

**STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION**

**STAFF REPORT FOR REGULAR MEETING OF NOVEMBER 8-9, 2018**  
Prepared on October 19, 2018

**ITEM NO.:** 5

**SUBJECT:** Agricultural Order 4.0 Requirement Options

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**ACTION:** Informational/Discussion

**SUMMARY**

Staff has developed conceptual options tables to present to the board and public as the next step in the development and outreach process associated with the next order regulating waste discharges from irrigated agricultural lands, Ag Order 4.0. Staff has identified certain elements that must be included to create an effective and legally compliant order; these required or necessary elements include: numeric limits, a time schedule, monitoring and reporting, a method for prioritization or phasing, and incentives.

Staff has also identified the five primary water quality-related challenges (also referred to as components) that must be addressed by Ag Order 4.0. These water quality challenges have been identified through review of monitoring data and are largely due to the impacts of irrigated agricultural discharges in the region; the five components are: irrigation and nutrient management for groundwater protection, irrigation and nutrient management for surface water protection, pesticide management for groundwater and surface water protection, sediment and erosion management, and riparian habitat management.

Options tables are prepared for each of the five components. Within each options table, staff outlines three general requirement options: Ag Order 3.0, Ag Order 4.0 (Option 1), and Ag Order 4.0 (Option 2). Ag Order 3.0 is included to provide a reference point for requirements included in the current order. Ag Order 4.0 Options 1 and 2 are designed to present a conceptual range of what should be included in Ag Order 4.0 to ensure compliance with all plans, policies, court direction, and precedential requirements. Generally speaking, Option 1 would allow a longer time frame to achieve water quality objectives and would incorporate less monitoring and reporting, whereas Option 2 would achieve water quality objectives in a shorter amount of time and would include additional monitoring and reporting to assess compliance a) with the requirements of the new order and b) with achieving water quality objectives in receiving waters.

Staff is using these options tables as a tool and framework to solicit stakeholder input on what the requirements of Ag Order 4.0 should ultimately look like. The elements and components within the framework are intended to inform stakeholders who might be interested in submitting alternative requirement options regarding what must be incorporated to comply with the Nonpoint Source Policy, the State Water Board's Eastern San Joaquin Order, and other relevant plans and policies that the Central Coast Water Board must comply with in developing and adopting Ag Order 4.0.

## **BACKGROUND**

### **Ag Order 4.0 Process and Timeline**

The current agricultural order, Ag Order 3.0, was adopted on March 8, 2017. It is a conditional waiver of waste discharge requirements with a three-year term, meaning it must be replaced with a new order by March 7, 2020. The replacement order, Ag Order 4.0, is currently under development and is the subject of this agenda item.

Staff developed and has been implementing an outreach plan to solicit stakeholder input throughout the Ag Order 4.0 development process. This plan incorporates lessons learned from previous Ag Order renewal processes. Staff has engaged with diverse stakeholder groups early in the order development process via informational and listening sessions and continues to create ample opportunities for dialogue to continue. Several key events are described below. Additional stakeholder discussions can be found in the Ag Order 4.0 section of the Central Coast Water Board's website at the following link:

[https://www.waterboards.ca.gov/centralcoast/water\\_issues/programs/ag\\_waivers/ag\\_order4\\_renewal](https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/ag_order4_renewal)

In August 2017, staff initiated the public outreach portion of the project with a series of listening sessions held throughout the region. At the listening sessions, staff facilitated discussion of potential improvements to Ag Order 3.0's structure, content, and requirements. The listening sessions were attended by growers, technical assistance providers, environmental and environmental justice representatives, and other interested parties. Staff discussed the input received from stakeholders during the listening sessions as part of the September 2017 board meeting in Santa Barbara.

In February 2018, as part of complying with the California Environmental Quality Act (CEQA), staff released an Initial Study for 45-day public comment. In March 2018, staff held a series of CEQA scoping meetings to discuss CEQA and receive additional input on the Initial Study. Comments received during this written comment period and the scoping meetings will be incorporated into the draft Environmental Impact Report (EIR) that will be released concurrent with the draft Ag Order 4.0, currently planned for August 2019.

At the March and May 2018 board meetings, staff and external speakers presented information items discussing the Central Coast region's general surface water and groundwater quality conditions, respectively. Staff presented broad analyses of surface water and groundwater data, discussed where increasing and decreasing trends are identifiable, and concluded that, overall, water quality objectives are not being achieved and beneficial uses are not being protected in

many agricultural areas of the Central Coast, primarily due to the impacts from agricultural discharges.

The September 2018 board meeting commenced the regional board's focused development of Ag Order 4.0. The board meeting consisted of a workshop to facilitate stakeholder engagement in the Ag Order 4.0 development process and provide the opportunity for stakeholders to dialogue with the board. Panels of agricultural, environmental, and environmental justice representatives gave presentations to the board in response to a series of questions posed by staff. These questions are listed below and relate directly to the five primary water quality challenges, or components, mentioned above; these questions also aided in development of the conceptual options tables created by staff and discussed later in this staff report.

1. What can growers and the regional board do to demonstrate quantifiable progress to minimize nitrate discharge to groundwater to achieve water quality objectives?
2. What can growers and the regional board do to demonstrate quantifiable progress to minimize nutrient discharge to surface waters to achieve water quality objectives?
3. What can growers and the regional board do to demonstrate quantifiable progress to minimize toxicity in surface waters from pesticide discharges to achieve water quality objectives?
4. What can growers and the regional board do to ensure that riparian and wetland habitat is protected due to agricultural activities and discharges?
5. What can growers and the regional board do to demonstrate quantifiable progress to minimize sediment discharge to achieve water quality objectives?
6. How can the regional board use discharge permit requirements to ensure current and future affordable, safe, and clean water for drinking and environmental uses?

With the November Central Coast Water Board meeting, the Ag Order 4.0 development and outreach process shifts to a discussion with the board and stakeholders regarding a conceptual outline of the elements necessary in an effective and compliant Ag Order 4.0. There are many elements to an order (e.g., findings, requirements, etc.), but the elements that this staff report will focus on are numeric limits, a time schedule, monitoring and reporting, a method for prioritization of ranches or phasing-in of requirements, and incentivization methods. At this stage, staff is soliciting input from the board and all stakeholders on what the details of these elements should ultimately be in Ag Order 4.0.

As part of this item, staff will discuss these conceptual elements in several tables that display a range of options, starting with the current Ag Order 3.0 requirements to provide a reference point, then moving to two options for what Ag Order 4.0 could include. Staff will discuss what pieces must be included in an order to comply with plans, policies, State Board precedent, and court decisions, as well as where the board has the most flexibility in creating regulatory requirements.

During the second week of November, an approximately 60-day written public comment period (the public comment period will be a minimum of 60 days) will begin, to solicit comment on the options tables. During this comment period, staff will hold a series of outreach meetings throughout the region to provide interested persons with additional opportunities to learn and ask questions about the conceptual options to guide their comments.

After the close of the public comment, staff will review all comments received and incorporate the comments into the options tables. Staff will present and discuss public comments and updated options tables with recommendations at the March 2019 board meeting. Staff will also evaluate alternative options provided during the comment period.

The first draft Ag Order 4.0 will be released for public comment in August 2019. Staff will incorporate comments received on the draft and will present a final draft for board consideration at a board meeting in early 2020, ahead of the March 2020 expiration of Ag Order 3.0.

### **Elements of an Order**

There are many elements that are typically included in regulatory permits: findings, conditions, provisions, numeric water quality limits, narrative limits, prohibitions, time schedules, monitoring and reporting, prioritization, consequences of non-compliance, and the requirement to implement treatment and control measures to achieve compliance with the water quality limits.

