

Equestrian Property Best Management Practice Checklist



June 2012

**Mission Resource Conservation District
&
The County of San Diego**

Introduction

In February 2001, San Diego County adopted the Watershed Protection, Stormwater Management, and Discharge Control Ordinance. The goals of this ordinance include protecting the health, safety and general wellbeing of the residents of San Diego County, protecting water resources, improving water quality, and increasing the use of best management practices by the County and its residents. Best Management Practices (BMPs) are methods that have been proven to be the most efficient and simple to achieve a desired goal (such as reducing water pollution).

Water pollution comes from one of two sources, point source and non-point source. Point source pollution is the easiest to identify and regulate as it originates from one particular point (typically an industrial business illegally dumping pollutants into waterways). The Environmental Protection Agency strictly regulates point source pollution and it is slowly being eliminated. As opposed to point source pollution, non-point source pollution does not originate from one place, but comes from many places and is carried by stormwater runoff into our water system through storm drains, irrigation ditches, streams, and rivers. Non-point source pollution includes trash left in gutters, eroding slopes and banks, motor oil spilled on roads and driveways, excess pesticides and fertilizers used on lawns, gardens and agricultural operations, and manure from farm animals. Non-point source pollution can even come from rooftops and parking lots.

This checklist can be used on equestrian properties to help identify areas where BMPs are already in place and other areas where BMPs could be installed or implemented to help reduce the amount of nutrients, sediment, pesticides, oil, and pathogenic organisms on the property from entering the local waterways.

How To Use This Checklist

This checklist is a self-assessment tool that can be used by equestrian property owners and managers to identify likely areas on their properties that can be addressed to maximize the health and safety of their horses and animals as well as reduce the possibility of contaminants impacting the water quality in local waterways.

A Table of Contents that outlines the sections and contents of this checklist can be found on Page iii this introductory section. Have this checklist with you as you walk around your horse property. The purpose of this checklist is to help property owners and managers view their properties with a new perspective. Each question can be marked with a “Yes”, “No” or “N/A” (Not Applicable). For most of the questions (but not all!), a “No” answer indicates that that topic can be reassessed for the installation of an appropriate Best Management Practice (BMP). A “No” answer does not necessarily signify that contaminants are leaving the property, but the topic should be further investigated. A brief explanation is included for each topic to explain how the questions in that section relate to water quality or horses’ health and safety. A list of applicable BMPs is also included for each topic. For more information about the listed BMPs, as well as instructions on installing and implementing the BMPs correctly, please refer to the Resources section on the next page and contact either Mission RCD or NRCS.

Resources

For more information on any of the listed Best Management Practices in this checklist or for technical help for your property, the following non-regulatory agencies can provide assistance for equestrian, agricultural or residential properties. Mission RCD and NRCS also provide free comprehensive Nutrient Management Plans for equestrian properties that are specifically designed for each property.

Mission Resource Conservation District (Mission RCD)

1588 S. Mission Road, Suite 100
Fallbrook, CA 92028
Phone (760) 728-1332
Fax (760) 728-1331
www.missionrcd.org

Natural Resources Conservation Service (NRCS)

332 S. Juniper Street, Suite 110
Escondido, CA 92025
Phone (760) 745-2061
Fax (760) 745-3210

UC Cooperative Extension's Farm and Home Advisor's Office (UCCE)

9335 Hazard Way, Suite 201
San Diego, CA 92123
Phone (858) 694-2845

151 E. Carmel Street
San Marcos, CA 92078
Phone (760) 752-4724
cesandiego@ucdavis.edu

A record keeping system is available from UC Cooperative Extension – County of San Diego at <http://cesandiego.ucdavis.edu>. Go to “Ag Water Quality Research and Outreach” (this is a tab under “Additional Projects” at the top of the homepage) and then click on “Grower Resources”.

Acknowledgments

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This checklist includes content from the UC Cooperative Extension – County of San Diego's “Runoff and Nonpoint Source Pollution Self-Assessment: Animal Agriculture”.

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I) Property Management

A. Property Location	Yes	No	N/A
1. Is the property located away from waterways, including creeks, rivers, lakes, lagoons, and bays?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
When a property is close to a natural or man-made waterway there is a greater potential for contaminants (including chemicals, manure, pesticides and motor oil) to enter the waterways and pollute water quality. Non-stormwater discharge into a waterway is prohibited.			
<u>Best Management Practices:</u>			
All of the following BMPs in the checklist are appropriate for an equestrian property, regardless of the property's proximity to a drainage or waterway.			
B. Vehicles and Equipment	Yes	No	N/A
1. Are vehicles/trucks/tractors regularly maintained to detect and prevent fluid leaks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are vehicle spills and leaks properly and promptly cleaned up?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are the collected fluids and solids from vehicle maintenance properly recycled or disposed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are maintenance and storage areas located away from drainages, stormdrains and other waterways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are the maintenance and storage areas frequently cleaned to avoid the buildup of fluid and solids buildup?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Does the water from washing the vehicles remain on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Are fuel tanks and nozzles inspected frequently and maintained to prevent leaks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are fuel tanks and nozzles stored away from waterways and drainages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Are retired vehicles, storage tanks and other equipment drained of all fluids or removed from the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
The chemicals and solid waste from maintenance and usage of the property vehicles and equipment can pollute water in the local waterways.			
<u>Best Management Practices:</u>			
<ol style="list-style-type: none"> a. Regularly maintain vehicles. b. Promptly and properly clean up spills or leaks. c. Properly recycle or dispose of fluid or solid waste. d. Do not store vehicles or equipment near drainages or other waterways. e. Frequently clean vehicle maintenance or storage areas. f. Use sacrifice areas (with permeable surface) to wash vehicles. g. Fuel tanks and nozzles are inspected and maintained frequently to prevent leaks. h. Fuel tanks and nozzles are stored away from drainages and other waterways. i. Drain all fluid from retired equipment or remove from property to avoid leaks. 			

C. Chemicals	Yes	No	N/A
1. Are all chemicals (oil, pesticides, medications, fertilizers, herbicides, fuel, etc) properly labeled?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are all chemicals stored in closed containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are all chemicals stored under cover?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are all chemicals stored off the ground?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are all chemicals properly disposed of according to label directions and regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are spill clean up materials and equipment available for all potential chemical spills?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p data-bbox="243 619 617 661"><i>Why is this topic important?</i></p> <p data-bbox="243 661 1429 735">If chemicals from the property are not stored or disposed of properly, they have a high potential of impacting water quality.</p> <p data-bbox="243 735 617 777"><u>Best Management Practices:</u></p> <p data-bbox="243 777 1461 850">a. Store chemicals in tightly closed, labeled containers under cover (to protect from rain, sun and wind damage) and off of the ground.</p> <p data-bbox="243 850 1331 892">b. Properly dispose of all chemicals according to label directions and applicable regulations.</p> <p data-bbox="243 892 1429 966">c. Make sure that clean up materials and equipment are appropriate for all potential spill types and sizes.</p>			
D. Solid Waste and Debris (not including manure)	Yes	No	N/A
1. Is the property kept clean of solid waste and debris (other than manure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there a sufficient number of waste containers for the waste that is regularly collected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Does each waste container have its own lid?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are waste containers filled so that they never overflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are the waste containers frequently checked for leaks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Are the waste containers stored away from waterways and drainages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p data-bbox="243 1459 617 1501"><i>Why is this topic important?</i></p> <p data-bbox="243 1501 1266 1543">Solid waste also impacts water quality, degrades wildlife habitat and can harm wildlife.</p> <p data-bbox="243 1543 617 1585"><u>Best Management Practices:</u></p> <p data-bbox="243 1585 941 1627">a. Clean the property frequently to remove all solid waste.</p> <p data-bbox="243 1627 1201 1669">b. Do not store the waste in containers that are overflowing and do not have lids.</p> <p data-bbox="243 1669 1104 1711">c. Frequently make sure that the containers are not cracked or can leak.</p> <p data-bbox="243 1711 974 1753">d. Locate the containers away from waterways and drainages.</p>			

