FARM WATER QUALITY PLAN

Date of Preparation **Date of Latest update:**

Section 1: General Farm Information – NOI info

1. Name of Farm or Operation

2. Farm / Site Address

3. County

4. APN (Assessors Parcel Number(s)

5. Name of Farmer / Operator

   Mailing address

   Phone number (work / cell)

   Email address (if applicable)

6. Name of Land Owner if different than farmer/operator

   Contact information (address or phone number)

7. Total acres

8. Total irrigated farmed acres

9. Which crops are grown on the farm?

Section 2: Watershed/Runoff issues

10. Name of Watershed

    and subwatershed (if known)

11. What is the name of the nearest downstream waterbody (stream, river, lake, etc.).?

    How close is your farm to the waterbody?

12. Does runoff from your irrigation or rain on the irrigated area drain to the waterbody?

    ☐ yes ☐ no

    If yes, where is your closest drainage point into that waterbody?

    ☐ adjacent ☐ less than 250 feet ☐ less than 1000 feet ☐ greater than 1000 feet

    Mark the drainage point on your map (see section 4 for description of maps).

13. How would you characterize the flow of the waterbody?

    ☐ Perennial – flows all year long

    ☐ Intermittent – flows during and for a period following rainfall

    ☐ Ephemeral – only flows in direct response to rainfall

14. If your farm is adjacent to a waterbody, describe the condition of the riparian corridor (the vegetated area right along the stream).

    ☐ Lots of trees ☐ partly covered ☐ very few trees/bushes ☐ bare

    (attach photos as documentation)

15. Is the waterbody (stream, river, lake) listed as "impaired" on the state's list of impaired waterbodies (the "303d" list) due to agricultural sources? ☐ yes ☐ no

    If yes, what is/are the listed problem(s) attributed to ag runoff? (i.e. nitrates, toxicity, turbidity, etc.)

Note: You can look up your waterbody in the 303d list of impaired waterbodies at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

16. Does the farm irrigation water runoff (tail water) drain off of your property?

☐ yes ☐ no

If yes, to where does it drain? (describe below) :

☐ to neighbor's property ☐ to ditch ☐ to creek ☐ other (explain)…..

17. Does the farm have tile drains to move subsurface water? ☐ yes ☐ no

If yes, to where do they drain? (describe below) :

☐ to neighbor's property ☐ to ditch ☐ to creek ☐ other (explain)…..

18. Does water from your irrigated land discharge from your property during storm events?

☐ yes ☐ no

If yes, under what conditions does water run off during storms?

☐ During most rain events

☐ Only during heavy storms

☐ Only after soil is saturated

(include map showing drainages, see Section 4)

If yes, to where does it drain? (describe below) :

☐ to neighbor's property ☐ to ditch ☐ to creek ☐ other (explain)…..

19. Does water from other sources run on to your property? ☐ yes ☐ no

If yes, where?

Mark location on your farm map.

What are you doing about it? (describe)

Section 3: Determination of Tiers

- ☐ Tier 1
- ☐ Tier 2
- ☐ Tier 3

Section 4: Recommended Maps (mark all that are included and attach here). **Note that the Ag Commissioner, NRCS, RCD, and Farm Bureaus can also help you get these maps at no cost.**

Necessary Maps:

- ☐ Area map (map of area showing the main local streets and closest waterbodies with farm site flagged – can be as simple as a copy of a local or Google map)
- ☐ Location map (shows closest roads and outlines borders of farm; (e.g.; pesticide permit map). This is the map that you attached to your NOI
- ☐ Farm map showing fields, drainages, wells, roads (can be hand drawn)

Useful Maps (optional)

- ☐ County Assessor's map (APN map)
- ☐ Watershed map of adjacent and downstream waterbodies (streams, rivers, etc.)
- ☐ Farm map showing Fields / Crops (can be hand drawn)
- ☐ Soil map(s) (one source is: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm)
- ☐ Maps showing major events that have affected your runoff (e.g.; historical maps, landslides, earthquake faults, area hit by a major fire, etc.)
- ☐ Other (describe)

Section 5: Irrigation System

20. Source of Irrigation Water (check all that apply)

- Ground water (well) ☐
- Surface water (creek or pond) ☐
- Recycled water (from on-site or from purple pipe) ☐
- Imported water or city water ☐
- Spring ☐

21. Describe irrigation system (check all that apply)

Drip	☐	Microsprinkler	☐
Sprinkler	☐	Furrow	☐
Hand	☐	other	☐

Sprinkler for plant establishment, then convert to drip ☐

22. Does your irrigation system have a flow meter?

☐ yes ☐ no

If no, how do you measure the amount of water that you are applying?

