Tulare Lake Basin
MPEP Group Option Approach

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The group option as proposed by the Tulare Lake Basin coalition groups will utilize data collected through the Farm Evaluation, Nitrogen Management Plan, and potentially the Sediment and Erosion Control plan to conduct a representative monitoring program for major crops within the high vulnerability areas. Scientific and detailed research experiments will document the potential for constituents of concern to get past the root zone and modeling will be conducted to estimate the potential to degrade groundwater.

Groundwater Quality Assessment Report (GAR)
In developing the GAR, each coalition group will identify their own high vulnerability areas for groundwater.

Farm Evaluation (FE)
The Farm Evaluation report will be used to determine the acreage and practices from all crops within the groundwater high vulnerability area.

Nitrogen Management Plan (NMP)
The NMP will be used to determine what is a representative nitrogen use ratio for a specific crop within the high vulnerability areas.

Sediment & Erosion Control Plan (SECP)
The Sediment and Erosion Control Plan may be further used if crops grown in high vulnerability areas for groundwater are also implementing a SECP.

Management Practices Effectiveness Program (MPEP)
Steps

1. Identify High Vulnerability Area for Groundwater. (GAR)
2. Identify major crops grown within the High Vulnerability Areas. (FE)
3. Select order of priority for each of the major crops within the High Vulnerability Areas to conduct scientific research. Acreage, nitrogen use, farm practices and proximity to drinking water sources will guide priorities. A time schedule will be put into place for all crops or crop groupings to be analyzed.
4. Select a site that is the most representative for the crop based on the nitrogen use ratios, management practices, and soil types. (FE, NMP)
5. Collect and analyze existing data.
6. Conduct the three to five year research trials to determine nitrogen and other constituents of concern movement past the root zone which is unrecoverable using research outline as prepared by technical experts.
7. After completion of the scientific research, model the potential for groundwater degradation for all of the sites within the high vulnerability area. Determine if the current representative practices are protective of groundwater. If determined to be protective, no further requirements will be required of growers. Coalitions will continue outreach and education efforts to further enhance nitrogen use efficiency.
8. If not protective, the coalition groups along with growers and research institutions will evaluate what can be done to enhance the protection of groundwater until it can be determined to be protective of groundwater quality through research studies and modeling or through alternative compliance.

Grower Self-Certification
Continuing Education Approach

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Certified Nitrogen Management Plans are required in High Vulnerability Groundwater Areas under the Central Valley Regional Water Quality Control Board's LT-ILRP. Current options for getting a plan certified under those Orders are:

Options within the Central Valley

a. ***Self-certified by the Member who attends a California Department of Food and Agriculture or other Executive Officer approved training program for nitrogen plan certification. The Member must retain written documentation of their attendance in the training program;*** *or*
b. *Self-certified by the Member that the plan adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS) or the University of California Cooperative Extension. The Member must retain written documentation of the recommendation provided; or*
c. *Certified by a nitrogen management plan specialist as defined in Attachment E of this Order. Such specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisors24 certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management in California by the NRCS; or*
d. *Certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the Nitrogen Management Plan meets the objectives and requirements of this Order.*

This White Paper focuses option A, and proposes an outline of a continuing education program that growers could attend to be eligible to certify their own Nitrogen Management Plans. The continuing education model allows for flexibility among regions and growers and builds upon the lessons learned over time. The development of a one-size-fits-all comprehensive training program would be a time consuming task and not as efficient of a way to deliver the appropriate messages to fit the needs of a diverse farming community.

While many farms use technical consultants (CCA's, PCA's, Agronomists, etc.) to help prepare farm plans the option for self-certification, it is anticipated to be an attractive option for growers who have a wealth of experience and knowledge for the crops and conditions on their farm, and also for smaller farms without resources for the hiring of professionals. Enhancing the existing knowledge base of the individuals making the planning decisions was a core element of the Regional Board's LT-ILRP goals. A continuing education model allows for an approach that can be implemented in a timely manner and be tailored to the individual growers.

The other key component is the ability to use a "Train-the-Trainer" model that the agricultural community has used for safety training (tractor, forklift, lockout/tagout) through Cal-OSHA. That program allows management personnel to receive continuing training of regulations and safety aspects on specific farm machinery and then go back and train their employees in operating the specific equipment that they own. This relates well to the situation with nutrient management training as general knowledge can be taken back and applied at the farm. This model combines the knowledge of the trainer with that of the grower. The key to success of the program is having multiple trainers and outreaching to numerous locations. Convenience and costs are key drivers in getting participation.

For this plan, we propose that the professionals identified in option C above would be the eligible trainers to conduct targeted self-certification trainings that growers could attend. This would build on the existing programs and support the continual transfer of knowledge to the farming community making nutrient management decisions.