E. Restrooms	Yes	No	N/A
1. Are there a sufficient number of restrooms or portable sanitation stations available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the restroom toilets and floor and sink drains properly connected to the municipal sewer or a septic system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are the portable sanitation stations regularly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are the septic tank and leach field properly maintained and inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the portable sanitation station located away from waterways and drainages?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
By properly locating, maintaining and constructing restrooms and portable sanitation stations, human waste and sewage can be prevented from entering waterways and polluting surface and groundwater.			
<u>Best Management Practices:</u>			
<ul style="list-style-type: none"> a. Have enough restrooms or portable sanitation stations for the number of people on the property. b. Properly connect the toilets and floor and sink drains into the sewer or septic system. c. Regularly maintain portable sanitation stations to prevent leaks and overflow. d. Properly maintain and frequently inspect the septic tank and leach field. e. Locate the portable sanitation station away from waterways. 			
F. Animal and Mortality Management	Yes	No	N/A
1. Are the number of animals on the property in compliance with local zoning permits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are animal carcasses removed from the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Not exceeding the number of animals allowed by the zoning permits helps minimize potential water pollution. Mortality management is important as burying a dead animal, especially if it is buried near a drainage or waterway, can impact water quality as the carcass begins to decompose. Disease organisms can also enter the waterways and compromise public and wildlife health. Sink holes can also result from decomposing buried large animals.			
<u>Best Management Practices:</u>			
<ul style="list-style-type: none"> a. Check with the local zoning permits to find out how many animals can be on the property and do not exceed that number of animals. b. Dead animals should be removed from the property using a rendering service. 			
G. Record Keeping	Yes	No	N/A
1. Is there a record keeping system in place for water quality issues (such as chemical application dates, septic system maintenance log, vehicle and equipment maintenance log)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
It is important to keep track of all activities on the property that could impact water quality, to help minimize the potential for polluting local waterways.			
<u>Best Management Practices:</u>			
<ul style="list-style-type: none"> a. Develop a record keeping system that would encompass activities that could impact water quality (UCCE has a record keeping system available, please see the Resources section). b. Maintain the record keeping system. 			

II) Stormwater Runoff Management

A. Diversions	Yes	No	N/A
1. Is roof runoff diverted so that it does not flow across contaminated areas such as animal holding areas, parking areas, and manure storage areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is roof runoff diverted so that it is directed into pervious areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is roof runoff diverted so that it is directed into collection ponds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is roof runoff diverted so that it is directed into natural waterways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is stormwater runoff diverted around contaminated areas or areas vulnerable to erosion using diversions that are sized properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is stormwater runoff diverted around contaminated areas or areas vulnerable to erosion using diversions that are sloped properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is stormwater runoff diverted around contaminated areas or areas vulnerable to erosion using diversions that are surfaced properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are stormwater runoff diversions constructed and placed so that they cannot harm horses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Diverting stormwater around contaminated areas greatly reduces the potential for stormwater to pick up pollutants and impact water quality. Diverting stormwater around areas that are vulnerable to or have experienced erosion greatly reduces the erosion potential and helps the soil maintain its integrity.			
<u><i>Best Management Practices:</i></u>			
<ul style="list-style-type: none"> a. Divert roof runoff around contaminated areas. b. Divert roof runoff into pervious areas, collection ponds or to natural waterways. c. Roof runoff can be collected and diverted using gutters and downspouts. d. Diversions, such as berms, ditches, and underground pipes, must be properly sized, sloped and surfaced (if open channels). e. Gutters and pipes should be located out of the reach of horses or protected with PVC. 			
B. Culverts	Yes	No	N/A
1. Are culverts (closed pipes crossing under roads) placed in appropriate locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are culverts installed according to engineering specifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Culverts direct the flow of stormwater runoff and can help with maintaining access to portions of the property in the rainy season.			
<u><i>Best Management Practices:</i></u>			
a. Culverts should be installed in locations decided by and according to specification from an engineer to maximize efficiency.			

C. Underground Outlets	Yes	No	N/A
1. Are underground outlets (underground, closed pipes that do not cross under a road) placed in appropriate locations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are underground outlets installed according to engineering specifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Do underground outlets have properly installed and protected inlets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do underground outlets have BMPs in place to prevent soil erosion at outlet location?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are underground outlets frequently maintained to keep free of debris?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
If underground outlets are not properly located and installed according to engineering specifications, stormwater flows can cause erosion and pollute water quality in local waterways.			
<u>Best Management Practices:</u>			
a. Underground outlets are placed in locations where they will not cause erosion and will be most effective at collecting and discharging stormwater.			
b. Underground outlets are installed according to engineering specifications to maximize			
c. Properly locating and installing inlets will maximize effectiveness			
d. Inlets should be protected with screens or debris racks to prevent clogging during rain events.			
e. Using lined waterways, cover crops, vegetated waterways, and rock riprap can prevent soil erosion at the outlet location.			
f. Frequently maintaining and clearing the underground outlet will help prevent clogging during rain events.			

