STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF DECEMBER 8-9, 2016
Prepared on November 1, 2016

ITEM NUMBER: **11**

SUBJECT: **Irrigated Lands Program Update: Amended Monitoring and Reporting Requirements**

STAFF CONTACT: **Chris Rose, 805/542-4770 or chris.rose@waterboards.ca.gov**

KEY INFORMATION

Location:	Central Coast Regional Boundaries
Discharge Type:	Discharge to surface waters and groundwater from commercial, irrigated agricultural operations
Existing Orders:	2012 Ag Order and its associated Monitoring and Reporting Program Orders [Order No. R3-2012-0011 and associated Monitoring and Reporting Program Order Nos. R3-2012-0011-01, R3-2012-0011-02, R3-2012-0011-03]
This Action:	**Review of Executive Officer's MRP Amendments**

SUMMARY

The Central Coast Water Board's 2012 Ag Order includes three regulatory tiers based on risk to water quality and a distinct Monitoring and Reporting Program (MRP) for each tier. The 2012 Ag Order and its MRPs expire in March 2017. The timing of this expiration could result in sampling data gaps during 2017, and there are also water quality issues, such as emerging pesticides, that should be addressed in the near term. The Water Board considered these issues during a public meeting on July 28, 2016. Based on staff recommendations and feedback from the Water Board's July 28, 2016 public meeting discussion, the Executive Officer issued amended MRPs on August 22, 2016.

Several stakeholders objected to the amended MRPs and petitioned the Executive Officer's action to the State Water Board. During a subsequent teleconference with the petitioners, the Executive Officer suggested that the petition be held in abeyance pending an informational item before the Water Board. The informational item would allow the Board to hear comments and recommendations from stakeholders regarding the amended MRPs. The petitioners agreed to this interim step and the Executive Officer scheduled this Water Board discussion of the MRP issues.

This staff report summarizes the amended MRPs and stakeholder objections. In the meantime, the amended MRPs are in effect and will remain in effect unless otherwise directed by the Water Board. After considering stakeholder objections and comments as discussed in this staff report, the Executive Officer recommends that the Water Board uphold the amended MRPs as issued on August 22, 2016.

DISCUSSION

The Central Coast Water Board's 2012 Ag Order, and its associated Monitoring and Reporting Programs (MRPs), expire in March 2017. The expiration of the MRPs presents issues that need to be addressed, such as sampling data gaps, providing clarity to the cooperative monitoring program regarding monitoring requirements for planning and budgeting purposes, and addressing emerging toxicity issues in the near term.

At the July 28, 2016 Water Board meeting, agenda item 6, several Board members suggested that future monitoring and reporting programs include groundwater monitoring requirements for 2017. Board members also requested that the MRP requirements include pesticide sampling to assess the pesticides currently being used and their effects on the environment.

In August 2016, Water Board staff hosted outreach events where they discussed the draft amendments to MRPs. The outreach events included a webcast meeting with agricultural technical service providers on August 15, 2016. At the webcast meeting, staff presented a summary of the July Water Board meeting discussion and a summary of the Executive Officer's pending amendments to the MRPs. The summary included: 1) 2017 groundwater monitoring requirements and 2) 2017 surface water monitoring for pyrethroid pesticides, neonicotinoid pesticides, and inclusion of the toxicity indicator species *Hyalella* (sensitive to pyrethroids) and *Chironomous* (sensitive to neonicotinoids). No objections to these proposed amendments were made at the meeting by technical service providers. Technical service providers did ask whether the ranch tiering criteria would be amended based on the proposed pesticide monitoring requirements. In response, staff indicated that the tiering criteria would not be altered.

After considering Board member input from the July Water Board meeting, staff recommendations, and feedback from the outreach events, the Executive Officer amended the MRPs on August 22, 2016. Staff notified all enrolled agricultural operations, agricultural service providers, and other interested parties about the amended MRPs via U.S. mail, emails, and an email list subscription service. On August 23rd and 24th, staff held public workshops in Salinas and Santa Maria, respectively, and discussed the amended MRPs. Staff hosted a follow-up telephone meeting with technical service providers on September 6, 2016, where, for the first time, the technical service providers raised objections to the neonicotinoid pesticide monitoring requirement.