23. Has system been evaluated for efficiency and uniformity of distribution?

☐ yes ☐ no

If yes, attach a copy of evaluation in this section.

Did you implement any of the evaluation recommendations? ☐ yes ☐ no

If yes, which ones?

If no, do you plan to implement some of the recommendations in the future? ☐ yes ☐ no

If yes, which ones do you plan to implement?

24. Does any water run off of your property during irrigation? ☐ yes ☐ no

If no, did you have to implement any practices to manage/control it? What did you do?

If yes, what are you doing to manage it? Explain and attach your documentation, if any.

25. Using the form below, record what practices you have used, where you used them and how they worked:

Irrigation Practices to Reduce Runoff	Practice currently in use (# acres)	Practice tried – Did Not work	Practice Under consideration (where)	N/A
Make your irrigations efficient				
Evaluate irrigation efficiency/distribution uniformity (e.g.; by irrigation mobile lab, UCCE, consultant)				
Upgrade/redesign irrigation equipment/system				
Upgrade Water Conveyance System (main lines, etc)				
Train irrigators				
Use catch trays/cups to evaluate amount of applied water				
Use daily CIMIS data to adjust irrigation schedule				
Calculate the field application rate of the irrigation system (in/hr)				
Adjust irrigation schedule for leaching fraction and distribution uniformity of system.				
Maintain records of irrigation schedule				
Maintain records of the amount of water applied during each irrigation				
Monitor soil moisture				
Monitor on-site rain gauges				
Install flow meters				
Improve Sprinkler Irrigation Uniformity				
Perform regularly scheduled system maintenance				
Repair leaks on main and lateral				
Maintain sprinkler heads				
Use sprinkler heads with a high uniformity rating				
Use appropriate nozzle size for lateral spacing and head pattern				
Maintain uniform nozzle size				

Use consistent riser heights and maintain risers perpendicular to ground				
Maintain appropriate system pressure				
Record system flow rate and pressures (head and tail)				
Use a closer lateral line spacing to improve overlap of pattern				
Use flow control nozzles when pressure is too high or variable				
Operate in low-wind conditions				
Minimize lateral spacing where practical				
Offset starting location of hand move lines				
Improve Drip Irrigation Uniformity				
Select drip tape/emitter with an application rate that matches system design, soil or substrate type, and crop needs				
Develop a maintenance plan appropriate for a drip system				
Use a filter appropriate for water quality				
Repair leaks on mains and laterals				
Regularly flush/clean filters				
Flush lateral lines regularly				
Use emitters that minimize pressure differences				
Use drip tape with a small emitter discharge exponent				
Use a pressure regulator for each submain				
Check and adjust pressures of submains				
Shorten lateral hose runs				
Use pressure compensating emitters.				
Manage water quality for potential clogging (high bicarbonates)				
Chlorinate lateral lines to prevent bacterial and algal build-up and root intrusion into emitters				
Keep water where you want it				
Ensure rows are aligned for proper drainage and to reduce erosion				
Improve soil infiltration through amendments				
Install engineered controls				
Convert Irrigation System to another type				
Install Structures for Water Control including:				
• Tailwater recovery system				
• Settling ponds				
• Underground pipes to redirect water				
• Surface Drains				
• Subsurface Drain				
• Recirculating sub-irrigation system				

Check your success in stopping irrigation water runoff by:

1. **Walking the property perimeter during irrigation to look for runoff areas**
2. **Taking pictures before and after you install practices**

Re-evaluate irrigation practices if you see runoff during irrigation.