D. Lined Channels	Yes	No	N/A
1. Are lined channels (drainages that are usually manmade, open, and lined with an impervious surface) the appropriate size for the maximum volume of water during storm events?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are lined channels appropriately sloped to minimize flow velocity as well as the potential for flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are lined channels surfaced properly to help slow velocity, prevent flooding and erosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Lined channels help control stormwater runoff and can greatly minimize the potential of stormwater collecting pollutants, as the lined channels can be used to divert stormwater around vulnerable or contaminated areas.			
<u>Best Management Practices:</u>			
a. Lined channels should be constructed to hold the maximum possible volume of water from large storm events.			
b. Lined channels should be sloped to minimize flow velocity, while moving enough water volume downhill during storm events to eliminate flooding.			
c. Lined channels should be lined with material that will protect the channel's sides and bottom from erosion and help slow the water velocity.			

E. Open Channels	Yes	No	N/A
1. Are the open channels (drainages that are usually naturally occurring, unlined and typically have either bare soil or vegetated sides and bottoms) maintained regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the open channels vegetated with native plants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Do the open channels have either no erosion potential or have had engineered stream bank protection practices installed to prevent erosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Open channels are critical for effectively moving stormwater downhill during storm events. Vegetating the channels' sides and bottoms will help prevent soil erosion and maintain the integrity of the channel and maximize its effectiveness as well as protecting the water quality in local waterways.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Regularly maintaining the open channels, which includes clearing debris and trimming existing vegetation, will help prevent stormwater from being blocked and flooding the channels' banks and surrounding area.</p> <p>b. Channels that have been vegetated with native plants will most likely need less maintenance as channels that are vegetated with non-native, potentially invasive plants.</p> <p>c. Open channels that have high erosion potential should have engineered practices, such as bank stabilizers, installed to help prevent scouring and erosion.</p>			
F. Sediment Control Basins	Yes	No	N/A
1. Are sediment control basins located where they will be most effective?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are sediment control basins installed according to engineering specifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are sediment control basins maintained frequently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are all sediment control basin locations known?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Sediment control basins collect sediment that would otherwise enter waterways and negatively impact water quality and wildlife habitat.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Sediment control basins are located in the site where they will be most effective.</p> <p>b. Sediment control basins are installed according to engineering specification to ensure maximum effectiveness.</p> <p>c. Sediment control basins are maintained frequently to ensure maximum effectiveness.</p>			

III) Stormwater Runoff Management

A. Non-stormwater Runoff	Yes	No	N/A
<p>1. Does all non-stormwater runoff, including irrigation and wash water, remain on the property?</p> <p><i>Why is this topic important?</i></p> <p>All non-stormwater runoff (all runoff during dry weather) must remain on the property and cannot enter storm drains, natural drainages, or other conveyances and cannot be discharged onto public streets and roads.</p> <p><u>Best Management Practices:</u></p> <p>a. Diverting and controlling non-stormwater runoff to areas on the property with pervious surfaces (allowing infiltration into the ground) or to collection ponds will keep non-stormwater runoff on the property.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV) Erosion Management