Some elements, including numeric limits, time schedules, and monitoring and reporting, are mandatory for an order to be considered compliant with various plans and policies. Other elements, such as a prioritization method, are discretionary in nature but can help to increase the effectiveness of an order by focusing limited resources on geographic areas or types of discharges that would generate the largest impact in terms of water quality improvement or protection. Staff has reviewed relevant guidance, plans, policies, State Board precedent, and court decisions to determine what elements are discretionary and what elements are mandatory, and they might drive what is included in Ag Order 4.0. These individual drivers include the Nonpoint Source Policy, the Antidegradation Policy, the State Board's order on Ag Order 2.0<sup>1</sup> and the court decisions in the subsequent civil lawsuit against the State Board,<sup>2</sup> and the precedential components from State Water Board's Eastern San Joaquin Order. Staff revisits each of these drivers in the sections below.

### **Nonpoint Source Policy**

The Policy for Implementation and Enforcement of the Nonpoint Source (NPS) Pollution Control Program (NPS Policy)<sup>3</sup> is a State Board regulation requiring all regional boards to regulate nonpoint sources of pollution, including agricultural discharges. The NPS Policy states that implementation programs for NPS pollution control must include five key elements:

1. "**KEY ELEMENT 1**: An NPS control implementation program's ultimate purpose shall be explicitly stated. Implementation programs must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements."

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<sup>1</sup> Ag Order 2.0 was adopted in 2012. Ag Order 3.0 was largely unchanged from Ag Order 2.0 in most respects, but included new compliance dates, an expansion of nitrogen reporting, and updates to the monitoring and reporting programs.

<sup>2</sup> *Monterey Coastkeeper v. State Water Resources Control Board* (Sept. 18, 2018, C080530), \_\_\_ Cal.App.5th \_\_\_.

The Court of Appeal decision can be found online at <http://www.courts.ca.gov/opinions/documents/C080530.PDF>

<sup>3</sup> The Nonpoint Source Policy can be found online at

[https://www.waterboards.ca.gov/water\\_issues/programs/nps/docs/plans\\_policies/nps\\_iepolicy.pdf](https://www.waterboards.ca.gov/water_issues/programs/nps/docs/plans_policies/nps_iepolicy.pdf)

2. “KEY ELEMENT 2: An NPS control implementation program shall include a description of the MPs [management practices] and other program elements that are expected to be implemented to ensure attainment of the implementation program’s stated purpose(s), the process to be used to select or develop MPs, and the process to be used to ensure and verify proper MP implementation. The RWQCB must be able to determine that there is a high likelihood that the program will attain water quality requirements. This will include consideration of the management practices to be used and the process for ensuring their proper implementation.”
3. “KEY ELEMENT 3: Where the RWQCB determines it is necessary to allow time to achieve water quality requirements the NPS control implementation program shall include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements.”
4. “KEY ELEMENT 4: An NPS control implementation program shall include sufficient feedback mechanisms so that the RWQCB, dischargers, and the public can determine whether the program is achieving its stated purpose(s) or whether additional or different MPs or other actions are required.”
5. “KEY ELEMENT 5: Each RWQCB shall make clear, in advance, the potential consequences for failure to achieve an NPS control implementation program’s stated purposes.”

Staff mirrored the key elements of the NPS Policy when developing the framework for the options tables. Based on the NPS Policy, required elements for an order that regulates NPS discharges are quantifiable milestones, i.e., numeric limits (elements 1 and 3); a time schedule (element 3); and a process for ensuring proper implementation of management practices as well as feedback mechanisms, i.e., monitoring and reporting (elements 2 and 4). Some concepts for potential consequences (element 5) are also incorporated into various sections within the conceptual options tables.

Discussion of the NPS Policy often involves discussion of management practice (MP) implementation. Within its discussion of key element 2 the NPS Policy states “Although MP implementation never may be a substitute for meeting water quality requirements, MP implementation assessment may, in some cases, be used to measure nonpoint source control progress.” The NPS Policy further states “MP implementation, however, may not be substituted for actual compliance with water quality requirements.” While the NPS Policy acknowledges the importance of management practice implementation in achieving water quality outcomes, it precludes an NPS Order from relying on management practice implementation as a substitute for measuring water quality and achieving the quantifiable water quality requirements/limits that must be established as described in key element 3. That is, the focus of the requirements should be on improving the quality of the NPS discharges such that these discharges ultimately do not impair the quality of the receiving waters or the associated beneficial uses.

The NPS Policy provides that “the most successful control of nonpoint sources is achieved by prevention or by minimizing the generation of NPS discharges.” Staff has addressed this in the

conceptual option strategies and consequences found in the options tables. For example, the board may consider including requirements related to 1) promoting the use of nitrate in groundwater (versus the use of nitrogen from fertilizer or other sources), and 2) limiting or prohibiting the application of certain materials if discharge limits are not achieved in compliance with the order.

The leftmost column of each of the conceptual options tables presented in this report is the framework of elements that must be included to comply with the NPS Policy: numeric limits, time schedules, and monitoring and reporting. The NPS Policy also requires the inclusion of the potential consequences for failure to comply with the NPS control implementation program. This element is included in multiple sections in the tables, depending on the nature of the consequence. Additional discretionary elements have been added to the framework because they are expected to increase the effectiveness of the order (phasing or prioritization and incentives).

### **Appellate Court Decision on Ag Order 2.0 and the NPS Policy**

In March 2012, the Central Coast Water Board adopted Ag Order 2.0, which was subsequently petitioned to the State Board. The State Board made several modifications to Ag Order 2.0<sup>4</sup>. Several petitioners sought judicial review of the State Board order modifying Ag Order 2.0. The trial court that heard the petition issued its decision, which was adverse to the State Board, in 2015. The State Board appealed the decision to the 3<sup>rd</sup> District Court of Appeal. On September 18, 2018, the Court of Appeal filed its decision in *Monterey Coastkeeper v. State Water Resources Control Board* (Sept. 18, 2018, C080530), \_\_\_ Cal.App.5th \_\_\_. The petition to State Board and the lawsuit addressed several issues, including whether Ag Order 2.0 and the order as modified by the State Board complied with the NPS Policy, which is discussed in this staff report.

In response to contentions that Ag Order 2.0 failed to comply with the NPS Policy, the State Board modified Ag Order 2.0 by adding provision 83.5. Provision 83.5 states “dischargers must (1) implement management practices that prevent or reduce discharges of waste that are causing or contributing to exceedances of water quality standards; and (2) to the extent practice effectiveness evaluation or reporting, monitoring data, or inspections indicate that the implemented management practices have not been effective in preventing the discharges from causing or contributing to exceedances of water quality standards, the Discharger must implement improved management practices.” This provision establishes an “iterative approach” of requiring improved management practices until discharges no longer cause or contribute to exceedances of water quality standards.

The trial court found that the modified waiver did not comply with the NPS Policy “because it lacks adequate monitoring and reporting to verify compliance with requirements and measure progress over time; specific time schedules designed to measure progress toward reaching quantifiable milestones; and a description of the action(s) to be taken if verification/feedback mechanisms indicate or demonstrate management practices are failing to achieve the stated objectives.”

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<sup>4</sup> State Board Order WQ-2013-0101, available at [https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2013/wqo2013\\_0101.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0101.pdf)

The appellate court upheld the trial court decision, reasoning that “the NPS Policy *expressly* requires time schedules and quantifiable milestones; the purpose is to assure that the water quality objectives are eventually met...Rather than establishing time schedules and milestones, [the State Board’s modified order] requires only vague and indefinite improvement--‘a conscientious effort.’ Without specific time schedules and quantifiable milestones, there is not a ‘high likelihood’ the program will succeed in achieving its objectives, as required by NPS Policy.”

The appellate court concluded that the trial court did not err in finding the State Board’s modified order did not comply with the NPS Policy due to the absence of “specific time schedules designed to measure progress toward reaching quantifiable milestones.”

The court decisions indicate that the inclusion of numeric limits, time schedules, and monitoring and reporting in an order regulating nonpoint source discharges will comply with the NPS Policy. Accordingly, staff considers numeric limits, time schedules, and monitoring and reporting to be necessary elements of Ag Order 4.0 and has incorporated them into the conceptual options tables.

