



April 11, 2013

Pamela Creedon
Irrigated Lands Regulatory Program
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

Re: Submittal of Templates for Waste Discharge Requirements General Order R5-2012-0116 for Growers in the Eastern San Joaquin River Watershed

Dear Ms. Creedon:

The East San Joaquin Water Quality Coalition (ESJWQC) has worked with various agricultural stakeholders including other coalitions in the Central Valley region and commodity groups to develop templates as outlined in Attachment B of the Waste Discharge Requirements General Order R5-2012-0116. Attachment I includes a list of individuals who contributed to the development of the templates.

Included in this submittal are templates and associated narratives for:

- Attachment II: Farm Evaluation Template,
- Attachment III: Nitrogen Management Plan (Worksheet and Summary Report) Template, and
- Attachment IV: Sediment and Erosion Control Plan Template.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines for knowing violations.

Submitted respectfully,

Parry Klassen
Executive Director
East San Joaquin Water Quality Coalition



Attachment I

Listed below are the individuals who contributed to development of the templates for the Farm Evaluation, Nitrogen Management Plan worksheet, Nitrogen Management Plan summary and Sediment and Erosion Control Plan.

<u>Name</u>	<u>Affiliation</u>
Eric Athorp	Kings River Sub Watershed/SSJVWQC
Bob Blakely	California Citrus Mutual
David Cory	Westside San Joaquin River Watershed Coalition
Casey Creamer	Western Agricultural Processors Association
Manuel Cunha	Nisei Farmers League
Bruce Houdesheldt	Sacramento Valley Water Quality Coalition
Roger Isom	Farm Advisor UC Cooperative Extension, Nisei Farmers League, Western Agricultural Processors Association
Parry Klassen	East San Joaquin Water Quality Coalition
Gabriele Ludwig	Almond Board of California
Joe McGahan	Westside San Joaquin River Watershed Coalition
Orvil McKinnis	Westlands Stormwater Coalition
Danny Merkley	California Farm Bureau Federation
Rob Mikkelsen	International Plant Nutrition Institute
Dan Munk	Farm Advisor UC Cooperative Extension
David Orth	Southern San Joaquin Valley Water Quality Coalition
Renee Pinel	Western Plant Health Association
John Schaap	Kern River Watershed Coalition Authority
Steve Spate	Raisin Bargaining Association
Tricia Stever Blattler	Tulare County Farm Bureau
Christopher Valadez	California Grape & Tree Fruit League
Michael Wackman	San Joaquin County & Delta Water Quality Coalition



Attachment II – Farm Evaluation Template

TEMPLATE FOR FARM EVALUATION

Narrative Description

The Farm Evaluation Template is presented to satisfy the requirements in Attachment B to General Order R5-2012-0116 Eastern San Joaquin River Watershed under the Group Option. The Farm Evaluation is intended to gather information on general site conditions and management practices that members currently have in place to protect surface and ground water quality. This template is designed to collect the following information:

- Identification of the crops grown and acreage of each crop
- Location of the farm.
- Identification of on-farm management practices implemented to achieve the Order's farm management performance standards.
- Identification of whether or not there is movement of soil during storm events and/or during irrigation (sediment and erosion risk areas) and a description of where this occurs.
- Identification of whether or not water leaves the property and is conveyed downstream and a description of where this occurs.
- Location of in-service wells and abandoned wells.
- Identification of whether wellhead protection and backflow prevention devices have been implemented.

The Farm Evaluation template (attachment A) addresses all of the requirements in what we believe is an effective way to communicate with growers and account for the varying methods growers will implement for their respective crops and locations. Below are the requirements as stated in Attachment B with a description of where the question is answered along with further discussion.

Identification of the crops grown and acreage of each crop

A Farm Evaluation will be completed by each member for each crop grown or each crop where practices are different. Questions 1, 2, and 3 identify the crop represented by the report and Question 4 asks for the acreage. It should be further noted that this information will also be available in the Nitrogen Management Plan. In that template each crop and its associated acreage is reported to the Coalition and the Regional Board in High Vulnerability Areas and available for inspection for growers in Low Vulnerability Areas.

Location of the Farm

This requirement is satisfied through the Coalition Member ID# at the top of General Farm

Practices – Part A. It is further satisfied by the identification of parcels in Question 1 of Part A. As a condition of membership each grower submits their parcels to the coalition which in turn provides a member identification number. The member identification number provides the coalition with the exact farm and field location(s).

Identification of on-farm management practices implemented to achieve the Order’s farm management performance standards

This requirement is satisfied by the identification of practices used on the farm in the following questions:

- Question 3: Wellhead Practices,
- Question 4: Pesticide Application Practices in Part A
- Question 5: Irrigation Practices
- Question 6: Nitrogen Management Methods in Part B for the Practices by Crop(s).

If the box is checked next to the question, this indicates the member is implementing the practice. Not checking the box means the practice is not used or not applicable to the farming operation.

The practices/methods listed are implemented based on crops, water quality, water supply, farm size, weather conditions, and economic factors.

Location of in-service wells and abandoned wells

Identification of exact coordinates of each and every well location in the Central Valley is an extremely burdensome task and one that could have detrimental impacts to farming operations if the information is not carefully guarded. Growers are very protective of this information for legitimate reasons including copper and metal theft, terrorism, and food safety concerns. Access to this information by those with illegitimate purposes has the potential to severely impact the public. We believe that the rationale for requesting this information by the Regional Board is to be able to properly conduct an inspection of the grower’s property. In order to meet the requirement in Attachment B and to also allow the Regional Board to properly inspect and enforce the order’s requirements, we propose that the growers identify well locations in the Farm Map – Part C and that the information is kept on-farm. At the request a Regional Board inspector, the grower would be required to produce a map that properly identifies both in-service and known abandoned well locations.

Identification of whether or not there is movement of soil during storm events and/or during irrigation (sediment and erosion risk areas) and a description of where this occurs

The identification of whether there is movement of soil during storm or irrigation events is through Question 6 of Part A – General Farm Practices. The question states “Does your farm have the potential to discharge sediment to off-farm surface waters above background levels?”

If the answer is yes, the member would be directed to complete a Sediment & Erosion Control Plan to control or prevent erosion on the properties where it is applicable. . This requirement will also be met through the Third-Party requirement to prepare a Sediment Discharge and Erosion Assessment Report. Further identification of soil movement is in the Farm Evaluation Part C – Farm Map. We believe it is more efficient for growers to identify these locations on a farm map that is kept at the farm headquarters. Growers can use existing field maps or use Part C if the locations are clearly marked and readily available for inspections by the Regional Board or the Third-Party group.

Identification of whether or not water leaves the property and is conveyed downstream and a description of where this occurs

The Farm Map – Part C would also be used to satisfy this requirement, as described in the previous section.

Identification of whether wellhead protection and backflow prevention devices have been implemented

Question 3 of the General Farm Practices – Part A asks if wellhead protection and/or backflow prevention devices have been implemented. The question also allows for additional information to be selected regarding ground sloping away from the wellhead and the avoidance of standing water around the wellhead. There is also the ability for growers to identify additional practices that may be relevant to preventing contamination from entering the wellhead.

In summary, we believe that the proposed template meets all the requirements identified in Attachment B, is a workable document for growers to complete, and for the third-party groups to summarize and do targeted outreach based upon the answers in the report. We also understand that this evaluation is part of an iterative process and as new practices are identified or there is need for an additional piece of information the group could again work together to address future concerns or data gaps.

Farm Evaluation Part A

Name: _____ Coalition Member ID#: _____

1. Identify Parcels

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

2. Total Acreage: _____ acres

3. Wellhead Practices (Check all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Backflow Prevention | <input type="checkbox"/> Wellhead Protection |
| <input type="checkbox"/> Ground Sloped Away from Wellhead | <input type="checkbox"/> <u>Standing</u> water avoided around wellhead |
| <input type="checkbox"/> Other _____ | <input type="checkbox"/> Other _____ |

4. Pesticide Application Practices (Check all that apply)

- | | | |
|---|--|--|
| <input type="checkbox"/> County Permit Followed | <input type="checkbox"/> Drift Control Agents | <input type="checkbox"/> Buffer Zones |
| <input type="checkbox"/> End of Row Shutoff | <input type="checkbox"/> Target Sensing Sprayer | <input type="checkbox"/> Follow Label Restrictions |
| <input type="checkbox"/> Attend Trainings | <input type="checkbox"/> Avoid Surface Water | <input type="checkbox"/> Monitor Wind Conditions |
| <input type="checkbox"/> Monitor Rain Forecasts | <input type="checkbox"/> Use Vegetated Drain Ditches | <input type="checkbox"/> Use PCA |
| <input type="checkbox"/> Sensitive Areas Mapped | <input type="checkbox"/> Reapply <u>Rinsate</u> to treated field | <input type="checkbox"/> <u>Chemigation</u> |
| <input type="checkbox"/> Other _____ | <input type="checkbox"/> Other _____ | |

5. Are you aware of any abandoned wells on your property? Yes No

6. Does your farm have the potential to discharge sediment to off-farm surface waters above background levels? Yes No
If yes, you may need to complete a Sediment & Erosion Control Plan.

7. Did a member representative attend any water quality or coalition outreach meetings? Yes No



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Farm Evaluation Practices by Crop(s)

Part B

(Fill this form out for each crop where practices are different)

1. Represented Field Crops Grown (Check those that apply to practices below)

- Barley Beans Corn Cotton Hay
 Pasture Rice Wheat Other _____

2. Represented Vegetable Crops Grown (Check those that apply to practices below)

- Asparagus Bell Peppers Broccoli Eggplant Garlic
 Lettuce Melons Onions Oriental Squash
 Sweet Corn Tomatoes Other _____

3. Represented Fruit & Nut Crops Grown (Check those that apply to practices below)

- Almonds Apples Cherries Citrus Grapes
 Kiwifruit Nectarines Olives Peaches Pears
 Pecans Persimmons Pistachios Plums Pomegranates
 Walnuts Other _____

4. Represented Crop(s) Acreage: _____ acres

5. Irrigation Practices (Check all that apply)

- Drip Border Strip Furrow Overhead
 Sprinkler Micro Sprinkler Tailwater Return
 Laser Leveling Water application scheduled to need
 Other _____

6. Nitrogen Management Methods (Check all that apply)

- Cover Crops Split Applications Soil Testing
 Tissue Testing Variable Rate/GPs Crop Advisors
 Foliar N Application Mgmt. Planning Water Testing
 Minimize Leaching Fertigation
 Other _____ Other _____



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LT-ILRP: Farm Evaluation Farm Map - Part C

(Farm Map – Keep Onsite- For Inspection Purposes Only)

<p>Legend X – In Use Well Locations AX – Known Abandoned Well Locations DP – Off Farm Surface Water Discharge Points</p>



Attachment III: Nitrogen Management Plan Template (Worksheet and Summary Report)

TEMPLATE FOR NITROGEN MANAGEMENT PLAN WORKSHEET AND SUMMARY REPORT

Narrative Description

The Nitrogen Management plan (NMP) worksheet template is a document intended as guidance for growers in developing the nitrogen fertilizer portion of an overall crop nutrient plan. Information on the worksheet should only be considered as basic components of the nitrogen portion of an overall crop nutrient program. The NMP worksheet template (or equivalent documents) will be prepared annually and kept on the farm. A NMP Summary Report will be submitted to the Coalition by the member based on the schedule in the WDR General Order.

The NMP worksheet template focuses on the nitrogen component of a whole crop nutrient plan that includes NPK and other nutrients. P and K, the two other major crop nutrient sources, do not impair beneficial uses of surface or groundwater in the Central Valley and their application is not included in this reporting. In high vulnerability areas, the worksheet must be signed off by a certified crop advisor or other approved party. In low vulnerability areas, the worksheet can be prepared by the grower and remains on the farm with no further reporting required.

For the Nutrient Management Plan Summary Report (NMP Summary Report), the member will utilize the NMP worksheet to calculate total nitrogen applied (input), amount of nitrogen needed to meet actual yield (need) and the balance of what is remaining (loss of nitrogen). The member reports the ratio of the amount of nitrogen applied over the amount of nitrogen the crop needs. Also in the NMP Summary Report is member identification, APN, crop and acreage in reporting unit.

If the Coalition determines that a ratio reported on a member summary report for a specific field or crop is an “outlier,” the Coalition or a representative will contact the member to better understand the fertilizer practices of the grower. The Coalition will work with the member to ensure that they have information regarding management practices specific to their crop and soil type. Members are responsible for implementing management practices that are protective of groundwater quality.

Nitrogen Management Plan Worksheet

Following is a description of the data fields and sources of information for each.

Crop Specific Information

Items 1-5 are also reported in the NMP Summary Report

1. Crop Year, Actual

- Year or season a crop is produced. For annual crops, the period of time from planting to harvest. For perennial crops, the crop year can be considered dormancy through post harvest (or other equivalent period). This is the period when the nitrogen applications are counted toward the ratio.