A. Access Roads	Yes	No	N/A
<p>1. Are access roads surfaced?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>2. If the access roads are not surfaced, are they located on soils that have a low erosion potential?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>3. Are the access roads slightly higher in the middle so that water flows to either side or are they sloped to one side?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>4. Are the access roads at a gradient that does not cause soil erosion?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>5. Are erosion control best management practices, including rolling dips and water bars, incorporated into the access roads to prevent soil erosion?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>6. Are access roads used during wet weather conditions?</p> <p><i>Why is this topic important?</i></p> <p>Access roads, if not properly surfaced, graded and sloped, can cause erosion as stormwater runoff flows can be improperly concentrated and areas vulnerable to erosion can be compromised.</p> <p><u>Best Management Practices:</u></p> <p>a. Access roads that are surfaced, if the road is graded and shaped properly, are less likely to experience erosion problems than roads that non-surfaced, unless the non-surfaced roads are located on soil that has a low erosion potential.</p> <p>b. Access roads should be shaped and graded according to Natural Resources Conservation Service's specifications to help minimize erosion potential.</p> <p>c. Erosion control practices, including rolling dips, culverts, and water bars, can be installed on access roads to minimize erosion potential. These practices have been established by the Natural Resources Conservation Service.</p> <p>d. Any stormwater runoff that is diverted using erosion control practices should avoid septic leach fields and areas that could contaminate the stormwater runoff.</p> <p>e. If roads are used during wet weather conditions, disturbance of the soil should be minimized to reduce erosion potential.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Mulching	Yes	No	N/A
1. Have areas that are vulnerable to erosion, such as access roads, slopes, and exposed soil, been identified on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are areas that are vulnerable to erosion mulched to help prevent erosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Mulching is an extremely effective BMP to help reduce erosion potential and control erosion in impacted areas.</p> <p><u><i>Best Management Practices:</i></u> a. Mulch, on areas vulnerable to erosion, can consist of gravel, wood chips, shavings or straw. Gravel and wood chips are usually used on roads and other heavy use areas, while wood chips, shavings and straw are usually used on slopes.</p>			
C. Critical Area Planting	Yes	No	N/A
1. Are any areas that are vulnerable to erosion appropriate for planting vegetation? This usually can be done on slopes and other areas that are not used frequently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If these areas are planted and irrigated, will the irrigation runoff leave the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Planting critical areas, areas that have a high erosion potential, is an excellent BMP for minimizing and controlling erosion.</p> <p><u><i>Best Management Practices:</i></u> a. Appropriate species of plants, such as native grasses or non-invasive ground cover species, can be used to control erosion on vulnerable areas. b. If irrigation will be used to maintain the critical area planting effort, the irrigation runoff must not leave the property and should be diverted into an area with a pervious surface or into a collection pond.</p>			
D. Heavy Use Area Protection	Yes	No	N/A
1. Are areas that receive heavy use (areas with frequent use and a high compaction rate, such as corrals, stalls and walkways) protected against erosion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Areas that receive frequent use often have a high erosion potential as the soil is exposed. Protecting these areas will help minimize the erosion potential and protect water quality in local waterways.</p> <p><u><i>Best Management Practices:</i></u> a. Shavings and sand (in areas where horses will not be eating) can be used to protect heavy use areas.</p>			

E. Filter Strips	Yes	No	N/A
<p>1. Is the stormwater runoff velocity slowed down before it reaches areas that have a high erosion potential through the use of filter strips (either vegetation or mulch)?</p> <p><i>Why is this topic important?</i></p> <p>Slowing stormwater runoff velocity can help minimize erosion potential in areas vulnerable to erosion. Filter strips can slow the runoff and help disburse the water's energy.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Appropriate vegetation (such as sedges or other non-invasive plants) and mulch can be used as filter strips to help slow down stormwater runoff before it reaches areas that are vulnerable to erosion.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F. Diversions

Please see Section II) Stormwater Runoff Management, Part A. Diversions to learn how diversion BMPs can be used to help control erosion.

V) Manure Management

A. Removal Schedule	Yes	No	N/A
1. Is the manure regularly removed from areas where the animals are kept, such as corrals and stalls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Manure contains nutrients and other contaminants that can be carried in stormwater runoff into waterways and pollute water quality.			
<u>Best Management Practices:</u>			
a. Regularly removing manure from areas where animals are kept decreases the possibility that stormwater runoff will carry nutrients and other contaminants into the local waterways.			
b. Removal frequency may be influenced by weather conditions as manure may need to be removed more often during wet weather conditions than dry weather conditions.			
B. Storage	Yes	No	N/A
1. Is the manure and bedding piled before it is removed from the property or disposed of using an alternative method?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If the manure is piled before removal or another end use, is it piled away from drainages, stormdrains, culverts and other waterways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are there stormwater runoff diversions, such as berms, in place to direct stormwater around the areas where manure and bedding is piled?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are manure and bedding piles covered with an impervious material (such as a tarp)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Manure contains nutrients and other contaminants that can be carried in stormwater runoff into waterways and pollute water quality.			
<u>Best Management Practices:</u>			
a. If manure and bedding are piled before removal from the property or another end use, the piles should be located away from any drainages or waterways.			
b. Berms and other diversion practices should be used to direct stormwater runoff around manure and bedding piles.			
c. Covering manure and bedding piles with tarps or other impervious materials helps prevent nutrients and other contaminants from being washed away with the stormwater runoff.			