### **Antidegradation Policy**

Because it is mentioned in key element 1 of the NPS Policy and is relevant to the development of Ag Order 4.0, a discussion of Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality Waters in California (Antidegradation Policy<sup>5</sup>) is included in this staff report. The Antidegradation Policy requires that the Water Boards maintain high quality waters of the state unless they determine that any authorized degradation is a) consistent with maximum benefit to the people of the state, b) will not unreasonably affect present and anticipated beneficial uses, and c) will not result in water quality less than that prescribed in state and regional policies.

The Antidegradation Policy does not provide specific direction on what elements must be included in an order, but it does provide direction on receiving water quality that must be protected through an order.

Compliance with the Antidegradation Policy includes three steps: 1) an initial water quality assessment to determine the baseline receiving water quality, defined as the best quality that has existed since 1968, minus any previous degradation, 2) a determination of whether the policy applies based on the analysis performed during the first step, and 3) application of the policy where the requirements of any permit or order must result in the best practicable treatment or control (BPTC) of wastes and any degradation of high quality waters that occurs is found to be consistent with the maximum benefit to the people of the state.

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<sup>5</sup> The Antidegradation Policy can be found online at:  
[https://www.waterboards.ca.gov/plans\\_policies/antidegradation.html](https://www.waterboards.ca.gov/plans_policies/antidegradation.html)

**State Water Board's Eastern San Joaquin Order**

In 2012, the Central Valley Water Board adopted waste discharge requirements (WDRs) for agricultural discharges in the Eastern San Joaquin River Watershed. The State Water Board reviewed the adopted order and subsequently adopted a modified order in February 2018. This order is referred to as the Eastern San Joaquin Order, or ESJ Order (State Board Order WQ 2018-0002).<sup>6</sup> The State Board established several requirements in the ESJ Order as being precedential for all Irrigated Lands Regulatory Programs (ILRPs) statewide and directed all ILRPs to incorporate the precedential elements into their agricultural orders within the next five years.

Some portions of the ESJ Order apply specifically to the ESJ watershed. The specific portions that are defined as precedential statewide are described as such in the order. In the ESJ Order, the State Board acknowledges that "generally, State Water Board petition orders are precedential unless otherwise designated...here, because of the significant variation in agricultural practices statewide, automatic application of all requirements endorsed in this order to all of the agricultural discharge programs statewide is inappropriate." The precedential elements, as described in the ESJ Order, are listed below.

**Outreach, management practices, recordkeeping**

1. Participation by all growers in outreach events. The regional water boards have discretion over the precise form and frequency of the outreach events (Pages 27-28 of ESJ Order).
2. Submission by all growers of management practice implementation information (29).
3. Submission of grower-specific field-level management practice implementation data to the regional water board shall be precedential statewide (32).
4. Recordkeeping requirement of ten years for all third-parties (53).

**Sediment and erosion control**

5. Implementation of sediment and erosion control practices by growers with the potential to cause erosion and discharge sediment that may degrade surface waters. The regional water boards shall continue to have discretion as to how these practices are documented and reported (32).

**Irrigation and Nutrient Management Plan**

6. Incorporation of irrigation management elements into nitrogen management planning (35).
7. For those irrigation and nitrogen management plans that the regional water boards require to be certified, the certification language shall be precedential (36).
8. Submittal by all growers of summary data from the irrigation and nitrogen management plans. The regional water boards have discretion as to whether to require certification of all growers or just a subset of growers based on a risk categorization... (36).

**Reporting of Nitrogen Applied (A) and Nitrogen Removed (R)**

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<sup>6</sup> The Eastern San Joaquin Order can be found online at:

[https://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality/a2239\\_sanjoaquin\\_ag.shtml](https://www.waterboards.ca.gov/public_notices/petitions/water_quality/a2239_sanjoaquin_ag.shtml)

9. Field-level AR<sup>7</sup> data submission to the regional water board consistent with the data sets and analysis of those data sets described in the ESJ Order. The regional boards have the discretion to require additional data related to irrigation and nitrogen management (51).
10. Calculation of annual and multi-year A/R ratio and A-R difference parameters for each grower by field, except as described in items 1-3 on pages 40-41.
11. Use of coefficients for conversion of yield to nitrogen removed values. The regional water boards will have discretion to determine the number of crops to be analyzed and the timeline for development of the coefficients (42).
12. Requirement for the third party to follow up with and provide training for AR data outliers and for identification of repeated outliers, except that the regional water boards will be responsible for the follow up and training for irrigated lands regulatory programs that directly regulate growers without a third-party intermediary (53).

#### Exemptions

13. State Board recognizes that there may be categories of uniquely-situated growers for whom the specific nitrogen management requirements made precedential in sections of the ESJ Order are unnecessary because the applied nitrogen is not expected to seep below the root zone in amounts that could impact groundwater, and is further not expected to discharge to surface water. These criteria for determining categories of growers that may be exempted from the nitrogen management requirements via a demonstration to the regional board are also precedential statewide (33).

#### Groundwater Protection Requirements

14. Development of the Groundwater Protection Formula, Values, and Targets. In areas of the state with third parties, the third parties may take the lead in developing the methodology. In other areas, the regional water boards shall take the lead. In all cases, the development of the methodology and approval by the regional water boards' executive officers shall be subject to public review and comment (66).

#### Groundwater Monitoring

15. The requirement for on-farm drinking water supply well monitoring. The regional water boards have the discretion to require sampling at a frequency that is similar, but not necessarily identical, to the frequency specified in the ESJ Order (62).
16. Groundwater quality trend monitoring. The specific requirements and the monitored constituents specified in the General WDRs shall not be precedential (64).

Staff has incorporated the precedential elements outlined in the ESJ Order in the options tables, to the extent practicable. The precedential elements of the ESJ Order have the greatest impact on Table 1: Irrigation and Nutrient Management for Groundwater Protection. Other precedential elements, such as management practice reporting, can be seen throughout all five options tables.

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<sup>7</sup> AR refers to nitrogen applied from all sources (A) and nitrogen removed (R)

## GENERAL WATER QUALITY CONDITIONS

As highlighted in staff reports and presentations for the March 2018<sup>8</sup> and May 2018<sup>9</sup> board meetings, overall water quality data in agricultural areas indicates that surface water quality and groundwater quality conditions are significantly degraded in many locations throughout the region, and conditions are not improving in terms of achieving water quality objectives and protecting beneficial uses in most of these areas.

### **Groundwater Quality Conditions**

Data from multiple groundwater monitoring programs (including domestic and ag well data submitted under requirements in Ag Orders 2.0 and 3.0) continue to show significant degradation of water quality conditions in a number of Central Coast groundwater basins. A review of the most recent nitrate concentration data indicates that a significant number of Central Coast groundwater basins are experiencing worsening nitrate pollution, particularly in agricultural areas. The data also indicate increasing concentrations in some subbasins where water quality is already degraded by nitrate, as well as in some subbasins that historically have had higher quality groundwater.

*Nitrate:* Nitrate contamination continues to threaten or impair significant drinking water sources in the Central Coast. The most recent nitrate concentration data<sup>7</sup> indicate ongoing and increasing degradation in many groundwater basins, predominantly in agricultural areas.

The California Nitrogen Assessment provides background for these groundwater trends, documenting that synthetic nitrogen fertilizer application rates per acre increased an average of 25 percent between 1973 and 2005, along with a shift from field crops to perennials and vegetable crops, and the transition to multiple crop plantings within each year. Over half of the nitrogen applied as fertilizer ends up as a waste discharge to the environment<sup>7</sup>. Relying on this value, the current *average* discharge of waste nitrogen from irrigated agriculture today, based on Total Nitrogen Applied reporting, is approximately ten times the discharge level identified by the 2012 UC Davis Nitrate Report as being protective of groundwater quality and beneficial uses.

Based on present nitrogen loading rates, groundwater nitrate concentrations will continue to increase and groundwater zones with impaired drinking water will similarly increase in basins containing high intensity, irrigated agriculture. Overall nitrate loading rates must be significantly reduced to slow and reverse this trend, and to ultimately achieve the water quality objective and protect drinking water beneficial uses.

*Pesticides:* Currently staff is unable to assess the threat to groundwater from pesticides, due to a lack of groundwater data. Groundwater monitoring data related to pesticides is very limited in the Central Coast Region.