2. Member ID

- Coalition membership number

3. Crop Year, Recommended

- This is the year/crop that an approved party would be making the nitrogen application recommendation

4. APN

- Assessor Parcel Number (APN) for reporting unit of worksheet and summary

5. Field #

- Field(s) numbers in the reporting unit covered by the worksheet

Crop Nitrogen Demand (Crop Nitrogen Needs)

6. Crop

- Crop covered by the worksheet

7. Actual Yield (lbs of N per acre)

- The total yield of a field per acre based on harvested production in the reporting period (total yield can also include non marketable portion of crops such as hulls, shells, culls)

8. Crop N Needs to meet actual yield (lbs of N per acre)

- Amount of nitrogen needed in the crop year for "Actual Yield".

9. Projected Yield

- Yield estimate based on cropping history, grower experience or other relevant information

10. N Needs to Meet Projected Yield (lbs of N per acre)

- The amount of Nitrogen fertilizer in pounds per acre needed to meet the Projected Yield. This amount will be based on N crop need levels developed by commodity groups, UC, CDFA or fertilizer suppliers.

11. Total Acres

- Total acres that the worksheet data applies to.

Nitrogen Applications and Credits

Nitrogen Fertilizer (Conventional and Organic)

12. Dry and Liquid N

- Sources of nitrogen, either dry granules or liquid formulations calculated in pounds of N per acre

13. Foliar N fertilizers

- Nitrogen fertilizer applied through spray equipment in a liquid form to crop foliage or canopy

14. Other N fertilizers

- Other sources of N fertilizers not accounted in above two categories

15. Available Organic Material N (manure, compost)

- Available nitrogen contained in manure or compost applications, measured in pounds per acre

16. Total available N Applied

- Sum of available nitrogen applied per acre in the reporting area

Soil Nitrogen Credits (Estimated)

Available N carryover

17. N from previous legume crop

- Nitrogen available to the upcoming crop from previous plantings such as alfalfa or legume-containing cover crops. This may be estimated using lab analysis or guidelines from the UC or other reputable source for estimating N contributed.

18. Available N residual from manure/compost

- Estimate of N available from manure or compost applications in previous years and available for the upcoming crop. This may be estimated using lab analysis or guidelines from the UC or other reputable source for estimating N contributed.

19. N in irrigation water (annualized)

- Nitrogen measured in the irrigation source water and available for crop update based on total applied irrigation water throughout the growing season. The estimated N is total applied on a pounds per acre basis for the entire season.

20. Total N Credits

- Total of cells 17, 18, 19

21. Total Available N Applied and Credits

- Total of cells 16 and 20

22. Crop N Needs

- From cell 8 (Actual) or 10 (Recommended)

23. Balance

- Amount of N above or below the projected crop needs.

24. Ratio

- Amount of nitrogen supplied over the amount of nitrogen the crop needs.
- *Also reported in the NMP Summary Report*

SUMMARY REPORT OF NITROGEN MANAGEMENT PLAN

The Nitrogen Management Plan Summary Report will be filled out by members and submitted to the ESJWQC based on the time schedule provided within the WDR General Order. A Coalition will summarize the data to provide assurance to the Regional Board that members are managing nitrogen to protect groundwater quality while trend monitoring data are collected. The Summary Report Nitrogen Worksheets will include an evaluation of the data reported to the ESJWQC by township (36 square mile area).

Data Collected and Reported

Each member in a high vulnerability area will also fill out a Nitrogen Management Plan Summary Report (NMP Summary Report). The member will utilize the NMP worksheet which records information such as type of fertilizer applied to calculate total available nitrogen applied (input), amount of nitrogen needed to meet actual yield (need) and the balance of what is remaining (balance). The member reports the ratio of the amount of nitrogen supplied over the amount of nitrogen the crop needs.

Member Requirements

Members are required to submit the NMP Summary Report to the Coalition based on the schedule in the WDR General Order. The member will fill out this report based on the actual amount of nitrogen supplied which should be based on the recommendation described in the NMP worksheet filled out by a certified crop advisor or other approved party. If the Coalition determines that the ratio submitted by the member is an outlier, the member will meet with a Coalition representative to better understand the fertilizer and irrigation practices of the grower. The member will be responsible for implementing management practices that are protective of groundwater quality. The Coalition will work with the member to ensure that they have information regarding management practices specific to their crop and soil type.