Section 6: Groundwater

26. Is the farm within 1000 feet of a public well that is impaired by high nitrate contamination?

☐ yes ☐ no

27. Are there any wells currently operating on the farm?

☐ yes ☐ no

If yes, how many?

If yes, are they being used for domestic use, irrigation water, or both?

How many for domestic use?

How many for irrigation use?

If yes, do any of your wells exceed the drinking water standard (10 ppm N or 45 ppm NO3)?

☐ yes ☐ no ☐ don't know

28. If wells are used for irrigation, do you apply fertilizer or chemicals through the irrigation system directly to the fields?

☐ yes ☐ no

If yes, do the wells have back-flow devices installed to prevent groundwater contamination?

☐ yes ☐ no ☐ don't know

29. Are there any wells on the farm which were drilled but are not in use? ☐ yes ☐ no

If yes, are they decommissioned appropriately? ☐ yes ☐ no

Note: NRCS standards for well decommissioning are available at:
http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_025736.pdf

Section 7: Nutrient Management

Nutrients are primary contributors to lowered surface water quality. In areas where irrigation water runs off of the farm, excess nutrients run off too. If the land is overwatered, nutrients are leached below the root zone and, from there, can get into the groundwater. Nutrient sources associated with agricultural production practices include fertilizers and other amendments, biodegradation of crop residues, agricultural and municipal waste applied to land, and waste generated by animals. Nutrients from these sources become pollutants when they are transported offsite into nearby streams and lakes or leach to groundwater. Nitrates and phosphates in surface water bodies contribute to eutrophication. Eutrophication leads to increases in aquatic plants and algal blooms that deplete dissolved oxygen, impacting aquatic organisms. Nitrate pollution of groundwater is widespread and a serious problem statewide because of impacts to drinking water.

30. Do you apply soil amendments and/or fertilizer on your fields? ☐ yes ☐ no

31. How is the fertilizer applied?

- ☐ Surface application
- ☐ Through the irrigation system
- ☐ Combination

32. How do you determine when and how much fertilizer to apply?

- ☐ Crop advisor (CCA)
- ☐ Soil tests (i.e. Nitrate quick test or lab results)
- ☐ Tissue samples from crop
- ☐ Standard farming practice for this crop (describe)
- ☐ Other; explain

33. Do you store fertilizer on this farm? ☐ yes ☐ no Where?
mark storage and mixing sites on your farm map

34. Is your farm adjacent to or does it drain towards a water body which is impaired (303d list) due to nutrients or nitrates? (see Section 2, Question 15 above)

☐ yes ☐ no

If yes, it is important that you complete this section

35. Do you plant crops that the University of California Center for Water Resources (WRC) Nitrate Groundwater Pollution Hazard Index identifies as a high risk for nitrate loading to groundwater (Beet, Broccoli, Cabbage, Cauliflower, Celery, Chinese/Napa Cabbage, Collard, Endive, Kale, Leek, Lettuce, Mustard, Onion, Spinach, Strawberry, Pepper, or Parsley)?

☐ yes ☐ no

36. Based on the completed worksheet (Note: you can use formula for either crop, irrigation system type and soils or crop, or irrigation system and irrigation water nitrate concentration), the Nitrate Loading Risk Factor for this farm is:

☐ Low ☐ Moderate ☐ High

Go to http://www.agwaterquality.org/documents-and-maps.html for the worksheet and instructions; attach completed worksheet

What practices have you used? Fill out the form below and attach any documentation:

Practices for Managing Nutrients	Practice currently in use (# acres)	Practice tried – Did Not work	Practice Under consideration (where)	N/A
Optimize fertilizer application				
Control over watering				
Manage fertigations to avoid nutrient loss below the rootzone				
Understand how much fertilizer your crop needs				
Take Tissue samples for N and P status before applying fertilizer				
Time fertilizer application according to crop requirements				
Do not apply fertilizers when rain is expected				
Monitor your irrigation water to determine pre-existing N and P levels				
Monitor the N and P in soil amendments before use				
Use controlled release fertilizer alone or with a liquid feed				
Test nitrogen levels before pre-side-dressing				

Split fertilizer applications				
Use precision to place fertilizer over root zone				
Do soil quick-tests or soil analysis to check for nitrogen remaining in soil				
Store and handle nutrients properly				
Calibrate sprayers and injectors				
Mix and load fertilizer on low runoff hazard sites – over 100 feet downslope of the well on an impermeable surface				
Make sure that your fertilizer storage facility includes a concrete pad and curb to contain spills and leaks				
Monitor and maintain your septic/port-a-potty systems				
Keep nutrients from blowing away				
Plant hedgerows and/or windbreaks				
Plant cover crops				
Mulch to keep bare soil in place				
Keeping nutrients from washing away				
Plant cover crop that use nitrogen in the soil				
Manage plant residue to hold soil in place				
Ensure rows are aligned for proper drainage and to reduce erosion				
Plant filter strips at field edges and row ends				
Cover bare soil with grass, mulch				
Divert runoff to a grassed area or sediment basin on your property				
Installed engineered control systems:				
Vegetated treatment systems				
Treatment wetlands				
Convert irrigation system to reduce runoff				
Reuse tailwater				
Treat tailwater				

Check your success in stopping nutrient runoff by:

1. **Walking the property perimeter in big rainstorms to look for runoff areas**
2. **Looking for blowing soil during high winds,**
3. **Taking pictures before and after you install practices**

If you see erosion or storm runoff with sediment, go back and re-evaluate practices.

Section 8: Sediment / Erosion

Soil erosion and sediment deposition are primary contributors to lowered surface water quality from farmlands. In areas where there are steep slopes, erodible soils, and intense storm characteristics, sediment delivery from farmlands can be relatively high. Roads and other areas of disturbed ground where bare soils are susceptible to the erosive action of water and wind can also be major contributors of sediment to waterbodies.

37. Is your farm adjacent to or does drain towards a water body which is impaired (303d list) due to sediment or turbidity (cloudiness)? (see Section 2, Question 15 above)

☐ yes ☐ no

If yes, it is important that you complete this section

38. Is any sediment coming onto your property and causing a problem?

☐ yes ☐ no

You should document this with photographs. Contact the NRCS, Coalition or other conservation / technical provider for technical assistance: http://www.agwaterquality.org/links-to-our-partners.html

39. Does any sediment run off of your property during irrigation? ☐ yes ☐ no

If no, have you had to implement any practices to control it? ☐ yes ☐ no

What did you do?

If yes, what are you doing to stop it? Explain and attach any documentation here.

40. Does any sediment run off of your property during winter storm events? ☐ yes ☐ no

If no, have you implemented any practices to control sediment runoff? ☐ yes ☐ no

What did you do? Fill out the form below and attach any documentation:

Practices for Managing Sediment	Practice currently in use (# acres)	Practice tried – Did Not work	Practice Under consideration (where)	N/A
Keeping soil on the field				
Manage prior year crop residue				
Ensure rows are aligned for proper drainage and to reduce erosion				
Plant buffer strips at field edges and row ends				
Use Polyacrylimide (PAM) in irrigation water				
Cover bare soil with grass or mulch				
Don't over water				
Practices to reduce sediment from access roads				
Grade road to reduce on road erosion				
Control concentrated drainage on road (culverts, rolling dips, etc				
Direct drainage off road (to vegetative areas, ditches, sediment basins, etc)				
Protect roads in rainy season: seed roads, rice straw, gravel, avoid use, etc)				
Reduce erosion on non-crop areas of farm				
Plant Filter/Buffer Strips				
Grass the waterways				
Establish trees/shrubs along the perimeter				
Practices to reduce wind erosion				
Plant hedgerows				
Plant windbreaks / shelterbelts				
Plant Cover Crops				
Mulch uncovered soil				
Leave residue from prior crop on soil until you are ready to plant				
Install structures for sediment control:				
Sediment Basin				
Underground Outlet pipe to redirect water				
Lined waterways				

Check your success in stopping sediment runoff by:

1. **Walking the property perimeter in big rainstorms to look for runoff areas**
2. **Being sure that drainage to ditches and streams are not concentrated so that they don't cause erosion!**
3. **Looking for blowing soil during high winds,**
4. **Taking pictures before and after you install practices**

If you see erosion or storm runoff with sediment, go back and re-evaluate practices.