### **Surface Water Quality Conditions**

Data from multiple surface water monitoring programs indicate degradation of surface water quality in the lower reaches of waterbodies located in the major agricultural areas of the Central

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<sup>8</sup> March 2018 Surface Water Quality Conditions Staff Report can be found online at:

[https://www.waterboards.ca.gov/centralcoast/board\\_info/agendas/2018/march/item4/item4\\_stfrpt.pdf](https://www.waterboards.ca.gov/centralcoast/board_info/agendas/2018/march/item4/item4_stfrpt.pdf)

<sup>9</sup> May 2018 Ground Water Quality Conditions Staff Report can be found online at:

[https://www.waterboards.ca.gov/centralcoast/board\\_info/agendas/2018/may/item8/item8\\_stfrpt.pdf](https://www.waterboards.ca.gov/centralcoast/board_info/agendas/2018/may/item8/item8_stfrpt.pdf)

Coast Region, particularly in the lower portions of the Pajaro River, Salinas River and Santa Maria River watersheds. This pollution severely impacts aquatic life and other beneficial uses.

*Nutrients:* Elevated levels of nitrate degrade water quality and impair beneficial uses for surface water and aquatic habitat. This nitrate pollution is widespread in lower reaches of watersheds with intensive agriculture. Sixty-five waterbodies in the Central Coast Region are on the 2014-2016 303(d) List (303(d) List) due to elevated nitrate concentrations. Sixty percent of these waterbodies are in the watersheds of the lower Pajaro River, Santa Maria River, and Salinas River. Agricultural runoff heavily influences more than ninety percent of these waterbodies. Currently, there are ten (10) Total Maximum Daily Load (TMDL) plans adopted for nutrients in the Central Coast Region. Most of these TMDLs<sup>10</sup> are in agricultural areas.

*Pesticides:* Pesticide pollution is widespread in agricultural areas of the Central Coast Region. Forty-five waterbodies in the region are on the 303(d) List due to pesticide pollution. Seventy-one percent of those waterbodies are in the watersheds of the lower Salinas River, Santa Maria River and Pajaro River. Several waterbodies are on the 303(d) List for multiple pesticides. Note that the 303(d) List does not include any neonicotinoid data and very limited pyrethroid data, and therefore does not yet reflect the more recent shift in pesticide usage. Staff anticipate several additional listings when those data are included in future assessments. Currently, there are seven (7) TMDL plans adopted for specific pesticides within the region. Most of these TMDLs<sup>11</sup> are in agricultural areas.

*Toxicity:* Toxicity testing determines the effects on living organisms when exposed to chemicals in sample water or sediment and compares their response to test organisms exposed to clean sample water or sediment (a control group). The 303(d) List identifies fifty-seven waterbodies within the region that are not meeting water quality standards due to toxicity. Sixty-eight percent of these waterbodies are in the Salinas River watershed, Santa Maria River, and Pajaro River watersheds. Currently, there are five (5) TMDL plans adopted for toxicity within the region. Most of these TMDLs<sup>11</sup> are in agricultural areas.

*Turbidity:* Turbidity is a measure of water clarity. In the major agricultural areas of the Central Coast region, sediment transport via irrigation runoff is the primary source of sustained turbidity during the dry season. Many of the monitoring sites located in areas dominated by agricultural activities have sustained turbidity throughout the dry season, in some cases greatly exceeding 100 NTU as a median. Fifty-five waterbodies in the Central Coast Region are on the 303(d) List due to elevated turbidity. Seventy-eight percent of those waterbodies are in the watersheds of the Salinas River, Santa Maria River, and Pajaro River. Currently, there are three (3) TMDL plans adopted for sediment in the region. Most of these TMDLs<sup>11</sup> are in agricultural areas.

### **Riparian Habitat Conditions**

Limited data exists for riparian conditions along waterways adjacent to agricultural lands in the region. However, there are indicators to help assess current conditions; sediment deposition is one indicator. The significant accumulation of fine sediment and sand deposited in the bottom of rivers and creeks typically indicates the absence of riparian vegetation. In general, riparian habitat monitoring sites in agricultural areas of the region have a high percentage of fine sediment and sand deposited in the river and creek bottoms. Generally speaking, the greater

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<sup>10</sup> Central Coast Water Board TMDLs Project List:

[https://www.waterboards.ca.gov/centralcoast/water\\_issues/programs/tmdl/303d\\_and\\_tmdl\\_projects.html](https://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/303d_and_tmdl_projects.html)

the riparian vegetative buffer along creeks and rivers, the greater the protection from erosion and sedimentation into surface waters. Sediment-laden stream bottoms can result from the immediate discharge of sediment from nearby fields, especially where stable and vegetated stream bank habitats are absent.

### **WATER QUALITY ISSUES FRAMEWORK AND COMPONENTS OF AG ORDER 4.0**

In defining the primary water quality issues associated with agricultural discharges, staff identified five issues or components to be addressed as part of Ag Order 4.0:

1. Irrigation and Nutrient Management for Groundwater Protection;
2. Irrigation and Nutrient Management for Surface Water Protection;
3. Pesticide Management for Groundwater and Surface Water Protection;
4. Sediment and Erosion Management for Surface Water Protection; and
5. Riparian Habitat Management for Water Quality Protection.

These five components form the framework of the conceptual tables included below. Each table incorporates the main required elements (numeric limits, time schedule, and monitoring and reporting) discussed above, as well as elements that may improve the effectiveness of the Order (phasing or prioritization and incentives).

Phasing: Phasing refers to the sequence or timing when a requirement might apply to various facilities or ranches in a given industry; typically, phasing or sequencing criteria is based on risk. Phasing incorporates an element of time that Ag Order 3.0's current "tier" structure does not. Currently, if a ranch is in a given tier, its monitoring and reporting requirements are unchanging, and some monitoring and reporting may never apply to the ranch. Aspects of the ESJ Order, such as the precedential requirement for all ranches to submit nitrogen Applied (A) and Removed (R) monitoring information, do not fit within the tier structure as it is currently defined. A phased approach focuses initial implementation efforts on ranches in areas with the most significant water quality impairment or those that present the largest risk to water quality. With phasing, during the order's term, monitoring and reporting requirements will apply to an increasing number of ranches in other areas of the region, such that eventually all ranches are complying with the same requirements.

During the forthcoming comment period, staff seeks stakeholder input on prioritization strategies including phasing methods, as well as incentives strategies that may serve to create an "off-ramp" or lighter regulatory burden for certain requirements if, for example, a grower or growers in a watershed area are able to demonstrate that certain aspects of monitoring and reporting are not needed because water quality objectives are being met. These incentives may not be available for requirements that apply to all ranches due to ESJ precedential mandates.

Values and timeframes: Tables 1-5 below conceptually outline the framework of five components and the necessary elements (i.e., numeric limits, time schedule, monitoring and reporting, etc.) for each, along with options for the elements. Numeric values, such as loading and concentration limits, and compliance dates for achieving the values, are not included in these versions of the option tables. Staff requests stakeholder input during the comment period regarding appropriate values and timeframes for Ag Order 4.0.

Concentration versus loading: Tables 2, 3, and 4 include numeric limits that are based on concentration values. Past stakeholder comments have suggested that loading is a better metric than concentration. However, loading has several inherent complicating factors. To calculate a reasonable loading value, accurate concentration and flow measurements are needed. Staff recognizes that obtaining accurate flow measurements is challenging in an agricultural setting. Stakeholder's ideas for how to effectively use loading in the numeric limit sections of Tables 2, 3, and 4 are encouraged. Any loading-based metric would also need to account for the fact that aquatic life responds to concentration, not loading, and that many of the Basin Plan's established water quality objectives are concentration-based.