Evaluation of Nitrogen Consumption Ratios

The NMP Summary Report is submitted to the Coalition and documents each member's crop, parcels, acreage and ratio (input/need). The Coalition uses the ratios to make comparisons of potential nitrogen loss by crops in similar soil conditions under similar practices.

Incorporating the Nitrogen Use Ratio (NUR) into the summary report allows a coalition or grower to better identify fields that have a high potential for future groundwater contamination. This indicator will also be useful in guiding the management plan effectiveness program because there will be both a record of the field's potential for leaching nitrogen into the groundwater as well as a way of tracking the progress of fields identified as having a higher potential for discharges to groundwater.

Reported ratios for similar crops will be graphed in box and whisker plots in the evaluation submitted to the Regional Board. The range of values within the box and whisker plot as well as the median value will be evaluated from year to year for specific crops. The box and whisker plots will allow the Coalition to evaluate ratios relative to crops managed under similar practices. The Coalition will gain additional understanding through Groundwater Trend Monitoring and Farm Evaluations.

Identification of Growers not Implementing Effective Practices

The Coalition will evaluate crop specific ratios and any outliers. This means that outliers may be higher or lower than the median values. The Coalition is interested in the specific management practices used by members that result in both types of outliers.

It is not assumed that an outlier is indicative of practices that are not protective of groundwater quality. There are several reasons why a ratio may be an outlier:

1. The information was not recorded correctly either on the survey (by the member) or into the database (by the Coalition)
2. There was a misunderstanding regarding what information is filled out in the cells of the associated nitrogen budget



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3. More (or less if the outlier is lower than the box) nitrogen is being applied than is assumed to be needed by the crop
4. Site-specific conditions require that the member apply more (or less) nitrogen than a majority of other members growing the same crop

Coalition Actions

When outliers are identified, the Coalition will take the following actions:

1. Review the submitted NMP Summary Report to ensure that data were recorded correctly;
2. Compare the outliers to published literature (if available) to determine if the ratio is within the expected range of ratios;
3. Review the member's Farm Evaluation Plan and practices implemented to protect groundwater quality;
4. If the reported ratio is correct and still considered an outlier, the Coalition will address the subject in future outreach activities.



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Nitrogen Management Plan Worksheet

1 Crop Year, Actual: _____ 3 Crop Year, Recommended: _____
 2 Member ID# _____ 4 APN(s): _____
 Owner/manager: _____ 5 Field # _____

CROP NITROGEN DEMAND Crop Nitrogen Needs / Uptake	NITROGEN APPLICATIONS AND CREDITS		
		Recommended N (t)	Actual N (t)
6 Crop	Total N applied to field (lbs/ac)		
9 Projected yield (t) (Lbs of production/ acre)	<i>Nitrogen fertilizers</i> (conventional and organic)		
10 N crop needs to meet projected yield 2014 (lbs of Nitrogen per acre)	Dry & Liquid N (non foliar)		12
	Foliar N fertilizers		13
	Other N fertilizers		14
7 Actual yield (t) (Lbs of production/ acre)	Available Organic Material N: manure (est.) compost (est.)		15
	TOTAL N APPLIED (per acre)		16
8 N crop needs to meet actual yield 2014 (lbs of Nitrogen per acre)	<i>Soil Nitrogen Credits (estimated)</i>	Lbs N/acre	Lbs N/acre
	Available N carryover from previous year N in irrigation water (annualized)		17, 18
11 Total Acres			19
	TOTAL N CREDITS (per acre)	0	0
	Total N Credits and Application:	0	0
	Crop N needs:	0	0
	Balance	0	0
	Ratio	#DIV/0!	#DIV/0!



Attachment IV: Sediment and Erosion Control Plan Template

TEMPLATE FOR SEDIMENT AND EROSION CONTROL PLAN

Narrative Description

The sediment and erosion control plan (SECP) template is developed to fulfill the group option of developing the plan for use by coalition Members. The goal of the template is to assist Members in achieving the farm management performance standards of the Order, which include the requirement to minimize or eliminate the discharge of sediment above background levels. This template is designed to facilitate Member consideration of the following (MRP Attachment B, VI. C. page 25).

- Identification of locations subject to erosion or locations subject to frequent water flow events that may mobilize sediment (sediment and erosion risk areas). Locations to be evaluated include the fields, roads or stream crossings within the enrolled parcel, and discharge points from the field.
- Identification of practices implemented at sediment and erosion risk areas to minimize or eliminate the discharge of sediment above background levels.

