General Waste Discharge Requirements for Commercial Vineyards in the North Coast Region

Attachment D: Methodologies and Procedures

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I. Methodologies for Determining Slope

Enrollees may choose one of the following methodologies for determining the percent slope of each Sediment Management Area.

A Sediment Management Area is each contiguous planted vineyard area not separated by streams, all-season roads, non-planted areas, or parcel boundaries and not to exceed 10 acres. For contiguous vineyard areas which exceed 10 acres, Enrollees may delineate each 10-acre Sediment Management Area in a manner consistent with their farming operation. Enrollees must delineate Sediment Management Areas such that all planted areas, vineyard avenues (Seasonal Roads) and areas appurtenant to the commercial vineyard (e.g., appurtenant structures, maintenance areas, storage yards, mixing and loading sites) on an enrolled parcel are included in a Sediment Management Area. See Figure F.1 for an example of a Sediment Management Area.

"Slope" means the inclination of the terrain calculated in accordance with the methodologies set forth below.

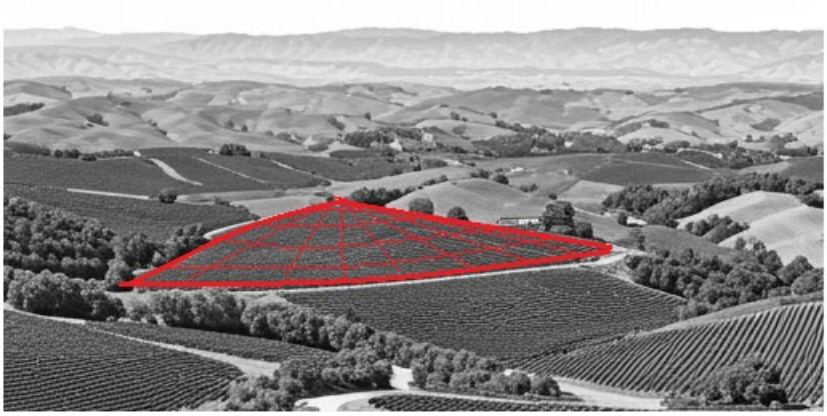

Figure F.1: Example of a Sediment Management Area shown outlined in red. Note the all-season roads separating vineyard blocks as well as vineyard areas which are not contiguous (either through trees, drainages, or roads) to help determine the boundary of this particular Sediment Management Area.

A. Physical Determination

The slope gradient and slope length of each contiguous vineyard area shall be measured using a series of profiles perpendicular to topographic contours. See **Figure F.2** for an example. At least three profiles which are representative of slope variability shall be measured in segments using a maximum 10-foot contour interval for each ten acres or less of contiguous vineyard area. The slope and slope length of each segment in all profiles shall be used to calculate the weighted average slope of the vineyard using **Equation F.1** unless more than 50 percent of the total slope profile length measured for the vineyard area exceeds 10 percent slope. In this case, the minimum

ground cover percentage for this vineyard area falls into the greater than 10 percent slope category.