**TABLE 1: IRRIGATION AND NUTRIENT MANAGEMENT FOR GROUNDWATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Phasing or Prioritization</b>	Tiers are based on ranch characteristics including ranch size, crops grown, specific chemical usage, proximity to impaired surface water, proximity to impaired public supply well.	Phases are based on location-specific conditions such as water quality impairment and risk to groundwater recharge areas.	No prioritization or phasing. All requirements apply to all ranches concurrently.
<b>Numeric Limit*</b>	None	<p><b>Discharge Limit</b>  <math>A_{FER} + A_{IRR} - R = \text{TBD lbs/ac/ranch/year}</math></p> <p><b>Application Limits</b>  <math>A_{FER}</math> cannot exceed TBD lbs/ac/crop</p> <p><i>Ranches that repeatedly exceed</i> the numeric discharge limit per the time schedule may be limited or prohibited from applying <math>A_{FER}</math>.</p> <p><i>Relatively higher limits</i></p>	<p><b>Discharge Limit</b>  <math>A_{FER} + A_{IRR} - R = \text{TBD lbs/ac/ranch/year}</math></p> <p><b>Application Limits</b>  <math>A_{FER}</math> cannot exceed TBD lbs/ac/crop</p> <p><i>Ranches that repeatedly exceed</i> the numeric discharge limit per the time schedule may be prohibited from applying <math>A_{FER}</math>.</p> <p><i>Relatively lower limits</i></p>
<b>Time Schedule to Achieve Numeric Limits*</b>	None	<p><b>Discharge Limit (lbs/ac/ranch/year)</b>  <math>A_{FER} + A_{IRR} - R = \text{TBD by 20XX}</math>  <math>A_{FER} + A_{IRR} - R = \text{TBD by 20XX}</math>  <math>A_{FER} + A_{IRR} - R = \text{Discharge Limit by 20XX}</math></p> <p><b>OR, for ranches with high <math>A_{IRR}</math></b>  <math>A_{FER} = R \text{ by 20XX}</math></p> <p><i>Relatively longer time schedule</i></p>	<p><b>Discharge Limit (lbs/ac/ranch/year)</b>  <math>A_{FER} + A_{IRR} - R = \text{TBD by 20XX}</math>  <math>A_{FER} + A_{IRR} - R = \text{TBD by 20XX}</math>  <math>A_{FER} + A_{IRR} - R = \text{Discharge Limit by 20XX}</math></p> <p><b>OR, for ranches with high <math>A_{IRR}</math></b>  <math>A_{FER} = R \text{ by 20XX}</math></p> <p><i>Relatively shorter time schedule</i></p>
<b>Monitoring and Reporting*</b>	<p><b>Total Nitrogen Applied Report</b>  <i>A subset of Tier 2 and Tier 3 ranches must monitor and report the following.</i></p> <ol style="list-style-type: none"> <li>Nitrogen applied from all sources (<math>A_{FER}</math>, <math>A_{IRR}</math>)</li> <li>Nitrogen present in the soil</li> <li>Irrigation well concentration</li> <li>Irrigation volume applied estimate</li> </ol> <p><b>Annual Compliance Form</b>  <i>All Tier 2 and Tier 3 ranches must submit information on the following.</i></p> <ol style="list-style-type: none"> <li>Irrigation, stormwater, and tile drain discharge to surface water</li> <li>Irrigation and nutrient management practices</li> </ol>	<p><b>Irrigation &amp; Nutrient Management Plan</b>  <i>All ranches must monitor the following. Report submittal is based on phase.</i></p> <ol style="list-style-type: none"> <li>Nitrogen applied from all sources (<math>A_{FER}</math>, <math>A_{IRR}</math>)</li> <li>Nitrogen present in the soil</li> <li>Irrigation well concentration</li> <li>Irrigation volume applied measurement</li> <li>Nitrogen removed (R)</li> <li>Crop evapotranspiration</li> <li>Irrigation discharge to surface water volume</li> <li>Irrigation discharge to groundwater volume</li> <li>Irrigation, nutrient, and salinity management practices</li> </ol>	<p><b>Irrigation &amp; Nutrient Management Plan</b>  <i>All ranches must monitor the following. Report submittal for all ranches concurrently.</i></p> <ol style="list-style-type: none"> <li>Nitrogen applied from all sources (<math>A_{FER}</math>, <math>A_{IRR}</math>)</li> <li>Nitrogen present in the soil</li> <li>Irrigation well concentration</li> <li>Irrigation volume applied measurement</li> <li>Nitrogen removed (R)</li> <li>Crop evapotranspiration</li> <li>Irrigation discharge to surface water volume</li> <li>Irrigation discharge to groundwater volume</li> <li>Irrigation, nutrient, and salinity management practices</li> </ol>

**TABLE 1: IRRIGATION AND NUTRIENT MANAGEMENT FOR GROUNDWATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
	<p><b><u>Irrigation &amp; Nutrient Management Plan and Effectiveness Report</u></b>  <i>A subset of Tier 3 ranches must develop and implement an INMP considering the following.</i>                      a. Nitrogen applied from all sources (<math>A_{FER}</math>, <math>A_{IRR}</math>)                      b. Crop nitrogen uptake                      c. Nitrogen removed (R)                      d. Irrigation and nutrient management practices</p> <p><b><u>Individual Discharge to Groundwater</u></b>                      Not required.</p> <p><b><u>Drinking Water Supply Well</u></b>  <i>All ranches</i> must monitor all drinking water supply wells present on enrolled parcels, either individually or through a cooperative program.</p> <p><b><u>Groundwater Quality Trends</u></b>                      Not required.</p>	<p><b><u>Individual Discharge to Groundwater</u></b>  <i>Ranches that exceed the numeric discharge limit per the time schedule may be assigned individual groundwater discharge monitoring.</i>                      a. Irrigation discharge to groundwater nitrate concentration                      b. Irrigation discharge to groundwater volume</p> <p><b><u>Drinking Water Supply Well</u></b>  <i>All ranches</i> must monitor all drinking water supply wells present on enrolled parcels, either individually or through a cooperative program.</p> <p><b><u>Groundwater Quality Trends</u></b>  <i>All ranches</i> must conduct groundwater quality trend monitoring, either individually or through a cooperative program.   <i>Relatively more estimates are accepted in monitoring and reporting.</i></p>	<p><b><u>Individual Discharge to Groundwater</u></b>  <i>All ranches</i> must perform individual groundwater discharge monitoring.                      a. Irrigation discharge to groundwater nitrate concentration                      b. Irrigation discharge to groundwater volume</p> <p><b><u>Drinking Water Supply Well</u></b>  <i>All ranches</i> must monitor all drinking water supply wells present on enrolled parcels, either individually or through a cooperative program.</p> <p><b><u>Groundwater Quality Trends</u></b>  <i>All ranches</i> must conduct groundwater quality trend monitoring, either individually or through a cooperative program.   <i>Relatively more measurements are required in monitoring and reporting.</i></p>
<b>Incentives</b>	Sustainability Certification	Pump & fertilize (see numeric limits section) Additional incentives TBD	Pump & fertilize (see numeric limits section) Additional incentives TBD
<b>Definitions</b>	<p><i>-<math>A_{FER}</math> is the amount of nitrogen applied in fertilizers, compost, and other amendments</i>  <i>-<math>A_{IRR}</math> is the amount of nitrogen applied through the irrigation water based on the groundwater nitrate concentration</i>  <i>-<math>A_{FER} + A_{IRR}</math> = the total amount of nitrogen applied</i>  <i>-R is the amount of nitrogen removed through harvest, pruning, or other methods, plus the nitrogen sequestered in perennial crop permanent wood</i>  <i>-<math>A_{FER} + A_{IRR} - R</math> = nitrogen waste discharge, or nitrogen loading to groundwater</i>  <i>-TBD means "to be determined" and is used as a placeholder for the value of the numeric limits</i>  <i>*Required elements; other elements are included because they can help improve the effectiveness of the Order and to solicit stakeholder input</i></p>		

**TABLE 2: IRRIGATION AND NUTRIENT MANAGEMENT FOR SURFACE WATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Phasing or Prioritization</b>	<u>Tiers</u> based on ranch characteristics including ranch size, crops grown, specific chemical usage, proximity to impaired surface water, proximity to impaired public supply well.	<u>Phases</u> are based on location-specific conditions such as water quality impairment, high quality surface water, and risk to surface water areas.	<u>No prioritization or phasing</u> . All requirements apply to all ranches concurrently.
<b>Numeric Limits*</b>	None	<p><b><u>Discharge Limit</u></b> Nitrate Concentration= TBD mg/L Ammonia Concentration = TBD mg/L Orthophosphate Concentration = TBD mg/L</p> <p><b><u>Application Limit</u></b> <i>Ranches that repeatedly exceed</i> the nitrate, ammonia and/or orthophosphate discharge limit per the time schedule may be limited or prohibited from applying nitrogen and/or phosphorous from fertilizers, compost and/or other amendments.</p> <p><i>Relatively higher limits</i></p>	<p><b><u>Discharge Limit</u></b> Nitrate Concentration = TBD mg/L Ammonia Concentration = TBD mg/L Orthophosphate Concentration = TBD mg/L</p> <p><b><u>Application Limit</u></b> <i>Ranches that repeatedly exceed</i> the nitrate, ammonia and/or orthophosphate discharge limit per the time schedule may be prohibited from applying nitrogen and/or phosphorous from fertilizers, compost and/or other amendments.</p> <p><i>Relatively lower limits</i></p>
<b>Time Schedule to Achieve Numeric Limits*</b>	None	<p><b><u>Discharge Limit</u></b> TBD mg/L by 20XX TBD mg/L by 20XX Discharge Limit by 20XX</p> <p><i>Relatively longer time schedule</i></p>	<p><b><u>Discharge Limit</u></b> TBD mg/L by 20XX TBD mg/L by 20XX Discharge Limit by 20XX</p> <p><i>Relatively shorter time schedule</i></p>
<b>Monitoring and Reporting*</b>	<p><b><u>Annual Compliance Form</u></b> <i>All Tier 2 and Tier 3 ranches must submit information on the following.</i></p> <ol style="list-style-type: none"> <li>Irrigation, stormwater, and tile drain discharge to surface water</li> <li>Irrigation and nutrient management practices</li> </ol>	<p><b><u>Irrigation Nutrient Management Plan &amp; Report</u></b> <i>All ranches must monitor the following. Reporting based on ranch phase.</i></p> <ol style="list-style-type: none"> <li>Irrigation, stormwater, and tile drain discharge characteristics</li> <li>Irrigation and nutrient management practices</li> </ol>	<p><b><u>Irrigation Nutrient Management Plan &amp; Report</u></b> <i>All ranches must monitor the following. Report submittal for all ranches concurrently.</i></p> <ol style="list-style-type: none"> <li>Irrigation, stormwater, and tile drain discharge characteristics</li> <li>Irrigation and nutrient management practices</li> </ol>

**TABLE 2: IRRIGATION AND NUTRIENT MANAGEMENT FOR SURFACE WATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
	<p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches</i> must conduct surface receiving water quality monitoring, either individually or through a cooperative program.</p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>                      Not required.</p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>A subset of Tier 3 ranches</i> must submit information on the following.                      a. Discharge flow rate and volume                      b. Discharge nutrient concentrations</p>	<p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches</i> must conduct surface receiving water quality monitoring, either individually or through a cooperative program.</p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>  <i>Ranches in a subset of watershed areas that repeatedly exceed</i> water quality objectives may be assigned follow-up surface receiving water quality monitoring, performed either individually or through a cooperative program.</p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>Ranches in a subset of watershed areas that repeatedly exceed water quality objectives</i> may be assigned individual discharge monitoring.                      a. Discharge flow rate and volume                      b. Discharge nutrient concentrations</p> <p><i>Relatively more estimates are accepted in monitoring and reporting.</i></p>	<p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches</i> must conduct surface receiving water quality monitoring, either individually or through a cooperative program.</p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>  <i>Ranches in all watershed areas that repeatedly exceed water</i> quality objectives may be assigned follow-up surface receiving water quality monitoring, performed either individually or through a cooperative program.</p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>Ranches in all watershed areas that repeatedly exceed water quality objectives</i> must perform individual discharge monitoring.                      a. Discharge flow rate and volume                      b. Discharge nutrient concentrations</p> <p><i>Relatively more measurements are required in monitoring and reporting.</i></p>
<b>Incentives</b>	Sustainability Certification	TBD	TBD
<b>Definitions</b>	<p><i>-TBD means "to be determined" and is used as a placeholder for the value of the numeric limits</i>                      *Required elements; other elements are included because they can help improve the effectiveness of the Order and to solicit stakeholder input</p>		

**TABLE 3: PESTICIDE MANAGEMENT FOR SURFACE WATER AND GROUNDWATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Phasing or Prioritization</b>	Tiers based on ranch characteristics including ranch size, crops grown, specific chemical usage, proximity to impaired surface water, proximity to impaired public supply well.	<u>Phases</u> are based on location-specific conditions including water quality impairment, high quality surface water, and risk to surface water areas.	<u>No prioritization or phasing</u> . All requirements apply to all ranches concurrently.
<b>Numeric Limits*</b>	None	<p><b><u>Discharge Limit</u></b>                      Pesticide Concentration = TBD µg/L                      Toxicity Test = TBD # of toxic samples allowed                      Toxic Unit = TBD</p> <p><b><u>Application Limits</u></b>  <i>Ranches that repeatedly exceed</i> the pesticide concentration discharge limit per the time schedule may be limited or prohibited from applying that pesticide.   <i>Ranches that repeatedly exceed</i> the toxicity discharge limit per the time schedule may be required to complete a toxicity identification evaluation to identify chemicals causing toxicity. Ranches may be limited or prohibited from applying the pesticide(s) that caused the toxicity.   <i>Relatively higher limits</i></p>	<p><b><u>Discharge Limit</u></b>                      Pesticide Concentration = TBD µg/L                      Toxicity Test = TBD # of toxic samples allowed                      Toxic Unit = TBD</p> <p><b><u>Application Limits</u></b>  <i>Ranches that repeatedly exceed</i> the pesticide concentration discharge limit per the time schedule may be prohibited from applying that pesticide.   <i>Ranches that repeatedly exceed</i> the toxicity discharge limit per the time schedule may be required to complete a toxicity identification evaluation to identify chemicals causing toxicity. Ranches may be prohibited from applying the pesticide(s) that caused the toxicity.   <i>Relatively lower limits</i></p>
<b>Time Schedule to Achieve Numeric Limits*</b>	None	<p><b><u>Discharge Limit</u></b>                      TBD µg/L by 20XX                      TBD µg/L by 20XX                      Discharge Limit by 20XX</p> <p>TBD # toxic samples allowed by 20XX                      TBD # toxic samples allowed by 20XX                      Discharge Limit by 20XX</p> <p>TBD Toxicity Unit by 20XX                      TBD Toxicity Unit by 20XX                      Discharge Limit by 20XX   <i>Relatively longer time schedule</i></p>	<p><b><u>Discharge Limit</u></b>                      TBD µg/L by 20XX                      TBD µg/L by 20XX                      Discharge Limit by 20XX</p> <p>TBD # toxic samples allowed by 20XX                      TBD # toxic samples allowed by 20XX                      Discharge Limit by 20XX</p> <p>TBD Toxicity Unit by 20XX                      TBD Toxicity Unit by 20XX                      Discharge Limit by 20XX   <i>Relatively shorter time schedule</i></p>