Section 9: Pesticides

Pesticides that move from the application site into surface or groundwater can affect the beneficial uses of water through their potential impact on human and animal health, and on non-target organisms. Wind and water erosion of soil, or drift from pesticide applications may contribute to pesticide movement away from the target area. Pesticides may enter surface waters in irrigation return flows and tile drainage either as water-soluble residuals or adsorbed to sediments. Groundwater in agricultural areas may also be subject to pollution from pesticides when deep percolation from irrigated land carries water soluble pesticides to the groundwater.

41. Do you use pesticides on this farm? ☐ yes ☐ no

42. Which management method best describes your farming operation?

☐ Organic ☐ Conventional ☐ Both

43. Do you store pesticides on this farm? ☐ yes ☐ no Where?
Mark storage and mixing sites on your farm map

44. Do you apply Diazinon on this farm? ☐ yes ☐ no

45. Do you apply Chlorpyrifos on this farm? ☐ yes ☐ no

46. Is your farm adjacent to or does it drain towards a water body which is impaired (303d list) due to toxicity or pesticides? (see Section 2, Question 15 above) ☐ yes ☐ no

If yes, it is important that you complete this section

47. Do you have a pesticide crop advisor? Who?

48. Who is the pesticide applicator (☐ in house or ☐ contracted out)

Name of applicator (or company)

Applicator number:

49. Do you keep the Pesticide Use reports on site? ☐ yes ☐ no

(Use reports may be included in the attachments)

50. Have you implemented practices to control pesticide movement off your farm (see list below for practices that you may have implemented)? Did they work? Fill out the form below and attach any documentation.

Practices to Reduce Pesticide Movement with Water, Wind, and Eroding Soil	Practice currently in use (# acres)	Practice tried – Did Not work	Practice Under consideration (where)	**N/A**
Storage and Disposal Practices				
Label instructions are followed				
Store pesticides in a facility includes a concrete pad and curb to contain spills and leaks				
Calibrate sprayers and injectors				
Train pesticide handlers and applicators yearly				
Keep equipment clean of soil and plant parts as you move between fields				
Do all mixing and loading in low runoff hazard sites or impermeable surface at least 100 feet downslope of the well				
Minimize drift by spraying pesticides during low wind conditions				
Dispose of excess pesticides per label instructions				
Application Practices				
Install hedgerows or windbreaks				
Use filter strips in erosion areas				
Consult and follow label directions				
Consider the likelihood of ditch and surface water contamination prior to pesticide application				
Consider potential impact of rain events prior to pesticide application				
Recover and treat or reuse tailwater				
Use Integrated Pest Management practices to reduce pesticide need				

Section 10: Technical Assistance

51. Have you worked with anyone to address water quality issues in the past? ☐ yes ☐ no

If yes, explain who you worked with and what your results were?

Section 11: Review of water quality goals and issues relating to this farm which can be and are being addressed

52. What are the Water Quality goals (objectives) for this farm?

53. Do you have potential water quality problems that you plan to address over the next two years? (If yes, describe. As you work on the problem, attach before and after documents/photos here.)

54. Is there anything that you have done to address these issues in the past that you haven't noted above? If so, what did you implement that worked? What did you implement that didn't work? Attach before and after documents/photos here)

55. Are there other solutions (not noted above) that you are considering to help you achieve your goals? If so, what are they?

56. How are you assessing the effectiveness of these solutions?

Section 12: Attachments (Optional) - Check if attached

- ☐ Worksheet used to determine Nitrogen Risk Factor of crops grown
- ☐ Worksheet used to determine Nitrate Loading Risk Factor of the farm
- ☐ Photo monitoring (be sure to date!)
- ☐ Pesticide Use reports
- ☐ Soils information
- ☐ Soil Nitrate Quick Tests
- ☐ Nitrogen, Nitrate, or Phosphate test results
- ☐ Water testing: (include any results or reports in this section)
    - ☐ Irrigation water for nitrates and/or phosphates
    - ☐ Well water for multiple constituents