Continuing Education Model Details

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Qualified Trainers

Qualified Trainers to conduct self-certification classes are individuals identified in Attachment E (Option C in White Paper) under the Central Valley Regional Water Quality Control Boards Long-term Irrigated Lands Regulatory Program. Coalition representatives and technical experts could apply for hours through CDFA for nutrient management/coalition seminars and events. CDFA would maintain the list of approved trainers through their programs and be the approval entity for the number of hours awarded for nutrient management seminars and coalition outreach events.

Educational Materials

Trainers would be responsible for developing appropriate materials tailored to the crop/conditions/knowledge base of their prospective attendees. It would be expected that developed materials from CDFA's CCA program, FREP, USDA NRCS, UC Cooperative Extension, Commodity groups, and other educational institutions would be used and/or referenced depending on the targeted audience.

Frequency

A total of 6 hours of credits would be needed every 3 years. Three of the hours would be required to come from a self-certification class conducted by a trainer in Option C. The additional 3 hours could but would not be required to come from attendance of a Nutrient Management Seminar or Coalition education/outreach events.

Categories

Nutrient Management Certification Training Class – 3 Hours (Mandatory)
Nutrient Management Education Events and/or Coalition Outreach Events – up to 3 Hours

Eligibility

The person attending the self-certification training classes and outreach events must be a person responsible for making the nutrient management decisions on the farm and be the signors of the NMP. The person would be eligible to immediately sign off on an NMP upon completion of the first 3 hour self-certification course. To continue eligibility, all 6 hours of credits in the required categories would need to be completed every three years. If at the end of a three year period the appropriate hours are not earned then the person would not be eligible again until another 3 hour self-certification course is attended. The self-certification option could also be denied for particular individuals for non-compliance with the LT-ILRP.

Documentation

The responsibility for maintaining written documentation would fall on the individual seeking self-certification status and would be required to show proof upon inspection from the Regional Board or request from the Coalition group. Penalties for falsifying documentation would trigger non-compliance of the order and the severity of penalty would depend on the severity of the infraction.

Nitrogen Management Plan Worksheet

Crop Year, Actual: 2014 Crop Year, Recommended: 2014 DRAFT

Member ID# 1234 APN(s): 11013501

Owner/manager: Joe Almond Field # A, B, C

CROP NITROGEN DEMAND Crop Nitrogen Needs / Uptake	NITROGEN APPLICATIONS AND CREDITS		
		Recommended N (2014)	Actual N (2014)
Crop	**Total N applied to field** (lbs/ac)		
Almonds			
Projected yield (2014) (Lbs of production/ acre)	***Nitrogen fertilizers*** (conventional and organic)		
3000	Dry & Liquid N (non foliar)	225	230
N crop needs to meet projected yield 2014 (lbs of Nitrogen per acre)	Foliar N fertilizers	25	25
	Other N fertilizers	0	0
300			
Actual yield (2014) (Lbs of production/ acre)	Available Organic Material N: manure (est.)	10	10
	compost (est.)	5	5
4000			
N crop needs to meet actual yield 2014 (lbs of Nitrogen per acre)	TOTAL N APPLIED (per acre)	265	270
	Soil Nitrogen Credits (estimated)	Lbs N/acre	Lbs N/acre
400	Available N carryover	0	0
Total Acres	N in irrigation water (annualized)	50	50
178			
	TOTAL N CREDITS (per acre)	50	50
	Total N Credits and Applications	315	320
	Crop N needs	300	400
	Balance	**15**	**-80**
	Ratio	**1.050**	**0.800**

Certified By: _____

☐ **Self-Certified, training program attended**

☐ **Self-Certified, UC or NRCS site specific recommendation**

☐ **Nitrogen Management Plan Specialist (CCA, NRCS TSP, Professional Agronomist, Crop Advisor)**

Farm Evaluation – Survey Completion Instructions

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The Farm Evaluation is a requirement of the Irrigated Lands Regulatory Program Waste Discharge Requirements (WDRs). Language below has been excerpted from the WDR. These questions should be answered based on 2014 practices.

When completing part C and E, subdivide a parcel into fields, assigning each field a name or number. The field name or number can correspond to site ID or location ID used for pesticide use reporting. For example, you might have two fields of different crops in one APN so they could be identified as APN# 111-00-222; field A; APN# 111-00-222, field B, etc. or any other field designation that fits your existing records. If there are parcels/fields in Part C that have the same practices, only one survey needs to be filled out with the parcels/fields marked for which the survey answers apply. If a parcel/field has different practices, fill out a separate Part C for each parcel/field with unique practices. For example, if a member has 3 parcels enrolled (Parcel 1, 2 and 3) and manages Parcel 1 and 2 the same, fill out one Part B for Parcels 1 and 2. Another survey needs to be filled out for Parcel 3 if practices differ from A and B.