V) Manure Management continued on the next page.

C. End Use or Removal	Yes	No	N/A
1. Is the manure removed from the property (hauled to a landfill or other facility)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is the manure not removed from the property but disposed of using another method, such as composting, applying it to the land or giving it away?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. If the manure and bedding end use is to either pile it indefinitely or compost it, is the end use location situated away from drainages and waterways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are there diversion practices in place to redirect stormwater runoff around the areas where the manure and bedding is either piled or being composted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If the manure and bedding are applied to the land as a disposal method, are the correct amounts being applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If the manure and bedding are applied to the land as a disposal method, are the application areas rotated on a regular basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Why is this topic important?

Manure and bedding contains nutrients and other contaminants that can pollute water quality if they enter the waterways via stormwater runoff. Either hauling the manure away or disposing of it using another method will ensure that the water quality and public health are not impacted.

Best Management Practices:

- a. Manure and bedding disposal methods include hauling it away to a landfill, composting it, giving it away and, in some cases, applying it to the land.
- b. Stormwater should be diverted around areas where manure and bedding are piled or being composted to avoid contaminated stormwater runoff. Diversion practices include berms, water bars and culverts.
- c. If the manure is to be applied to the land, recommended amounts are specified by the Natural Resources Conservation Service on a site specific basis.
- d. NRCS also recommends rotating the application areas on a site specific basis.

VI) Pasture Management

A. Mud Management	Yes	No	N/A
1. Are pastures areas sectioned into smaller pastures instead of one large pasture?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are there sacrifice areas (areas that have pervious surfaces, but are not used for pasture) established on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is stormwater runoff diverted around areas prone to mud and high soil moisture levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are bare spots reseeded or managed in any manner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. On walkways or other areas where horses will not be eating, but may be standing, are footing materials, such as chipped wood, gravel, cement pads or other minimally absorptive materials used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is manure removed on a regular basis from where the animals are kept?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Mud not only poses a threat to water quality, if it is carried away by stormwater runoff, but it is unhealthy for horses and other animals.			
<u><i>Best Management Practices:</i></u>			
a. Using fences to section off pastures allows animals to be kept out of areas with high soil moisture during vulnerable periods (such as during wet weather conditions).			
b. Sacrifice areas, areas that will not be used for pasture or rangeland, should be located on high ground (out of stormwater runoff pathways) and close to the barn for efficiency and convenience.			
c. Sacrifice areas should be well drained and can be constructed using gravelly soil or stone aggregate that is topped with finer stone dust.			
d. Sacrifice areas should be bordered by vegetation buffers that will filter nutrients and sediment from stormwater runoff.			
e. Diverting stormwater runoff around and away from areas that are prone to mud will help minimize muddy areas.			
f. Stormwater runoff diversions include French drain lines, underground drains, diversion terraces, water bars, swales, grassed waterways and ditches.			
g. Reseed bare spots and rest the seeded areas (remove animals from this area) until the plants are established and the bare spot is gone.			
h. Footing material, minimally absorptive footing, can be used in areas that receive frequent foot or hoof traffic.			
i. For areas where animals will be walking, footing material includes chipped wood, gravel, crushed stone no larger than 5/8 inch, and sand (where horses will not be eating).			
j. For areas where only humans will walk, footing material includes cement pads, mulched tree trimmings and other materials.			
k. Manure, with its organic and moisture content, can easily exacerbate a muddy situation and should be removed frequently from areas where animals are kept.			

B. Grazing and Resting Pastures

Yes No N/A

1. Is there one large grazing area?

2. Are areas allowed to be rested (not grazed)?

Why is this topic important?

Pastures that are overgrazed have a higher potential for problems, such as mud conditions and erosion. By moderating the grazing time and resting pasture sections, a pasture will be less likely to be overgrazed and impact the animals' health and the water quality in waterways.

Best Management Practices:

a. Dividing a pasture into sections, based on soil moisture levels, as well as including a sacrifice area for horses to be kept part of the time, will allow plants time to recover from compaction and grazing pressures.

b. Rotating pasture use by moving animals on a regular basis and excluding the animals from vulnerable areas during wet weather conditions will increase the health of the pastures.

C. Irrigation in Pastures

Please see Section VII) Irrigation Management to learn how irrigation management can be utilized in pasture management.

VII) Irrigation Management

A. Irrigation System	Yes	No	N/A
1. Is the irrigation system designed so that the spray pattern of the sprinklers distributes water uniformly in the landscaped areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is the irrigation system designed so that the spray pattern of the sprinklers distributes water uniformly in the corrals and pastures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has the irrigation system been assessed for worn, outdated, and inefficient equipment that can be replaced?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are pressure regulators utilized in the irrigation system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the irrigation system checked for leaks and maintained regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is the irrigation system flushed and managed for clogs and blockages regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Does the irrigation water runoff leave the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
An irrigation system with high distribution uniformity will use less water to irrigate the same area than an irrigation system with low distribution uniformity. Regularly examining and maintaining the system will also help conserve water.			
<u>Best Management Practices:</u>			
a. An irrigation system that is designed so that the sprinklers are placed where the spray pattern distributes water evenly will use less water than an irrigation system with low distribution uniformity. Uneven spray patterns can lead to muddy areas and areas that do not receive enough water and stress plants.			
b. Replacing outdated, worn and inefficient irrigation equipment can help increase distribution uniformity.			
c. Pressure regulators can help increase distribution uniformity.			
d. Repairing leaks and removing clogs from the irrigation system will increase distribution uniformity. Regularly examining the system for leaks and flushing it for clogs is recommended.			
e. Diverting and controlling irrigation runoff to areas on the property with pervious surfaces (allowing infiltration into the ground) or to collection ponds will keep non-stormwater runoff on the property.			
f. Having the irrigation system evaluated by Mission Resource Conservation District or another organization will help the property owner know the irrigation system's distribution uniformity and the best management practices that can be applied to that specific system to increase the system's distribution uniformity.			

B. Water Source	Yes	No	N/A
1. Is the irrigation water from a municipal water source?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is the irrigation water from a well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is the irrigation water from a reservoir on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Has the irrigation water been tested so that important parameters, such as nitrogen and salinity, are known?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If well water or water from a reservoir is used to irrigate, is the water tested regularly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Knowing the quality of the irrigation water will help determine what, if any, fertilizers are needed to maximize plant health and to minimize over applying fertilizers.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Regularly test irrigation water, if it is from a well or reservoir, to know the water quality and nutrient, pH, EC and salinity amounts to properly manage for maximum plant health.</p>			
G. Record Keeping	Yes	No	N/A
1. Is there a record keeping system in place for irrigation management?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> It is important to keep track of all activities on the property that could impact water quality, to help minimize the potential for polluting local waterways.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Develop a record keeping system for irrigation management, such as the irrigation schedule, repair and maintenance log and water quality test results (UC Cooperative Extension has a record keeping system available for download, please see the Resources section for more information).</p> <p>b. Maintain the record keeping system.</p>			

VIII) Pest Management

A. Pest Plants	Yes	No	N/A
1. Are toxic, invasive or pest plants present on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have the problem plants been accurately identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have pest plant management methods included Integrated Pest Management or biological controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If chemical control has been used, have low toxicity or non-toxic chemicals been used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If chemical control has been used, has it been conducted in weather conditions recommended on the application label?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If chemical control has been used, was the irrigation schedule taken into consideration before, during and after the chemical application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Pest plants can be harmful to the health of the animals, can cause waterways to become clogged with vegetation and plant debris and can be detrimental to wildlife.			
<u><i>Best Management Practices:</i></u>			
a. Pest plants should be monitored according to monitoring protocols specific for the pest species.			
b. If a pest plant identity is unknown, a professional should be contacted for accurate identification in order to know the most effective method of treating and managing the problem plant.			
c. Integrated Pest Management and biological controls are environmentally friendly pest management methods for pest plants.			
d. Chemical applications for pest plant control should be conducted strictly according to the directions on the chemical's label.			
e. Chemical applications should take irrigation schedules into consideration so that chemicals are not applied before irrigation sessions or too soon after an irrigation session has ended.			