**TABLE 3: PESTICIDE MANAGEMENT FOR SURFACE WATER AND GROUNDWATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Monitoring and Reporting*</b>	<p><b><u>Annual Compliance Form</u></b>  <i>All Tier 2 and Tier 3 ranches must submit information on the following.</i></p> <ol style="list-style-type: none"> <li>Irrigation, stormwater, and tile drain discharge characteristics</li> <li>Pesticide management practices</li> </ol> <p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches must conduct surface receiving water quality monitoring, either individually or through a cooperative program.</i></p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>                      Not required.</p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>A subset of Tier 3 ranches must submit information on the following.</i></p> <ol style="list-style-type: none"> <li>Discharge flow rate and volume</li> <li>Discharge pesticide concentration(s)</li> <li>Discharge toxicity</li> </ol> <p><b><u>Drinking Water Supply Well</u></b>                      Pesticide monitoring not required.</p>	<p><b><u>Pesticide Management Plan &amp; Report</u></b>  <i>All ranches must monitor the following. Reporting based on ranch phase.</i></p> <ol style="list-style-type: none"> <li>Application characteristics</li> <li>Irrigation, stormwater, and tile drain discharge characteristics</li> <li>Pesticide management practices</li> </ol> <p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches must conduct surface receiving water quality monitoring, either individually or through a cooperative program.</i></p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>  <i>Ranches in a subset of watershed areas that repeatedly exceed water quality objectives may be assigned follow-up surface receiving water quality monitoring, performed either individually or through a cooperative program.</i></p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>Ranches in a subset of watershed areas that repeatedly exceed water quality objectives may be assigned individual discharge monitoring.</i></p> <ol style="list-style-type: none"> <li>Discharge flow rate and volume</li> <li>Discharge pesticide concentration(s)</li> <li>Discharge toxicity</li> </ol> <p><b><u>Drinking Water Supply Well</u></b>  <i>A subset of drinking water supply wells must be monitored for pesticides, either individually or through a cooperative program.</i></p> <p><i>Relatively more estimates are accepted in monitoring and reporting.</i></p>	<p><b><u>Pesticide Management Plan &amp; Report</u></b>  <i>All ranches must monitor the following. Report submittal for all ranches concurrently.</i></p> <ol style="list-style-type: none"> <li>Application characteristics</li> <li>Irrigation, stormwater, and tile drain discharge characteristics</li> <li>Pesticide management practices</li> </ol> <p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches must conduct surface receiving water quality monitoring, either individually or through a cooperative program.</i></p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>  <i>Ranches in all watershed areas that repeatedly exceed water quality objectives may be assigned follow-up surface receiving water quality monitoring, performed either individually or through a cooperative program.</i></p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>Ranches in all watershed areas that repeatedly exceed water quality objectives must perform individual discharge monitoring.</i></p> <ol style="list-style-type: none"> <li>Discharge flow rate and volume</li> <li>Discharge pesticide concentration(s)</li> <li>Discharge toxicity</li> </ol> <p><b><u>Drinking Water Supply Well</u></b>  <i>All drinking water supply wells must be monitored for pesticides, either individually or through a cooperative program.</i></p> <p><i>Relatively more measurements are required in monitoring and reporting.</i></p>
<b>Incentives</b>	Sustainability Certification	TBD	TBD
<b>Definitions</b>	<p><i>-TBD means "to be determined" and is used as a placeholder for the value of the numeric limits</i></p> <p><i>*Required elements; other elements are included because they can help improve the effectiveness of the Order and to solicit stakeholder input</i></p>		

**TABLE 4: SEDIMENT AND EROSION MANAGEMENT FOR SURFACE WATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Phasing or Prioritization</b>	<u>Tiers</u> are based on ranch characteristics including ranch size, crops grown, specific chemical usage, proximity to impaired surface water, proximity to impaired public supply well.	<u>Phases</u> are based on location-specific conditions including water quality impairment, high quality surface water, and risk characteristics such as slope and impermeable surfaces.	<u>No prioritization or phasing</u> . All requirements apply to all ranches concurrently.
<b>Numeric Limits*</b>	None	<p><b><u>Discharge Limits</u></b>                      Turbidity = TBD NTU (COLD)                      Turbidity = TBD NTU (WARM)</p> <p>Cultivation on ranches with impermeable surfaces on slopes greater than TBD% is not covered by this order. Ranches may apply for individual waste discharge requirements.</p> <p>No discharge of sediment due to erosion events may occur.</p> <p>No discharge may cause or contribute to altering the receiving water channel through scour, bank failure, downcutting, or sediment accumulation.</p> <p>Stormwater discharge intensity and volume from ranches with impermeable surfaces may not exceed discharge intensity and volume from equivalent non-impermeable area for any storm up to and including the design storm. Design storm TBD.</p> <p><i>Relatively higher limits</i></p>	<p><b><u>Discharge Limits</u></b>                      Turbidity = TBD NTU (COLD)                      Turbidity = TBD NTU (WARM)</p> <p>Cultivation on ranches with impermeable surfaces on slopes greater than TBD% is not covered by this order. Ranches may apply for individual waste discharge requirements.</p> <p>No discharge of sediment due to erosion events may occur.</p> <p>No discharge may cause or contribute to altering the receiving water channel through scour, bank failure, downcutting, or sediment accumulation.</p> <p>No stormwater discharge may occur for any storm up to and including the design storm. Design storm TBD.</p> <p><i>Ranches that repeatedly exceed</i> the numeric discharge limits per the time schedule may be prohibited from discharging irrigation water.</p> <p><i>Relatively lower limits</i></p>
<b>Time Schedule to Achieve Numeric Limits*</b>	None	<p><b><u>Discharge Limit</u></b>                      TBD NTU by 20XX (COLD &amp; WARM)                      TBD NTU by 20XX (COLD &amp; WARM)                      Discharge Limit by 20XX (COLD &amp; WARM)</p> <p><i>Relatively longer time schedule</i></p>	<p><b><u>Discharge Limit</u></b>                      TBD NTU by 20XX (COLD &amp; WARM)                      TBD NTU by 20XX (COLD &amp; WARM)                      Discharge Limit by 20XX (COLD &amp; WARM)</p> <p><i>Relatively shorter time schedule</i></p>

**TABLE 4: SEDIMENT AND EROSION MANAGEMENT FOR SURFACE WATER PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Monitoring and Reporting*</b>	<p><b><u>Annual Compliance Form</u></b>  <i>All Tier 2 and Tier 3 ranches must monitor and report the following.</i></p> <p>a. Irrigation, stormwater, and tile drain discharge characteristics                      b. Sediment and erosion management practices                      c. Irrigation management practices</p> <p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches must conduct surface receiving water quality trend monitoring, either individually or through a cooperative program.</i></p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>                      Not required.</p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>A subset of Tier 3 ranches must submit information on the following.</i></p> <p>a. Discharge flow rate and volume                      b. Discharge turbidity</p>	<p><b><u>Sediment &amp; Erosion Management Plan</u></b>  <i>All ranches must monitor the following. Report submittal based on <u>phase</u>.</i></p> <p>a. Irrigation, stormwater, and tile drain discharge characteristics                      b. Sediment and erosion management practices                      c. Irrigation management practices                      d. Stormwater management practices                      e. Proper sizing, design, and maintenance of sediment and erosion control measures, e.g. sediment retention basins</p> <p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches must conduct surface receiving water quality trend monitoring, either individually or through a cooperative program.</i></p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>  <i>Ranches in a subset of watershed areas that repeatedly exceed water quality objectives may be assigned follow-up surface receiving water quality monitoring, performed either individually or through a cooperative program.</i></p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>Ranches in a subset of watershed areas that repeatedly exceed water quality objectives may be assigned individual discharge monitoring.</i></p> <p>a. Discharge flow rate and volume                      b. Discharge turbidity</p> <p><i>Relatively more estimates are accepted in monitoring and reporting.</i></p>	<p><b><u>Sediment &amp; Erosion Management Plan</u></b>  <i>All ranches must monitor the following. Report submittal for all ranches <u>concurrently</u>.</i></p> <p>a. Irrigation, stormwater, and tile drain discharge characteristics                      b. Sediment and erosion management practices                      c. Irrigation management practices                      d. Stormwater management practices                      e. Proper sizing, design, and maintenance of sediment and erosion control measures, e.g. sediment retention basins</p> <p><b><u>Surface Water Quality Trends</u></b>  <i>All ranches must conduct surface receiving water quality trend monitoring, either individually or through a cooperative program.</i></p> <p><b><u>Follow-Up Receiving Water Monitoring</u></b>  <i>Ranches in all watershed areas that repeatedly exceed water quality objectives may be assigned follow-up surface receiving water quality monitoring, performed either individually or through a cooperative program.</i></p> <p><b><u>Individual Discharge to Surface Water</u></b>  <i>Ranches in all watershed areas that repeatedly exceed water quality objectives must perform individual discharge monitoring.</i></p> <p>a. Discharge flow rate and volume                      b. Discharge turbidity</p> <p><i>Relatively more measurements are required in monitoring and reporting.</i></p>
<b>Incentives</b>	Sustainability Certification	TBD	TBD
<b>Definitions</b>	<p>-<b>NTU</b>: nephelometric turbidity unit                      -<b>COLD</b>: beneficial use designation for cold fresh water habitat; <b>WARM</b>: beneficial use designation for warm fresh water habitat                      -<b>Design storm</b>: the storm intensity and volume that management measures such as sediment retention basins are designed to accommodate                      -<b>TBD</b> means "to be determined" and is used as a placeholder for the value of the numeric limits                      -<b>Impermeable surfaces</b> include materials such as plastic mulch and hoop houses; here, impermeable surfaces do not refer to soils                      *Required elements; other elements are included because they can help improve the effectiveness of the Order and to solicit stakeholder input</p>		