Steps to Complete the Farm Evaluation (Part A, B, C, D and E):

Step 1: For questions 1 and 2, check the box next to all practices listed that apply to your enrolled parcels/fields. Answer question 3 by circling either Yes or No. If you answer yes to question 3, you may be required to complete a Sediment and Erosion Control Plan (separate template) along with completing Part E of this form identifying the practices you have in place to control sediment and erosion.

Step 2: Answer questions 1 and 2 of Part B of the Farm Evaluation for all wells and known abandoned wells associated with the membership (Irrigation Well Information).

Step 3: Question 3 of Part B describes how to label the map to identify well(s) associated with this Farm Evaluation. Identify the location of both active and known abandoned wells on the attached map/sheet, or on your own in-house mapping system. In order to use your own farm map, you must update it with the legend in Part B. Create a well identification (Well ID) to link the well management practices to the well(s) marked on the map.

Step 4: Answer the questions in the well management practices table with an "X" for practices that are implemented. For known abandoned wells, indicate the year that the well was abandoned and the method of abandonment. If you have more wells than the sheets provide, use additional copies as necessary.

Step 5: The Specific Field Evaluation (Part C) includes management practices that may apply only to some of the enrolled parcels/fields. In question 1, identify which parcels/fields the survey applies to by inputting the parcel numbers and fields that have similar practices. You will need to complete an additional Part C where practices differ, until you have completed one for every enrolled parcel and field (make additional sheets as necessary). For question 2, indicate the primary irrigation practice that is used during the season. If a secondary irrigation practice is also used on the same parcel and fields

included in question 1, indicate that in the space provided. For questions 3 and 4, check all that apply to the parcel and fields indicated in question 1.

Step 6: Part D, is a blank page for a Farm Map. The purpose of the Farm Map is for you to identify your well locations and discharge points. The Farm Map will be required to be distributed upon inspection to verify the practices that you report in Part B are indeed in place. The Farm Map is not required to be submitted to the Coalition or Regional Board at this time. You may use your own Farm Map as long as it is updated with the Legend provided identifying well locations and discharge points.

Step 7: If applicable, fill out Part E (Sediment and Erosion Control Practices) if it has been determined that any portion of your enrolled acreage needs a Sediment and Erosion Control Plan. Completion of Part E does not relieve the requirement of completing a Sediment and Erosion Control Plan. Part E is the reporting method of the practices that you are implementing in your plan. For question 1, indicate the parcels and fields that have been determined to need of a Sediment and Erosion Control Plan. For questions 2 and 3, check next to all of the practices that are currently in place.

Step 8: Sign the bottom of the Farm Evaluation (Part A) to certify that all of the information provided (Parts A-E) is current and accurate. Submit the signed Farm Evaluation to the Coalition.
KEEP COPIES FOR YOUR RECORDS.

Language from ILRP WDRs:

"Members shall complete a Farm Evaluation and submit a copy of the completed Farm Evaluation to the third-party group according to the schedule below. The Member must use the Farm Evaluation Template approved by the Executive Officer (see section VIII.C below). A copy of the Farm Evaluation shall be maintained at the Member's farming headquarters or primary place of business, and must be produced upon request by Central Valley Water Board staff.

[A]n updated Farm Evaluation must be prepared and submitted to the third-party . . . annually thereafter. As part of the Farm Evaluation, the Member shall provide information on any outreach events attended in accordance with section IV.B.4 of this Order. . . . [T]he Executive Officer may approve reduction in the frequency of updates and submission of Farm Evaluations, if the third-party demonstrates that year to year changes in Farm Evaluation updates are minimal and the Executive Officer concurs that the practices identified in the Farm Evaluations are consistent with practices that, when properly implemented, will achieve receiving water limitations or best practicable treatment or control, where applicable."

Low Vulnerable Areas:
Members in low vulnerable areas will have to submit the revised Farm Evaluation every five years instead of annually as in highly vulnerable areas.

Part A – General Farm Practices

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Member Name: _____ Coalition Member ID#: _____

1. Pesticide Application Practices (check all that apply)

- ☐ County Permit Followed
- ☐ Follow Label Restrictions
- ☐ Sensitive Areas Mapped
- ☐ Attend Trainings
- ☐ End of Row Shutoff When Spraying
- ☐ Avoid Surface Water When Spraying
- ☐ Reapply Rinsate to Treated Field
- ☐ Target Sensing Sprayer used
- ☐ Use Drift Control Agents
- ☐ Monitor Wind Conditions
- ☐ Use Appropriate Buffer Zones
- ☐ Use Vegetated Drain Ditches
- ☐ Monitor Rain Forecasts
- ☐ Use PCA Recommendations
- ☐ No Pesticides Applied
- ☐ Chemigation
- ☐ Other _____
- ☐ Other _____

2. If you have one or more Nutrient Management Plans, who helped prepare the plan?

- ☐ Certified Crop Advisor (CCA)
- ☐ Certified Technical Service Providers by NRCS
- ☐ Self-Certified using site specific recommendations from UCCE or NRCS
- ☐ Self-Certified by CDFA or Executive Officer approved training program
- ☐ Professional Soil Scientist
- ☐ Professional Agronomist
- ☐ None of the above

3. Does your farm have the potential to discharge sediment to off-farm surface waters above background levels? (circle one) Yes No

*If **yes**, you may need a sediment and erosion control plan. If it has been determined that you need a sediment and erosion control plan, please fill out **Part E**.*

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 or represented Members 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 knowingly submitting false information, including the possibility of fine and imprisonment for violations.

