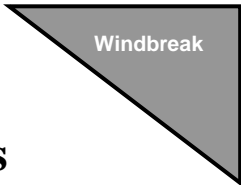


**San Joaquin Valley Air Pollution Control District  
Supplemental Application Form**



**Permit Application for New and Expanding Dairies  
Windbreak Design**

*Windbreaks are multiple rows of trees in linear configurations planted on the windward or downwind side of a given site. The windbreaks must be designed in accordance with the National Research Conservation Service (NRCS) standard #380.*

**Permit to be issued to:**

**General Windbreak Guidelines**

- Spacing between rows should be sufficient to accommodate cultivation equipment
- Windbreaks should be irrigated to provide the greatest survivability and the most rapid growth of the trees and shrubs.
- Species must be suitable and adapted to the soils, climate, site conditions, and purpose(s) for which the windbreak is established.
- Each row should be planted so that trees are offset from one another.
- Where space permits, the length of the windbreak shall be extended at least 100 feet beyond the area to be protected to reduce eddying effects for upwind windbreaks and for increased filtering for downwind windbreaks. The “area to be protected” is defined as the downwind point of the edge of the corral.
- Weed control in the windbreak must be performed and dead trees or shrubs should be rapidly replaced.
- Shrubs/trees that are initially planted as part of a windbreak shall have a minimum container size of five gallons.

**Check here if you agree to fulfill all of the above requirements.**

**Downwind Windbreak Guidelines**

- Downwind windbreaks shall consist of a minimum of three irrigated rows.
- A downwind windbreak must include one row of evergreen shrubs (5+ ft); one row of medium to tall (25+ ft) trees (evergreen or deciduous); and one row of tall (35+ ft) coniferous, evergreen trees. The order of rows should be as follows, with the first row being closest to the dairy/feedlot: first row - shrubs, second row – medium size trees, and third row – tall trees.
- Downwind windbreaks shall be located as close as possible to source of the particulate pollution (cow housing - corrals).
- The following spacing and height requirements must be met:

| Row        | Type of tree/shrub         | Spacing <sup>1</sup> | Height  |
|------------|----------------------------|----------------------|---------|
| First Row  | Low Shrubs                 | 3 to 5 ft apart      | 5ft +   |
|            | Tall shrubs                | 8 to 12 ft apart     |         |
| Second Row | Medium trees or Tall Trees | 8 to 12 ft apart     | 8-35 ft |
| Third Row  | Large Evergreen Conifer    | Varies               | 35 ft + |

<sup>1</sup> These are general spacing requirements and vary depending on type of tree.

## Downwind Windbreak Proposal

Please complete the following table:

| Row        | Type (tree/shrub) | Specie                 | Spacing (ft) | Max Height (ft) | Windbreak Length (ft) | Location              |
|------------|-------------------|------------------------|--------------|-----------------|-----------------------|-----------------------|
| <i>ex.</i> | <i>Tree</i>       | <i>Arizona Cypress</i> | <i>10 ft</i> | <i>35 ft</i>    | <i>1,925 ft</i>       | <i>NW corner - SW</i> |
| 1          |                   |                        |              |                 |                       |                       |
| 2          |                   |                        |              |                 |                       |                       |
| 3          |                   |                        |              |                 |                       |                       |

## Upwind Windbreak Guidelines

- Upwind windbreaks shall consist of a minimum of two irrigated rows.
- The upwind windbreak must include one row of evergreen shrubs and one row of tall (35+ ft) trees (evergreen). The order of rows should be as follows: the first row being closest to the dairy/feedlot (tall trees) and second row – shrubs.
- Upwind windbreaks shall be located as close as possible to the source of the particulate pollution (cow housing - corrals). To be effective upwind windbreaks must be located within a distance of 10H of the cow housing, where H is the effective height of the windbreak at maturity.
- The following spacing and height requirements must be met:

| Row        | Type of tree/shrub | Spacing          | Height |
|------------|--------------------|------------------|--------|
| First Row  | Low Shrubs         | 3 to 5 ft apart  | 5ft +  |
|            | Tall shrubs        | 8 to 12 ft apart |        |
| Second Row | Tall Trees         | Varies           | 35+ ft |

## Upwind Windbreak Proposal

Check here if this section does not apply

Please complete the following table:

| Row        | Type (tree/shrub) | Specie                 | Spacing (ft) | Max Height (ft) | Windbreak Length (ft) | Location              |
|------------|-------------------|------------------------|--------------|-----------------|-----------------------|-----------------------|
| <i>ex.</i> | <i>Tree</i>       | <i>Arizona Cypress</i> | <i>10 ft</i> | <i>35 ft</i>    |                       | <i>NW corner - SW</i> |
| 1          |                   |                        |              |                 |                       |                       |
| 2          |                   |                        |              |                 |                       |                       |
|            |                   |                        |              |                 |                       |                       |