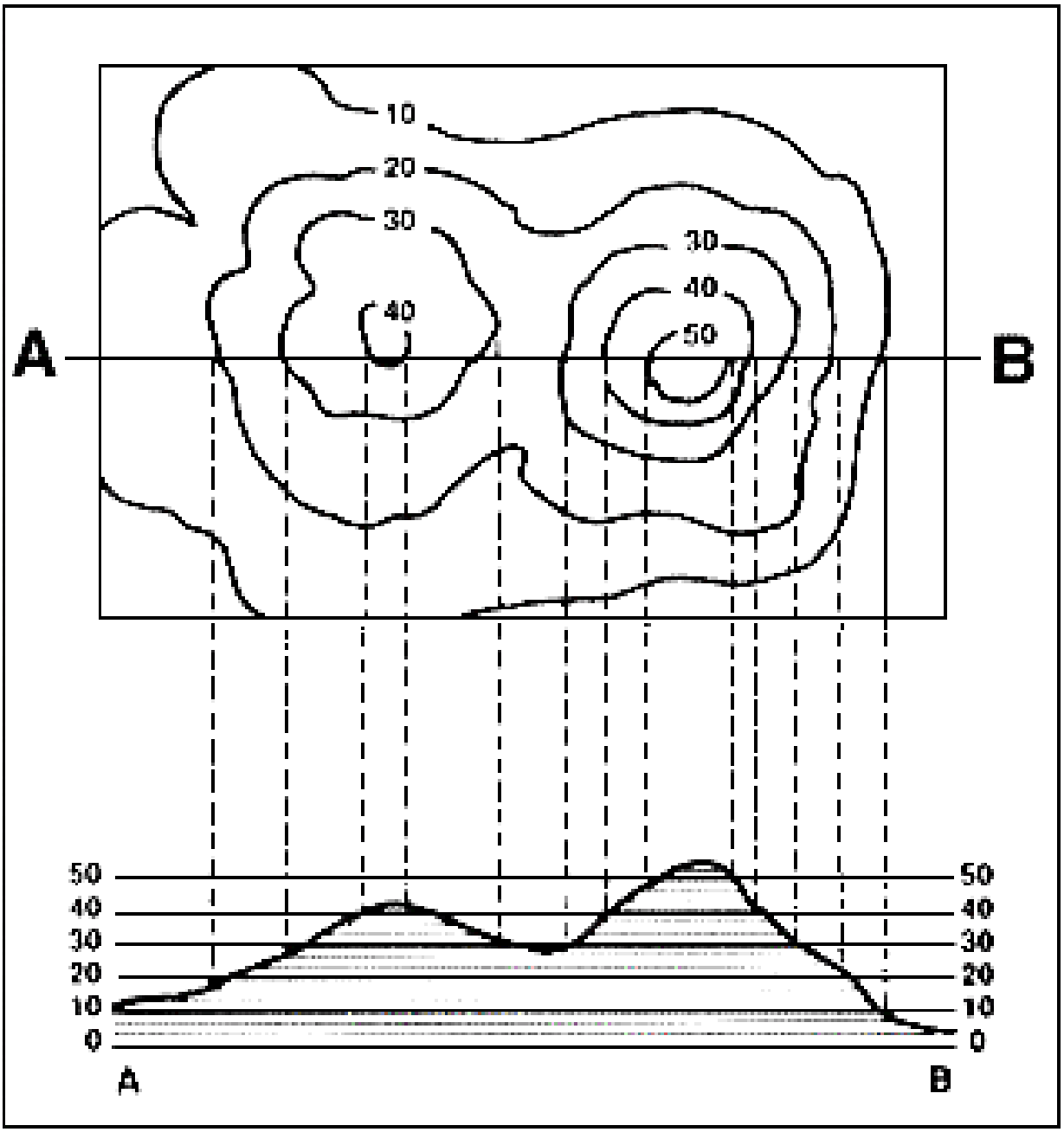

Figure F.2: Map showing topographic profile with slope segments using 10-foot contour interval. (Source: https://serc.carleton.edu/mathyouneed/slope/topoprofile.html)

Equation F.1:

The weighted average slope of the vineyard is calculated by the sum of the weighted slope (slope gradient x slope segment length) divided by the sum of all slope segment lengths.

Weighted Average Slope =

$$\frac{(\text{weighted slope})_1 + (\text{weighted slope})_2 + (\text{weighted slope})_3}{(\text{slope segment length})_1 + (\text{slope segment length})_2 + (\text{slope segment length})_3}$$

where: weighted slope = (slope segment gradient x slope segment length)

Equation F.1 Worksheet Example:

Slope Segment Gradient	Slope Segment Length	Weighted Slope: Slope Segment Gradient x Slope Segment Length
10%	500	50
15%	300	45
20%	200	40
SUM	1200	165

WEIGHTED AVERAGE SLOPE (sum of weighted slope divided by sum of slope segment length) = 13.5%

B. GIS or Map-based Slope Determination

Slope over the contiguous vineyard area may be determined using a GIS program that using contour intervals of a maximum of ten (10) feet and a scale of 1" = 100' or better. Slope shall be averaged for the planted vineyard area.