The SECP would be required of parcels that have been identified with the potential to cause erosion and discharge sediment that may degrade surface waters, as identified by the Member in their Farm Evaluation, by the third-party in the Sediment Discharge and Erosion Assessment Report, or by the Executive Officer. The SECP is to be updated as conditions change. A copy of the Sediment and Erosion Control Plan will be maintained at the farming operations headquarters or primary place of business; and must be produced by the Member, if requested, should Central Valley Water Board staff, or an authorized representative, conduct an inspection of the Member's irrigated lands operation.

The SECP template is designed so that Members identify the management practices that may be used to manage sediment discharges from their parcels. A list of practices is provided and Members would identify which practices are currently being or are planned to be implemented. The benefit of the list is to provide Members with the possible options to be considered for implementation.

One SECP would be prepared for a parcel or number of parcels for similar type operations of a member. Using this approach, a separate plan would not need to be prepared for each individual parcel. Similar parcels could be combined for purposes of the plan.

The general farm information section of the plan would identify the farm or operation, location of APN's that it applies to and pertinent contact information.

The checklist section of the SECP would allow the Member to select from a range of irrigation and farming cultural practices that should be implemented either individually or in combination to manage sediment and erosion.



The last section of the SECP would provide the specific information requested in the MRP - Attachment B of the Eastside Order Section VI.C.

The SECP will be completed within 180 days of the Executive Officer accepting the third party's Sediment Discharge and Erosion Assessment Report. For small farming operations the SECP will be completed within 1 year of the Executive Officer approval.

The SECP is to be certified in one of the ways specified in the WDR, VII.C. page 24. It can be self-certified by the Member who has completed a training program that the Executive Officer concurs provides necessary training for sediment and erosion control plan development. It can also be prepared by professional consultants or by adhering to the site-specific recommendations of listed conservation agencies.



Sediment and Erosion Control Plan

General Farm Information

1. Name of Farm or Operation

2. Farm / Site Address

3. County

4. APN (Assessors Parcel Number(s)) with Potential Discharge

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)

Total acres with potential discharge

7. Total irrigated farmed acres

8. Which crops are grown on parcels with discharge potential?



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Sediment & Erosion Control Practices Checklist	Check If Practice Has Been Implemented	NA
Irrigation Practices		
Drip irrigation installed and used where practical.		
In-furrow dams are used to increase infiltration and settling out of sediment prior to entering the tail ditch.		
Recirculation systems are used to keep sediment and farm inputs on site. Water is recirculated to irrigate other fields.		
Use of irrigation scheduling methods and equipment to match irrigations to crop needs where possible.		
Use of irrigation equipment (sprinklers, micro-sprinklers, emitters, etc.) to match soil infiltration rates as much as possible to prevent runoff.		
The time between pesticide applications and the next irrigation is lengthened as much as possible to mitigate runoff of pesticide residue.		
Storm water is captured using field borders to supplement field irrigation.		
Shorter irrigation runs are used with checks to manage and capture flows.		
Use of flow dissipaters to minimize erosion at discharge point.		
Land leveling has been done to increase irrigation efficiency.		
Cultural Practices		
Vegetated ditches are used to remove sediment as well as water soluble pesticides, phosphate fertilizers and some forms of nitrogen.		
Vegetative filter strips and buffers are used to capture flows.		
Sediment basins / holding ponds are used to settle out sediment and hydrophobic pesticides such as pyrethroids from irrigation and storm runoff.		
Cover crops or native vegetation are used to reduce erosion.		
Hedgerows or trees are used to help stabilize soils and trap sediment movement.		
Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration.		
Crop rows are graded, directed and at a length that will optimize the use of rain and irrigation water.		
Creek banks and stream banks have been stabilized.		
Subsurface pipelines are used to channel runoff water.		
PAM (polyacrylamide) used in furrow and flood irrigated fields to help bind sediment and increase infiltration.		
Berms are constructed at low ends of fields to capture runoff and trap sediment.		
Minimum tillage incorporated to minimize erosion.		



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1. Identify any areas of your farming operation that are subject to erosion or frequent runoff events that mobilize sediment (Attach a map or provide a narrative below):

2. List practices that are or will be implemented in the areas described above (#1) to minimize or eliminate the discharge of sediment (from practices listed on previous page):