Staff presented an informational item to the board on September 22, 2016, as agenda item 11 and included a summary of the amended MRPs. The Water Board did not object to the MRP amendments nor did it direct staff to reverse or alter these changes.

MRP Amendments

The significant August 2016 amendments can be grouped in two categories: 1) groundwater monitoring and reporting and 2) surface receiving water and sediment monitoring parameters and frequency.

Groundwater Monitoring and Reporting

The amended MRPs require all enrolled dischargers to sample private domestic wells and the primary irrigation well on each farm or ranch twice during calendar year 2017. These groundwater monitoring and reporting requirements are identical to those adopted during the 2012 Ag Order renewal, with respect to the types of wells sampled (all domestic wells and the primary irrigation well), frequency of sampling (twice during year one), and parameters analyzed

(nitrate and major ions). Findings to support the need for groundwater monitoring and reporting are the same as those included in the 2012 Ag Order.

Clarification of Domestic Wells
The amended MRPs clarify that a domestic well is any groundwater well that is connected to a residence, workshop, or place of business that is used or may be used for human consumption, cooking, or sanitary purposes. This definition is consistent with the definition used during implementation of the 2012 Ag Order and is also consistent with Water Code section 106.3 (human right to water) and descriptions used by the State Water Board Division of Drinking Water (DDW), Department of Water Resources (DWR), and local county environmental health agencies. The amended MRPs retain the requirement for dischargers to notify well users promptly if a pollutant in a domestic well exceeds the maximum contaminant level (MCL).

Clarification of Individual and Cooperative Groundwater Monitoring
The amended MRPs also clarify but do not change a discharger's option to comply as an individual or through a cooperative groundwater monitoring program. The amended MRPs also do not change the Executive Officer's authority to review and approve alternative groundwater monitoring and reporting requirements submitted by an individual or third party (i.e., a coalition).

Groundwater Monitoring Frequency
The amended MRPs retain a similar frequency of monitoring as the 2012 Ag Order MRPs for growers who conducted individual groundwater monitoring, which required sampling twice during the first year. The amended MRPs streamline groundwater monitoring by applying this requirement to all dischargers to ensure data quality, consistency, and comparability of data. To streamline the requirements, the amended MRPs removed the requirement for the few Tier 3 dischargers to conduct annual groundwater monitoring and reporting and also removed the requirement for cooperative groundwater monitoring programs to conduct repeat sampling, during the term of the Order, for domestic drinking water wells when the nitrate level is within 80% of the MCL. In addition, the amended MRPs removed the option to submit "pre-existing" groundwater monitoring data, in lieu of newly collected data, that is less than five years old. In most cases, staff found such pre-existing data to be inconsistent and noncompliant with that required by the 2012 Ag Order MRPs.

Cooperative Groundwater Monitoring
Staff began discussing options for updating groundwater monitoring and reporting requirements with the Central Coast Groundwater Coalition (CCGC) in late 2015 and early 2016, following the CCGC's final submittal of the required groundwater characterization reports, and discussed potential changes in more detail during meetings between April and July 2016.

In August 2016, staff clarified to CCGC and also the Santa Rosa Creek Valley Groundwater Cooperative that a third party could submit a request to the Executive Officer for alternative groundwater monitoring and reporting requirements. On October 18, 2016, the Santa Rosa Creek Valley Groundwater Cooperative submitted a request to the Executive Officer proposing alternative groundwater monitoring and reporting requirements for 11 farms and ranches located in the Santa Rosa Creek Valley, north of Cambria. Additionally, CCGC has indicated that they will also submit a proposal for alternative groundwater monitoring and reporting requirements for consideration by the Executive Officer.