C. Alternate Methodology

Enrollees may submit an alternate average slope determination methodology to the Executive Officer for review and approval.

II. Methodologies for Determining Ground Cover

Enrollees may choose one of the following methodologies for determining the Ground Cover for each contiguous vineyard area (i.e., each planted area not separated by streams, all-season roads, non-planted areas, or parcel boundaries).

A. VESCO Methodology

To assess percent ground cover, a sampling procedure placed in a uniform grid shall be used to determine the ground cover of the area prior to operations. Plots shall be placed on a 50-foot x 50-foot grid or a minimum of 10 plots per contiguous area. Ground cover shall be measured from the percent bare soil covering the circle relative to the area absent of bare soil within a 1/300th acre circle (6'8"). Ground cover shall be determined from the average amount of cover within each plot, within the project area. Refer to the VESCO guidelines[1] for more information. Figure F.3 provides a visual example of different Ground Cover percentages for reference.

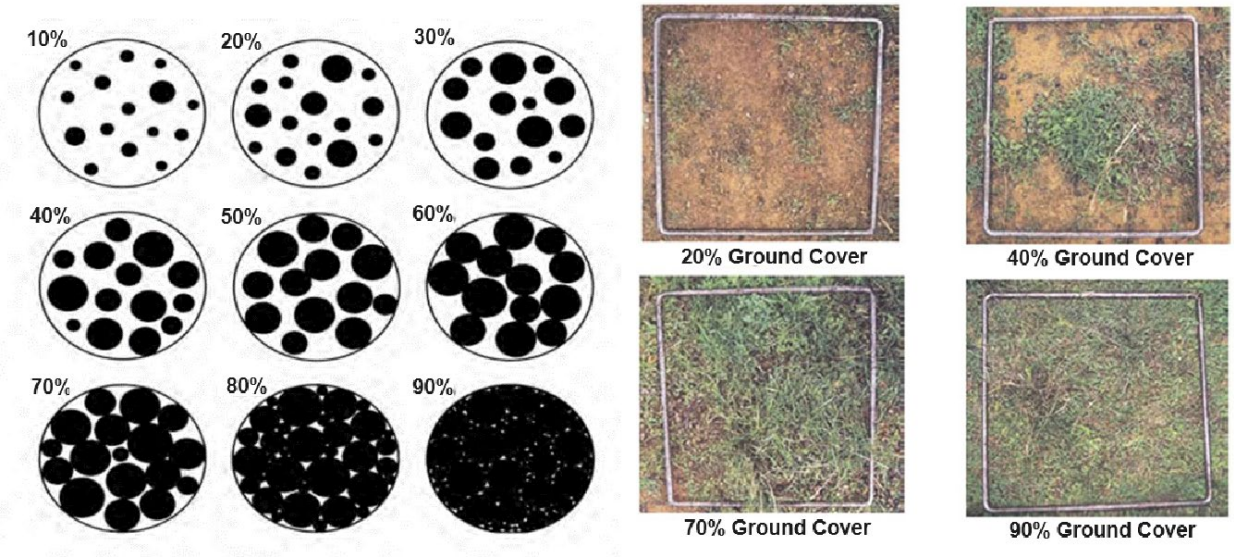

Figure F.3: Visual guide to different levels of cover using a two-dimensional circular frame (left) or grid (right). (Source: NRCS-USDA)

B. Alternate Methodology

Enrollees may submit an alternate ground cover determination methodology to the Executive Officer for review and approval. Alternate ground cover determination

[1] VESCO Guidelines
https://sonomacounty.ca.gov/Main%20County%20Site/General/Sonoma/Sample%20Dept/Divisions%20and%20Sections/Agriculture/Ordinances/GMO/_Documents/VESCO%20BMP%20and%20Technical%20Report%20Guidelines_Final.pdf

methodologies must reach similar outcomes to the VESCO methodology above.

III. Sample Collection and Handling Instructions

Enrollees shall follow the below procedures to comply with water quality monitoring requirements in this Order:

1) Identify the sampling parameters required to be tested and the number of locations that will be sampled.

2) Request the laboratory provide the appropriate number of sample containers, types of containers, sample container labels, blank Chain of Custody forms, and sample preservation instructions.

3) Prior to sampling, record information about the planned sampling event into Field Sheets and Chain-of-Custody forms. This information should include the vineyard name along with the sample location identifier and sample container types and number to be filled. Field measurement data and observations shall be recorded as they are collected.

4) Collect samples in accordance with the following instructions:

    a) Sampling from a Pipe: sample the outflow directly from the pipe. For hard-to-reach pipes, it may be necessary to fasten a collection bottle to a pole.

    b) Sampling From a Drainage Ditch or Swale: sample from a consistently flowing part of the ditch / swale. If the ditch / swale is too small or shallow, install a barrier device in the channel or deepen a small area so you are able to sample directly into the bottles. Allow sufficient time to pass after disturbing the bottom so that any solids stirred up do not contaminate your sample.

    c) Sampling From a Stormwater Detention / Retention Basin or Other Treatment Device: sample at the outlet of the structure. Collecting samples from stagnant or slowly moving water inside a pond will not yield a representative sample as the pollutants might not be adequately mixed. Stormwater basins may hold stormwater for long periods of time.

    d) Sampling From a Well: locate a valve or cold water tap as near to the well as possible, preferably prior to any storage/pressure tanks or physical/chemical treatment system that might be present. Open the valve (turn on pump if needed), monitor and record pH, specific conductance and temperature of the groundwater removed during purging at 5-minute intervals. Once these parameters have stabilized within 10 percent over 10 minutes, the well has been purged. Observe and record the rate and volume of water purged using a graduate bucket and stopwatch. Remove any hose that may be present before sample collection and reduce the flow to a low level to minimize sample disturbance. Collect samples directly into the laboratory supplied containers.

5) All monitoring instruments and equipment shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements.

6) Use only the sample containers provided/specified by the laboratory to collect and store samples. Use of any other type of containers could cause sample contamination.

7) Prevent sample contamination by not touching or putting anything into the sample containers before collecting samples.

8) Not overfill sample containers. Overfilling can change the analytical results. g. Secure each sample container cap without stripping the cap threads.

9) Label each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.

10) Use the appropriate sample shipping method to the laboratory. The laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory to meet all method hold times). The options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or ship them overnight to the laboratory.

11) Carefully pack the sample container into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment; frozen ice packs or ice is placed into the shipping container to keep the sample close to 4° C (39° F) until arriving at the laboratory (do not freeze samples).

12) Complete a Chain of Custody form with each set of samples. The Chain of Custody form shall include the discharger’s name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, the analysis that is required for each sample container, and both the signatures of the persons relinquishing and receiving the sample containers.

13) Designate and train personnel for the collection, maintenance, and shipment of samples in accordance with the above sample protocols and laboratory-specific practices.

IV. Streamside Area Examples

A Streamside Area is comprised of two contiguous components: a Riparian Vegetation Area and a Vegetated Buffer in which different requirements are applied. A Streamside Area is defined as the area between the waterside edge of vegetation and where the field side edge of the Vegetated Buffer meets the Farm Area. The Riparian Vegetation Area extends from the waterside edge of vegetation to the Vegetated Buffer in Perennial and Ephemeral/Intermittent Streams. The Vegetated Buffer is measured from the Riparian Vegetation Area to the Farm Area along Perennial and Ephemeral/Intermittent Streams, and from the waterside edge of vegetation in Hydrologically Connected Undesignated Channels, Unfarmed Wetlands, and Hydrologically Connected Lakes, Ponds, or On-Stream Reservoirs. See also Appendix I: Acronyms, Definitions, and Endnotes for definitions of terms related to the Streamside Area.

For the purposes of this Order, the waterside edge of vegetation is the line on the bank established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. The purpose of establishing the Streamside Area at the waterside edge of vegetation is to identify where riparian vegetation that provides shade begins.