**TABLE 5: RIPARIAN HABITAT MANAGEMENT FOR WATER QUALITY PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
<b>Phasing or Prioritization</b>	<u>Tiers</u> are based on ranch characteristics including ranch size, crops grown, specific chemical usage, proximity to impaired surface water, proximity to impaired public supply well.	<u>Phases</u> are based on location-specific conditions including water quality impairment, high quality surface water, critical habitat, and beneficial use designations.	<u>No prioritization or phasing</u> . All requirements apply to all ranches concurrently.
<b>Numeric Limits*</b>	<p><b><u>Buffer Width</u></b>  <i>A subset of Tier 3 ranches must comply with the numeric limit.</i></p> <p>Buffer width = 30 feet  <b>OR</b>                      Functional equivalent.</p> <p><b><u>Prohibition</u></b>                      The removal of existing riparian vegetative cover is prohibited, unless authorized through another permitting mechanism.</p>	<p><b><u>Setback Width and Native Vegetative Cover</u></b>                      Ranch-level setback width and percent native vegetative cover requirements are based on a stream classification system.</p> <p>Class X width = TBD feet                      Class X native grasses = TBD%                      Class X native shrubs = TBD%                      Class X native trees = TBD%  <b>OR</b>                      Participate in an approved watershed restoration program.</p> <p><b><u>Prohibition</u></b>                      The removal of existing native riparian vegetative cover is prohibited, unless authorized through another permitting mechanism.</p>	<p><b><u>Setback Width and Native Vegetative Cover</u></b>                      Setback width and percent native vegetative cover requirements for each ranch are based on a functional riparian assessment (such as pHab or RipRAM).</p> <p><b><u>Prohibition</u></b>                      The removal of existing native riparian vegetative cover is prohibited, unless authorized through another permitting mechanism.</p>
<b>Time Schedule to Achieve Numeric Limits*</b>	None	<p><b><u>Setback Width Establishment</u></b>                      Phase 1 by 20XX                      Phase 2 by 20XX  <i>etc.</i></p> <p><b><u>Native Vegetative Cover Establishment</u></b>                      Phase 1 by 20XX                      Phase 2 by 20XX  <i>etc.</i></p>	<p><b><u>Setback Width Establishment</u></b>                      All ranches by 20XX</p> <p><b><u>Native Vegetative Cover Establishment</u></b>                      All ranches by 20XX</p>
<b>Monitoring and Reporting*</b>	<p><b><u>Water Quality Buffer Plan</u></b>  <i>A subset of Tier 3 ranches must develop a Water Quality Buffer Plan and report on the following.</i></p> <p>a. Buffer width, in feet</p>	<p><b><u>Riparian Management Reporting</u></b>  <i>Based on phase, all ranches adjacent to surface waterbodies must monitor and report the following.</i></p> <p>a. Buffer width, in feet</p>	<p><b><u>Riparian Management Reporting</u></b>  <i>Concurrently, all ranches adjacent to surface waterbodies must monitor and report the following.</i></p> <p>a. Buffer width, in feet</p>

**TABLE 5: RIPARIAN HABITAT MANAGEMENT FOR WATER QUALITY PROTECTION**

	<b>Ag Order 3.0</b>	<b>Ag Order 4.0 (Option 1)</b>	<b>Ag Order 4.0 (Option 2)</b>
	<p>b. Total vegetative cover, in percent                      c. Vegetative cover by type, in percent (trees, shrubs, grasses, non-vegetated)                      d. Vegetative shading of active water channel, in percent                      e. Photomonitoring of current average riparian condition</p> <p><b>Individual Riparian Assessment</b>                      Not required.</p> <p><b>Surface Water Quality Trends</b>  <i>All ranches</i> must conduct regional bioassessment trend monitoring, either individually or through a cooperative program.</p>	<p>b. Total native vegetative cover, in percent                      c. Vegetative cover by type, in percent (trees, shrubs, grasses, non-vegetated)                      d. Digital map of farm and setback boundaries</p> <p><b>Individual Riparian Assessment</b>                      Not required.</p> <p><b>Surface Water Quality Trends</b>  <i>All ranches</i> must conduct regional bioassessment trend monitoring, either individually or through a cooperative program.</p> <p><i>Relatively more estimates are accepted in monitoring and reporting.</i></p>	<p>b. Total native vegetative cover, in percent                      c. Vegetative cover by type, in percent (trees, shrubs, grasses, non-vegetated)                      d. Digital map of farm and setback boundaries</p> <p><b>Individual Riparian Assessment</b>  <i>All ranches</i> adjacent to surface waterbodies must score the functional riparian setback annually using a method such as pHab or RipRAM.</p> <p><b>Surface Water Quality Trends</b>  <i>All ranches</i> must conduct regional bioassessment trend monitoring, either individually or through a cooperative program.</p> <p><i>Relatively more measurements are required in monitoring and reporting.</i></p>
<b>Incentives</b>	Sustainability Certification	TBD	TBD
<b>Definitions</b>	<p><i>-Riparian is defined as vegetation, habitat, or ecosystems that are associated with bodies of water (creeks, streams, or lakes) or are dependent on the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage</i>                      -Riparian areas include those portions of terrestrial ecosystems that significantly influence exchanges of energy and matter with aquatic ecosystems (i.e., a zone of influence)                      -pHab is an index of physical habitat condition incorporating channel morphology, flow, patch types, substrate, riparian complexity, and energy                      -RipRAM is a rapid riparian assessment method designed to score the overall health of a riparian area                      -TBD means “to be determined” and is used as a placeholder for the value of the numeric limits                      *Required elements; other elements are included because they can help improve the effectiveness of the Order and to solicit stakeholder input</p>		

## CONCLUSION

Staff prepared the attached five option tables for the Ag Order 4.0 components<sup>11</sup>, each presenting a water quality-issue framework and the necessary elements<sup>12</sup> to create the foundation for an effective and legally compliant Ag Order 4.0. The required elements include numeric limits, time schedules, and monitoring and reporting. The release and subsequent discussion of these options tables represents the beginning of the comment period for these topics, as staff works towards evaluation of all stakeholder comments (January/February 2019) and presentation of recommended options (March 2019). Additional elements that may be included and for which staff is also soliciting stakeholder input include methods for prioritizing or phasing and incentivizing.

Based on agricultural discharges and their impacts to water quality, the components identified and laid out in the conceptual options tables that are necessary in Ag Order 4.0 are: 1) irrigation and nutrient management for groundwater protection, 2) irrigation and nutrient management for surface water protection, 3) pesticide management for groundwater and surface water protection, 4) sediment and erosion management for surface water protection, and 5) riparian habitat management for water quality protection.

The conceptual options tables are intended to convey these components and elements and solicit stakeholder input on what the requirements in Ag Order 4.0 should ultimately include, such that it effectively addresses the water quality issues and complies with all appropriate plans, policies, court direction, and precedential requirements.

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<sup>11</sup> Components are the discharges that must be addressed based on water quality data, e.g. sediment and erosion management

<sup>12</sup> Elements are the regulatory pieces that are necessary for an effective and legally compliant order, e.g. numeric limits