Surface Receiving Water and Sediment Monitoring Parameters and Frequency

The table below summarizes the previous and amended MRPs:

PARAMETER	**2012 AG ORDER MRP**	**AMENDED MRP**	**REASON FOR ADDITION/REMOVAL**
Physical Parameters (flow, pH, EC, dissolved oxygen…)	Every monitoring event	Every monitoring event	
Nutrients (nitrogen, phosphorus…)	Monthly including two storm water events	Monthly	
Water Column Toxicity			
Algae	Twice in dry, twice in wet season	Twice in dry, twice in wet season	
Ceriodaphnia	Twice in dry, twice in wet season	Twice in dry, twice in wet season	
Fathead minnow	Twice in dry, twice in wet season	**NOT REQUIRED**	Limited toxicity to fish found using this species; replacing with *Chironomous*
Chironomous (sensitive to neonicotinoids)	**NOT REQUIRED**	**NEW REQUIREMENT** Twice in dry, twice in wet season	Sensitive to neonicotinoid pesticides; pesticide use rising since 2010. 2014 data show toxicity to *Chironomous* in ag areas
Water Chemistry			
Carbamate Pesticides (6)	4 times in 2nd or 3rd year, concurrent w/tox monitoring	**NOT REQUIRED**	Very limited exceedance of thresholds of this pesticide; replacing with neonicotinoids
Organophosphate Pesticides (13)	4 times in 2nd or 3rd year, concurrent w/tox monitoring	2 times, once in dry, once in wet season, concurrent with water tox	
Herbicides (8)	4 times in 2nd or 3rd year, concurrent w/tox monitoring	2 times, once in dry, once in wet season, concurrent with water tox	
Metals (9)	4 times in 2nd or 3rd year, concurrent w/tox monitoring	2 times, once in dry, once in wet season, concurrent with water tox	

PARAMETER	2012 AG ORDER MRP	AMENDED MRP	REASON FOR ADDITION/REMOVAL
Total phenolic compounds	4 times in 2nd or 3rd year, concurrent w/tox monitoring	2 times, once in dry, once in wet season, concurrent with water tox	
Neonicotinoid Pesticides (5)	**NOT REQUIRED**	2 times, once in dry, once in wet season, concurrent with water tox **NEW REQUIREMENT**	Data indicate the use of this pesticide is rising
Sediment Sampling			
Sediment Toxicity: *Hyalella*	Annually	2 times, once in spring, once in fall, concurrent w/sed tox	
Benthic Invertebrate/Physical Habitat	Once in 2nd or 3rd year concurrent w/sed tox	**NOT REQUIRED**	Staff will propose frequency about once/five years; last sampled 2014
Pyrethroid Pesticides (11)	Once in 2nd or 3rd year concurrent w/sed tox	2 times, once in spring once in fall concurrent w/sed tox	
Organochlorine Pesticides (2)	Once in 2nd or 3rd year concurrent w/sed tox	**NOT REQUIRED**	Only a few detections with no exceedances of benchmarks
Chlorpyrifos Pesticide	Once in 2nd or 3rd year concurrent w/sed tox	2 times, once in spring once in fall concurrent w/sed tox	

Note from the table above that the amended MRPs result in the following changes:

Surface receiving water and sediment parameters:
The amended MRPs add the following parameters:

- Five neonicotinoid pesticides in water column sampling
- *Chironomus* (midge) to water column toxicity testing, which is sensitive to neonicotinoid pesticides

and removes the following parameters:

- Fathead minnow from water column toxicity testing
- Carbamate pesticides in water column sampling
- Benthic invertebrate and associated physical habitat assessment
- Organochlorine pesticides and sulfides in sediment sampling

Objections to the MRP Amendments
Several agricultural program stakeholders objected to the modifications and asked for a public review process and for the Executive Officer to reconsider the changes. This staff report and Board meeting discussion are in response to those requests. It is standard practice for the Board to grant the Executive Officer authority to modify monitoring and reporting provisions. This is consistent with the delegation of authority to the Executive Officer and Water Code section 13267. This discussion item invites the Board members' and public feedback on these amendments.

Grower-Shipper Association of Central California, Grower Shipper Association of Santa Barbara and San Luis Obispo Counties, Monterey County Farm Bureau, Central Coast Groundwater Coalition, and California Farm Bureau Federation collectively petitioned the State Water Resources Control Board for review of the Executive Officer's action to amend the MRPs.