Figure 1 is an example of a Streamside Area on a Perennial Stream. The Riparian Vegetation Area extends 25 ft. from the waterside edge of vegetation in the Perennial Stream. The requirements specific to the Riparian Vegetation Area are given in the Streamside Area Section of the Order. Contiguous to the Riparian Vegetation Area is a Vegetated Buffer, which must extend at least 25 ft. until it hits the Farm Area. Seasonal roads (e.g., perimeter vineyard roads) are allowed within the Vegetated Buffer provided the applicable requirements given in the Streamside Area section of the Order are followed.

Figure 2 shows an example of a Streamside Area on an Ephemeral/Intermittent Stream. Figure 2 shows an example of a Streamside Area on a Hydrologically-Connected Undesignated Channel.

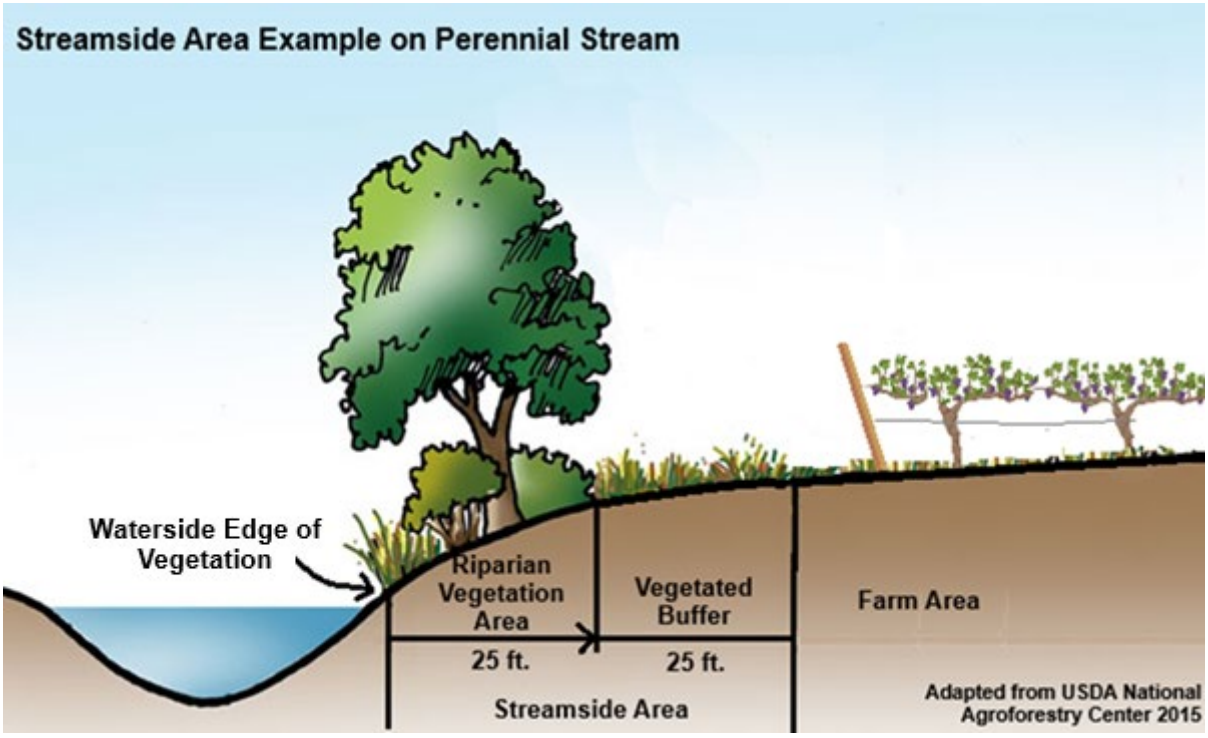

Figure 1: Streamside Area on a Perennial Stream

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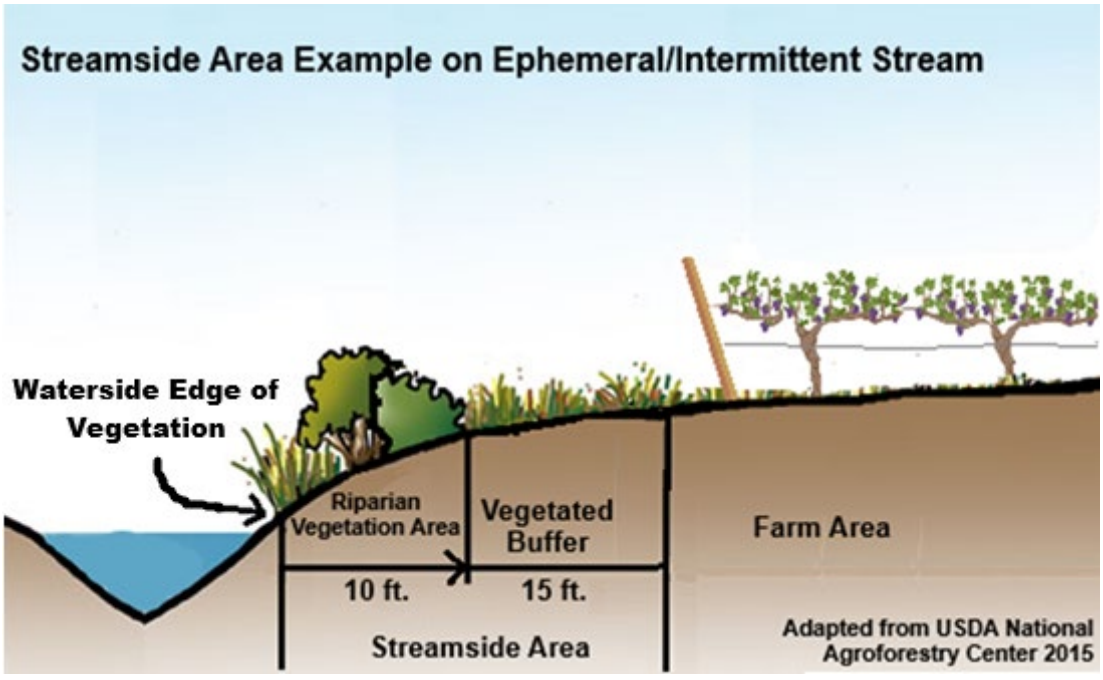

Figure 2: Streamside Area on Ephemeral/Intermittent Stream

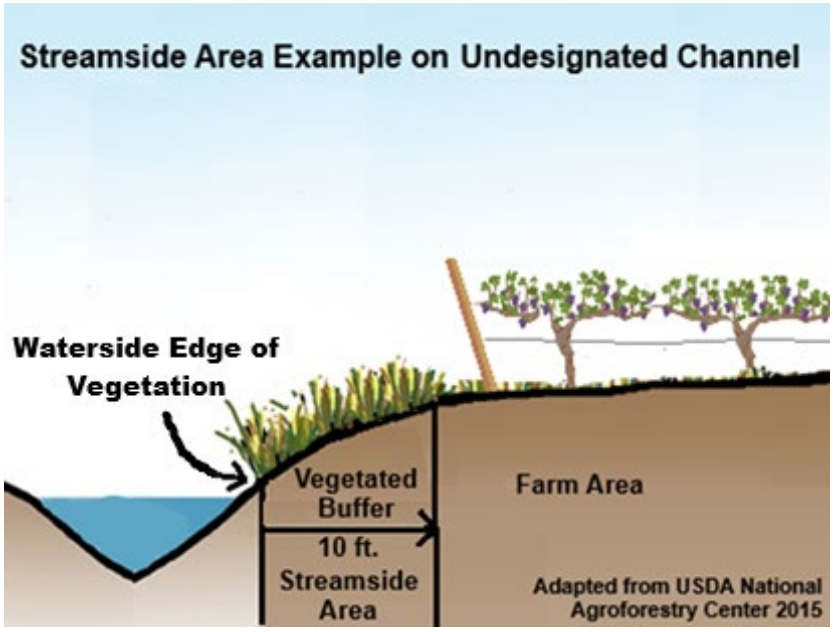

Figure 3: Streamside Area Example, Undesignated Channel