_____ _____ _____

Signature *Printed Name* *Date*

Part B – Irrigation Well Information

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1. Do you have any wells on parcels associated with this Farm Evaluation? (circle one) Yes No
2. Are you aware of any known abandoned wells associated with this Farm Evaluation? (circle one) Yes No

For each well (existing or abandoned), identify with a mark the location of these wells on the attached map(s) or your own farm map with a unique Well ID of your choice.

3. For each well, fill in the table below with the Well ID that corresponds to the map and put an "X" next to the practices that apply to the individual well. If the well has been abandoned, indicate the year the well was abandoned (write "Unk" if the year is unknown; approximation is ok) and mark how the well was abandoned:

Farm Well ID	Wellhead Protection				Abandoned Wells			
	Ground Sloped Away from Wellhead	Standing water avoided around wellhead	Good "Housekeeping" Practices*	Air Gap (for non-pressurized systems)	Year abandoned	Destroyed – Certified by County	Destroyed by licensed professional	Destroyed – Unknown method

*Good housekeeping practices include keeping the area surrounding the wellhead clean of trash, debris and any empty containers.

Comments/Notes: _____

Part C – Specific Field Evaluation

(Complete separate form for each field/parcel where practices differ) DRAFT

Member Name: _____ Coalition Member ID#: _____

1. Identify the Parcels and Fields that this survey applies to.

Crop	Acres	Field ID	Parcel (APN)

2. Irrigation Practices (A secondary system could be used for germination, frost protection, crop cooling, etc.)

Primary (check one)	Secondary (if applicable, check one)
☐ Drip	☐ Drip
☐ Micro Sprinkler	☐ Micro Sprinkler
☐ Furrow	☐ Furrow
☐ Sprinkler	☐ Sprinkler
☐ Border Strip	☐ Border Strip

3. Irrigation Efficiency Practices (check all that apply)

- ☐ Laser Leveling
- ☐ Use of E_T in scheduling irrigations
- ☐ Water application scheduled to need
- ☐ Use of moisture probe (e.g. irrometer or tensiometer)
- ☐ Other _____

4. Nitrogen Management Methods to Minimize Leaching (check all that apply)

- ☐ Cover Crops
- ☐ Split Fertilizer Applications
- ☐ Soil Testing
- ☐ Tissue/Petiole Testing
- ☐ Variable Rate/GPS
- ☐ Foliar N Application
- ☐ Irrigation Water N Testing
- ☐ Fertigation
- ☐ Other _____
- ☐ Other _____

Part D - Farm Map

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Keep at Farming Headquarters - For Inspection Purposes Only. You may use your own Farm Map if Legend is followed.
Update map with well locations and surface water discharge points. Identify well locations with the **Well ID** from **Part B.**

Legend
X – In Use Well Locations
A – Known Abandoned Well Locations
DP – Off Farm Surface Water Discharge Points

Part E – Sediment & Erosion Control Practices (If Applicable)

Member Name: _____ Coalition Member ID#: _____

1. Identify Parcels and Field(s) where Sediment & Erosion Control practices are implemented. Fill out a separate Part E for parcels/fields with different sediment & erosion practices.

Crop	Acres	Field ID	Parcel (APN)

2. **Irrigation Practices** for Managing Sediment and Erosion:

- ☐ In-furrow dams are used to increase infiltration and settling out of sediment prior to entering the tail ditch.
- ☐ The time between pesticide applications and the next irrigation is lengthened as much as possible to mitigate runoff of pesticide residue.
- ☐ Shorter irrigation runs are used with checks to manage and capture flows.
- ☐ PAM (polyacrylamide) used to help bind sediment and increase infiltration.
- ☐ Use drip or micro-irrigation to eliminate irrigation drainage.
- ☐ Use of flow dissipaters to minimize erosion at discharge point.
- ☐ Tailwater Return System.

3. **Cultural Practices** for Managing Sediment and Erosion:

- ☐ Storm water is captured using field borders.
- ☐ 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.
- ☐ Berms are constructed at low ends of fields to capture runoff and trap sediment.
- ☐ Minimum tillage incorporated to minimize erosion.