The petitioners argue that the Executive Officer did not provide sufficient notice and comment opportunities, that the revisions are not supported by findings that the burden of compliance is reasonable in light of the benefit to be conferred, that there are no findings that support the need for increased monitoring frequency or additional sampling analytes and toxicity testing, that provisions for cooperative groundwater monitoring were improperly deleted, and that the amendments improperly require monitoring of all groundwater wells, even where the grower is not responsible for a domestic well located within the property boundary. The petitioning parties asked that the petition be held in abeyance pending this information discussion and any subsequent modification of the monitoring requirements.

Pesticide Use and Toxicity
Data on current commercial application of pesticides indicates that neonicotinoid and pyrethroid pesticide use in the Central Coast Region and statewide is increasing in urban and agricultural settings and these pesticides have been detected at levels known to be toxic at a number of locations in the Central Coast Region in recent years. Both the Environmental Protection Agency and the California Department of Pesticide Regulation (CDPR) are reevaluating uses of pyrethroid and neonicotinoid pesticides because of environmental impacts. Neonicotinoids are also of concern because of their known impacts to honey bees and other pollinators.

CDPR pesticide usage data from 2010 to 2014 for Monterey and Santa Barbara counties show an annual increase of neonicotinoid pesticide active ingredient applied (thiamethoxam, imidacloprid, thiacloprid, dinotefuran, acetamiprid) from 43,351 pounds in 2010 to 70,824

pounds in 2014. For the same time period, the amount of active ingredient applied of pyrethroid pesticides (gamma-cyhalothrin, lambda-cyhalothrin, bifenthrin, beta-cyfluthrin, cyfluthrin, esfenvalerate, permethrin, cypermethrin, fenvalerate) increased from 46,638 pounds applied in 2010 to 70,378 pounds applied in 2014.

In September 2014, a collaborative study between Central Coast Water Board's Central Coast Ambient Monitoring Program (CCAMP), CDPR, and the Granite Canyon Marine Pollution Studies Laboratory evaluated nine sites in the Santa Maria and Salinas watersheds for a broad suite of pesticides and two different toxicity test organisms. These sites are also sampled by Central Coast Water Quality Preservation, Inc.'s Cooperative Monitoring Program. The study data showed frequent detections of imidicloprid and pyrethroid pesticides, with toxicity commonly found to *Hyalella* (an amphipod sensitive to pyrethroids) and *Chironomus* (a fly larvae sensitive to neonicotinoids). All but one site (89%) were toxic to one or both test species. The Cooperative Monitoring Program sampled the same sites one month earlier in August 2014, using the traditional toxicity test species required by the 2012 MRPs: *Ceriodaphnia* (waterflea), *Selenastrum* (algae), and *Pimephales* (fathead minnow). No toxicity was found at any of the sites using these test species. These findings demonstrate the importance of selecting test organisms that are sensitive to the chemicals found at the site and also suggest that monitoring requirements for the Cooperative Monitoring Program need to be adjusted in response to changes in pesticide use patterns.

CDPR's report *Surface Water Monitoring for Pesticides in Agricultural Areas of California, 2015* found that two of the four pesticides with the highest detection frequencies included imidacloprid (a neonicotinoid pesticide) and bifenthrin (a pyrethroid pesticide). Forty-seven percent of the 30 bifenthrin samples exceeded an aquatic life benchmark; 21% of the 77 imidacloprid samples exceeded an aquatic life benchmark. The areas studied included agricultural areas in Monterey, San Luis Obispo, and Santa Barbara counties of the Central Coast Region. All of these studies demonstrate the urgency of the monitoring requirements included in the amended MRPs.

CONCLUSION

The Executive Officer's August 2016 amendments to the MRPs were necessary to address specific water quality issues and ensure and document compliance with the 2012 Ag Order. The modifications are reasonable, and the burden, including costs, of the sampling and reporting bear a reasonable relationship to the benefit to be obtained; specifically, the amendments address changes in agricultural pesticide use and the resulting risk to water quality and evaluate the effects of discharges from irrigated agricultural operations to surface water and groundwater.

The Executive Officer has considered stakeholder objections and comments and, based on the information, does not plan to revoke or modify the August 2016 MRP amendments. The amended MRPs will remain in effect unless otherwise directed by the Water Board.

ATTACHMENT

1. Amended Tier 1 MRP, redline version