved in water can kill fish. State, Federal, and international criteria recognize that waters which support a balanced population of fish and aquatic life have an almost undetectable un-ionized ammonia concentration of 0.025 parts per million or less.

Salts contained in all animal waste do not breakdown, and can be carried by rain runoff into local surface and ground waters. The presence of salts in soils of animal confinement areas can increase the salt load to local streams, limiting the species of fish, amphibians, and invertebrate life.

Bacteria and viruses in horse manure rarely cause health problems for people. The potential for spread of disease to other horses, or susceptible wildlife species may be of concern.

How does erosion affect water quality?

Activities, such as heavy grazing or trampling, that remove the soil's vegetative cover and thus expose the soil surface to the energy of raindrops, water runoff, and wind, accelerate the natural process of erosion. Once mobilized into a stream, excessive sediment can fill pools, smother fish spawning beds, cover or obscure food supplies, reduce the amount of sunlight reaching aquatic plants, increase water temperature, and clog fish gills. In addition, heavy metals and other toxic contaminants can temporarily bind to sediments and be carried along into water.

CONSERVATION PRACTICES FOR HORSE OWNERS

A conservation practice *is any activity that improves, protects or restores a natural resource.*

To implement conservation practices that protect water quality:

1. Identify the source of pollution

2. Determine how pollutants reach the water

3. Select a conservation practice, or a combination of practices, to cost effectively reduce the adverse impact to water quality

4. Monitor and evaluate its effectiveness in achieving the desired result

5. Make any necessary changes based on the evaluation

Horse owners should consider the following points to protect water quality:

Horse Waste Management

Clean up manure and soiled bedding on a regular basis, especially during wet weather, to limit seepage of salts and nutrients into ground water or runoff of manure into waterbodies.

After clean up, during the arid summer, use a bucket, hose or sprinkler to water areas where horses frequently deposit manure. Watering maintains the moist environment bacteria need to decompose residual waste.

Store horse waste on an impervious surface (a concrete pad or plastic tarp) and under cover (a roof or tarp) during rains to prevent leaching or runoff of contaminants. Locate storage areas away from waterways so that floods or runoff will not wash away waste. Do not dump horse waste on the edge or directly into stream channels.

Disposal fees are expensive. Manure composts into an excellent soil amendment. Perhaps neighbors or local gardeners will want your raw material. Keep compost piles moist and well aerated to aid in conversion of urea and ammonia compounds to more useable, and less toxic nitrates. Be innovative and establish a disposal solution rather than create a disposal problem.

Facility Siting

Keeping horses close to streams, in flood-prone areas, or on steep hillsides increases the potential for the runoff of manure and sediment. One does not always have an ideal site, given the constraints of topography, soil, rainfall patterns or existing structures; but conscientious management can often offset site shortcomings. New facilities should be sited and designed to address water quality concerns. Work to upgrade existing facilities.

Stormwater Runoff Management

- Keep "clean water clean." Use grassed ditches, berms, or subsurface drains to divert "clean" runoff around barns, manure storage areas, and paddocks.
- Install and maintain a system of properly sized roof gutters, downspouts, and drains to prevent "clean" roof water from becoming "contaminated" by mixing with barnyard manure and sediment.
- Divert "contaminated" runoff from manured areas away from waterways and to low-gradient vegetated buffer areas.
- Separate barnyards, paddocks, and manure storage areas from any waterway with buffer strips of vegetation to filter sediments and absorb nutrients in runoff.
- Construct or repair trails, arenas, roads, parking areas, their associated ditches, and culverts to drain water in a non-erosive manner.
- With a little training, horse owners can use simple water quality test kits to monitor their operations.
- Additional benefits of runoff management include a drier barnyard, a healthier horse environment, and better working conditions.

Pasture and Paddock Care

Vegetation protects water quality by slowing the rate of stormwater runoff, which increases absorption into soil, increases bacterial conversion of toxic or consumptive constituents, and lessens the risk that soil and manure solids will be carried into streams.

Grazing Management - Maintain pasture productivity by controlling the number of horses and the amount of time they spend on a pasture. In most cases, pastures provide an exercise area and not the primary food source. For this reason, pasture management should focus on protecting the pasture's soil and vegetative cover. Prevent bare areas from forming. Allow grass time for regrowth. Cross fence to divide pastures into smaller areas, which can be grazed in rotation. Inexpensive and moveable, electric fencing works well to define grazing areas. During the growing season, graze grass to a height of 3-4 inches and allow regrowth to 6-8 inches before returning horses to the pasture. Manage grazing so that a cover of dry residual vegetation protects soil from the first rains.

Soil Compaction - A porous soil improves plant vigor by allowing the infiltration of water, air, and nutrients. Hoof impact and machinery operation on water saturated land compact soil particles and cause loss of porosity.

Paddocks as a Sacrifice Area - Use turnout paddocks as "sacrifice areas" to preserve pastures. This strategy reduces churning and compaction of wet soils, and overgrazing when pastures require rest. If possible, locate paddocks back from waterways; and avoid swales where overland flows can wash away bare soil or manure. Maintain a vegetated border around paddocks to help filter contaminants. Be sure paddocks provide horses with adequate exercise room.

Protection of Waterbodies

Riparian Buffer Strips - Protect or restore a vegetated riparian (streamside) corridor with grass, trees, shrubs and/or groundcover to filter sediments and horse waste, stabilize streambanks, reduce solar heating of the water, and enhance aquatic habitat.

Limit Horses Access to Waterways - Provide other sources of water and shade. The direct deposit of manure into water can harm aquatic life. Trampling physically breaks down streambanks and destroys vegetative cover, which can increase sedimentation. The loss of streamside vegetation may also result in excessive solar heating of the water, which can harm cold water fish. Design stream crossings to minimize erosion. Exclusionary fencing and seasonal grazing of riparian corridors are possible management choices.

Protect Small Tributaries - Ditches and drainage swales carry a large amount of rain runoff. These tributaries also require vegetation to filter sediment and reduce the erosive energy of water. Fencing may be necessary to exclude horses from these smaller waterways.

Wetlands naturally filter contaminants from water and provide excellent wildlife habitat. Protect wetlands from grazing and trampling during the rainy season.

Chemicals in horse grooming and health products, detergents, disinfectants, herbicides, and pesticides can harm aquatic life. Follow instructions for correct application. Minimize use whenever possible. Be careful to avoid direct application or airborne transport of sprays to waterbodies. Do not let horse wash water drain directly into waterways.