VIII) Pest Management continued on the next page.

B. Pest Insects	Yes	No	N/A
1. Are toxic, invasive or pest insects present on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have the problem insects been accurately identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have pest insect management methods included Integrated Pest Management or biological controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If chemical control has been used, have low toxicity or non-toxic chemicals been used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If chemical control has been used, has it been conducted in weather conditions recommended on the application label?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If chemical control has been used, was the irrigation schedule taken into consideration before, during and after the chemical application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Pest insects can be harmful to the health of the animals, can cause waterways to become clogged with vegetation and plant debris and can be detrimental to wildlife.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Pest insects should be monitored according to monitoring protocols specific for the pest species. b. If a pest insect's identity is unknown, a professional should be contacted for accurate identification in order to know the most effective method of treating and managing the problem insect. c. Integrated Pest Management and biological controls are environmentally friendly pest management methods for problem insects. d. Chemical applications for pest plant control should be conducted strictly according to the directions on the chemical's label. e. Chemical applications should take irrigation schedules into consideration so that chemicals are not applied before irrigation sessions or too soon after an irrigation session has ended.</p>			
C. Ant Control	Yes	No	N/A
1. Is ant control management utilized on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have ant control methods included Integrated Pest Management or biological controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. If chemical control has been used, have low toxicity or non-toxic chemicals been used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. If chemical control has been used, has it been conducted in weather conditions recommended on the application label?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If chemical control has been used, was the irrigation schedule taken into consideration before, during and after the chemical application?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Why is this topic important?</i> Ants restrict native predators and parasites from participating in their natural behavior and when the ants' presence is removed, the native predators and parasites can help control other pests.</p> <p><u><i>Best Management Practices:</i></u></p> <p>a. Integrated Pest Management and biological controls are environmentally friendly pest management methods for ants. b. Chemical applications for ant control should be done strictly according to the directions on the chemical's label. c. Chemical applications should take irrigation schedules into consideration so that chemicals are not applied before irrigation sessions or too soon after an irrigation session has ended.</p>			

D. Gophers and Squirrels	Yes	No	N/A
1. Are gophers and squirrels managed on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have gopher and squirrel control methods included Integrated Pest Management or biological controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has poison been used as a control method for gophers and squirrels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Have traps been used as a control method for gophers and squirrels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Gopher and squirrel holes not only pose a risk for the safety and health of humans and horses on the property, but the holes can divert stormwater runoff and cause erosion, which would pollute waterways with sediment.			
<u>Best Management Practices:</u>			
a. Integrated Pest Management and biological controls are environmentally friendly pest management methods for gophers and squirrels.			
b. Control methods for gophers and squirrels also include trapping, poison and installing owl boxes and raptor perches to attract natural predators. The use of poison should not be used when installing raptor perches or owl boxes as eating poisoned gophers and squirrels is lethal to raptors, owls and other predators.			

E. Record Keeping	Yes	No	N/A
1. Is there a record keeping system in place for pest management?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
It is important to keep track of all activities on the property that could impact water quality, to help minimize the potential for polluting local waterways.			
<u>Best Management Practices:</u>			
a. Develop a record keeping system for pest management, such as the pest identification, a map of areas on the property that are affected, pest control methods and dates, method control results and chemical application rates (UC Cooperative Extension has a record keeping system available for download, please see the Resources section for more information).			
b. Maintain the record keeping system.			

IX) Wildlife Habitat Management

A. Maintenance	Yes	No	N/A
1. Is the upland wildlife habitat maintained on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is the wetland wildlife habitat maintained on the property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Why is this topic important?</i>			
Wildlife habitat assimilates nutrients, slows water velocity and provides habitat to beneficial organisms.			
<u>Best Management Practices:</u>			
a. Maintenance methods for wetland and upland wildlife habitat include non-native, invasive plant management and monitoring.			