New Zealand Wine
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Walk-in-the-rain Vineyard Survey

Walkover surveys can provide useful, highly detailed, site-specific information on a range of potential sources and pathways of contaminants. This method involves walking around a vineyard or farm during wet weather, looking for runoff-generating areas and their connectivity to waterways, then marking this information on a map.

Purpose

To observe and identify landscape features with the potential to cause water to run off, drain, or pond. You are identifying **Critical Source Areas (CSAs)** on your property – sources and pathways. The main focus of this survey guide is sediment, as it is relatively easy to observe. Sediment can also carry phosphorus with it.

Definition of Critical Source Areas (CSAs)

Critical Source Areas (CSAs) are overland flow paths that can accumulate and convey water and contaminants to waterways (regardless of whether there is any water in them at the time).

A critical source area is the combination of both a source of contaminants (e.g. nutrients, sediment or faecal microorganisms) and a transport pathway (e.g. surface runoff, ephemeral drainage). Minimising either the source or the transport pathway will decrease the risk of contaminant losses. Once sources and pathways have been identified, mitigation strategies can be more efficiently targeted to CSAs rather than the whole vineyard.

What to bring

A notepad, or this template and a clipboard, pen/pencil and a camera. It is important to take photos as they will be useful when creating a Freshwater Farm Plan. You might want to note sources of runoff, flow paths and direction of flow on a Google Earth map of your property.

What to look for?

The survey is best undertaken either during or directly after a significant rain event. Suggested areas to look for are areas of bare soil, vineyard tracks, areas where soil is compacted such as vine rows, slopes, contoured soil, any areas of cultivated soil such as new developments, areas of erosion – current or potential, drains, ditches, swales, depressions, ponds, ephemeral streams, areas of persistently saturated soil (increased risk of surface runoff).

Look at flow paths and check for connectivity with waterways (surface or ground water) – the connections may not necessarily be on your property e.g. water running out your gate and down the road could be running into a waterway some distance away. Any connections should be ascertained.

Sheep grazing in vineyards has the potential to provide contaminants such as phosphate, nitrate, and bacterial pathogens (from urine and dung) to waterways. Take note of stock congregation sites (e.g. feeding areas, stock campsites, water troughs and gateways).

Definition of a swale:

- Swales are found in lightly sloping to rolling paddocks and concentrate water flows from the surrounding area into a shallow channel.
- Swales only conduct water during or after rainfall events and may act as ephemeral flow paths connecting contaminants with waterbodies.
- Soils in this part of the paddock are often very wet, possibly marshy and are thus at substantial risk of generating runoff during rain events.

Questions to ask

Is there muddy water running off the vineyard and entering a stream or drain?

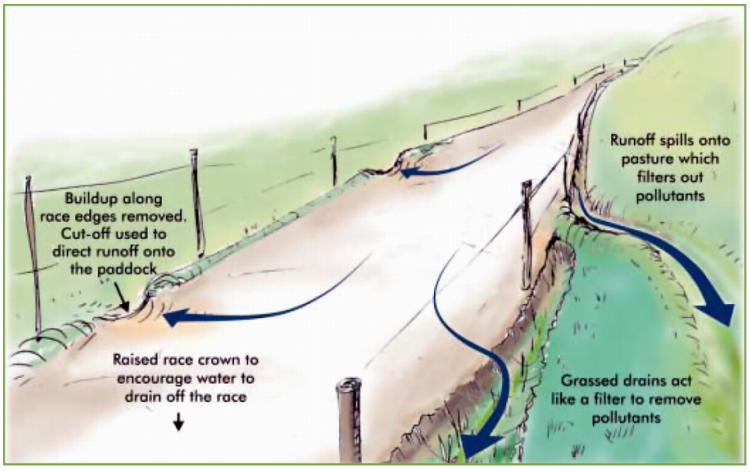
Is muddy water running out the gate and down the road?

Where is it running to?

Water and sediment flowing down a driveway, exiting the vineyard and flowing down the road to a nearby drain which then enters a stream.

Possible mitigations

Consider opportunities to plant and/or grow a sediment buffer zone or create ‘cutouts’ on vineyard tracks so sediment and water are diverted onto grass. For gateways onto roads consider creating a ‘judder bar’ or sloped exit at the gateway to prevent runoff from leaving the vineyard. For drains, ensure that the sides are grassed.



Picture courtesy of Northland Regional Council

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Walk-in-the-rain Vineyard Survey Template

A Walk-in-the-rain Vineyard Survey should be done more than once, and in varying rainfall events, to fully ascertain sources, flow paths of water and contaminants, and connectivity to other water bodies. Critical source areas (CSAs) are not always easy to spot, and their size and extent will vary from year to year depending on climate conditions.

Reflect on the season – was it wetter/drier? Were there periods when surface flow did connect, or was at risk of connecting, with a drain or other waterway? How well did the mitigations work?

Vineyard name or block code: _____

Date and time: _____

Weather during survey: _____

Has it rained in last 24 hours? Yes ☐ No ☐ **If yes...** Heavy ☐ Moderate ☐ Light ☐

How many mls over what time period? _____

1. Identify potential Critical Source Areas (CSAs)

Signs to look for: Areas that stay wet for prolonged periods after heavy rain (depression or swale) and any eroded banks or other signs of erosion - Yes/No. *If the answer is yes, make a note of where and take a photo for later.*

Within vineyard rows (record row #s):

Vineyard tracks and gateways:

Drain:

Ditch:

Gully/Swale/Hollow:

Stream/River (perennial, intermittent, ephemeral):

Road siding:

Hillside erosion spots:

2. Water Transport Pathways

Signs to look for: Evidence of flow or runoff – trace back to source and assess potential options.

Rivers (perennial, intermittent):

Streams (perennial, intermittent):

Wetlands:

Springs/seeps:

Surface drains:

Ephemeral waterways:

3. Sediment movement potentials (accelerating features)

Signs to look for: Areas of frequent ponding or standing water, areas that are heavily tracked by either livestock (winter sheep grazing) or machinery, and bare soil.

Bare soil:

Congregation sites (gateways, stock camps, water troughs):

Vineyard roads/tracks:

Machinery tracks:

Waterway crossing/s:

4. Sediment movement mitigations

Look for: vegetated areas that slow water flow, filter or traps sediment that protect waterways from contaminants.

Buffer strips:

Grassed fencelines:

Plantings on edges of drains:

Riparian plantings:

Forestry/bush blocks:

Culverts and cut-offs on vineyard tracks:

Wetland/seep/detainment bund:
