CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ATTACHMENT E TO ORDER R5-2015-XXXX

DEFINITIONS, ACRONYMS & ABBREVIATIONS

WASTE DISHARGE REQUIREMENTS GENERAL ORDER
FOR
GROWERS IN THE GRASSLAND DRAINAGE AREA

The following definitions, acronyms and abbreviations apply to this Order as related to discharges f waste from irrigated lands. All other terms shall have the same definitions as prescribed by the Porter-Cologne Water Quality Control Act (California Water Code Division 7), unless specified otherwise.

1. Antidegradation Policy – State Water Board Resolution 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," requires existing high quality water to be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of water, and will not result in water quality less than that prescribed in the Basin Plans. The Central Valley Water Board must establish standards in its orders for discharges to high quality waters that result in the implementation of best practicable treatment or control of the discharge necessary to avoid pollution or nuisance and to maintain the highest water quality consistent with maximum benefit to the people of the state. Resolution 68-16 has been approved by the USEPA to be consistent with the federal anti-degradation policy.

2. Aquifer – A geologic formation, group of formations, or portion of a formation capable of yielding usable quantities of groundwater to wells or springs (40 CFR Part 257.3-4).

3. Back flow prevention devices – Back flow prevention devices are installed at the well or pump to prevent contamination of groundwater or surface water when fertilizers, pesticides, fumigants, or other chemicals are applied through an irrigation system. Back flow prevention devices used to comply with this Order must be those approved by USEPA, DPR, DPH, or the local public health or water agency.[1]

4. Basin Plans – Central Valley Regional Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, and Water Quality Control Plan for the Tulare Lake Basin. The Basin Plans describe how the quality of the surface and groundwater in the Central Valley Region should be managed to ensure reasonable protection of beneficial uses. The Basin Plans include beneficial uses, water quality objectives, and a program of implementation.

5. Certified Nitrogen Management Specialist – Certified nitrogen management plan specialists include Professional Soil Scientists, Professional Agronomists, Crop Advisers[2] certified by the American Society of Agronomy, or Technical Service Providers certified in nutrient management in California by the Natural Resource Conservation Service (NRCS), or other specialist approved by the Executive Officer.

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[1] California Department of Public Health, Approved Backflow Prevention Devices List at http://www.cdph.ca.gov/certlic/drinkingwater/pages/publications.aspx. Requirements for backflow prevention for pesticide application are located in 6 CCR §6610.

[2] Should the California Department of Food and Agriculture and the California Certified Crop Advisers establish a specific nitrogen management certification, any Certified Crop Adviser who certifies a nitrogen management plan must have a nitrogen management certification

6. Degradation – Any measurable adverse change in water quality.

7. Durov Diagrams – A graphical representation of water quality. The Durov diagram is an alternative to the Piper diagram. The Durov diagram plots the major ions as percentages of milli-equivalents in two base triangles. The total cations and the total anions are set equal to 100% and the data points in the two triangles are projected onto a square grid which lies perpendicular to the third axis in each triangle. This plot reveals useful properties and relationships for large sample groups. The main purpose of the Durov diagram is to show clustering of data points to indicate samples that have similar compositions.

8. Exceedance – For the purposes of this Order, an exceedance is a reading using a field instrument or detection by a California state-certified analytical laboratory where the detected result indicates an impact to the beneficial use of the receiving water when compared to a water quality objective for the parameter or constituent. Exceedances will be determined based on available data and application of the appropriate averaging period. The appropriate averaging period may be defined in the Basin Plan, as part of the water quality criteria established by the USEPA, or as part of the water quality criteria being used to interpret a narrative water quality objective. If averaging periods are not defined as part of the water quality objective or the water quality criteria being used, then the Central Valley Water Board Executive Officer may use its best professional judgment to determine an appropriate period.

9. Farming Operation – A distinct farming business, organized as a sole proprietorship, partnership, corporation, limited liability company, cooperative, or other business entity that owns or operates irrigated lands.

10. Farm Operator – The person or entity, including, but not limited to a farm/ranch manager, lessee or sub-lessee, responsible for or otherwise directing farming operations in decisions that may result in a discharge of waste to surface water or groundwater. If a person or entity rents land to others or has land worked on shares by others, the person or entity is considered the operator only of the land which is retained for their own operation.

11. Fertigation – The process of applying fertilizer through an irrigation system by injecting the fertilizer into the irrigation water.

12. Groundwater – Water in the ground that is in the zone of saturation. The upper surface of the saturate zone is called the water table.

13. High vulnerability area (groundwater) – Areas identified in the approved Groundwater Quality Assessment Report "…where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities." (see section IV.A.3 of the MRP) or areas that meet any of the following requirements for the preparation of a Groundwater Quality Management Plan (see section VIII.H of the Order): (1) there is a confirmed exceedance[3] (considering applicable averaging periods) of a water quality objective or applicable water quality trigger limit (trigger limits are described in section VII of the MRP) in a groundwater well and irrigated agriculture may cause or contribute to the exceedance; (2) the Basin Plan requires development of a groundwater quality management plan for a constituent or constituents discharged by irrigated agriculture; or (3) the Executive Officer determines that irrigated agriculture

[3] A "confirmed exceedance of a water quality objective in a groundwater well" means that the monitoring data are determined to be of the appropriate quality and quantity necessary to verify that an exceedance has occurred.

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may be causing or contributing to a trend of degradation of groundwater that may threaten applicable Basin Plan beneficial uses.

14. Hydraulic conductivity – The volume of water that will move through a medium (generally soil) in a unit of time under a unit hydraulic gradient through a unit area measured perpendicular to the direction of flow (a measure of a soils ability to transmit water).

15. Hydraulic gradient – The change in total hydraulic head per unit distance in a given direction yielding a maximum rate of decrease in hydraulic head.

16. Hydraulic head – The height relative to a datum plane (generally sea level) of a column of water that can be supported by the hydraulic pressure at a given point in a groundwater system. For a well, the hydraulic head is equal to the distance between the water level in the well and the datum plane (sea level).

17. Irrigated lands – Land irrigated to produce crops or pasture for commercial purposes,[4] nurseries, and privately and publicly managed wetlands.

18. Irrigation return flow/runoff – Surface and subsurface water which leaves the field following application of irrigation water.

19. Kriging – A group of geostatistical techniques to interpolate the value of a random field (e.g., contaminant level in groundwater) at an unobserved location from observations of its value at nearby locations.

20. Low vulnerability area (groundwater) – are all areas not designated as high vulnerability for groundwater.

21. Management practices to protect water quality – A practice or combination of practices that is the most effective and practicable (including technological, economic, and institutional considerations) means of controlling nonpoint pollutant sources at levels protective of water quality.

22. Member – Owners and operators of irrigated lands within the Western San Joaquin River Watershed that are members of a third-party group implementing this Order.

23. Monitoring – Monitoring undertaken in connection with assessing water quality conditions, and factors that may affect water quality conditions. Monitoring includes, but is not limited to, water quality monitoring undertaken in connection with agricultural activities, monitoring to identify short and long-term trends in water quality, nutrient monitoring, active inspections of operations, and management practice implementation and effectiveness monitoring. The purposes of monitoring include, but are not limited to, verifying the adequacy and effectiveness of the Order's requirements, and evaluating each Member's compliance with the requirements of the Order.

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[4] For the purposes of this Order, commercial irrigated lands are irrigated lands that have one or more of the following characteristics:

- The landowner or operator holds a current Operator Identification Number/ Permit Number for pesticide use reporting;
- The crop is sold to a third-party including, but not limited to, (1) an industry cooperative, (2) harvest
- crew/company, or (3) a direct marketing location, such as farmers' markets;
- The landowner or operator files federal taxes using federal Department of Treasury Internal Revenue Service Form 1040, Schedule F Profit or Loss from Farming.

24. Nonpoint source waste discharge – The Sacramento and San Joaquin River Basin Plan states that "A nonpoint source discharge usually refers to waste emanating from diffused locations." Nonpoint source pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrologic modification. The term "nonpoint source" is defined to mean any source of water pollution that does not meet the legal definition of "point source" in section 502(14) of the Clean Water Act. The Clean Water Act (CWA) defines a point source as a discernible, confined, and discrete conveyance, such as a pipe, ditch, or channel. Irrigated agricultural return flows and agricultural storm water runoff are excluded from the CWA's definition of point source. Nonpoint pollution sources generally are sources of water pollution that do not meet the definition of a point source as defined by the CWA.

25. Nuisance – "Nuisance" is defined in section 13050 of the Water Code as "…anything which meets all of the following requirements:
    (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
    (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
    (3) Occur during, or as a result of, the treatment or disposal of wastes."

26. Nutrient – Any element taken in by an organism which is essential to its growth and which is used by the organism in elaboration of its food and tissue.

27. Nutrient consumption – A total quantity of a nutrient taken up by crop plants (to be distinguished from the total applied). Expressed as nutrient mass per land area, i.e., pounds/acre, nutrient consumption is typically described on an annual or crop cycle basis. Nutrients are contributed and lost from cropland through various human and natural processes[5]. Considering nitrogen as an example, sources of nitrogen available for plant consumption include applied fertilizers (including compost and animal manures), nitrogen fixed from the atmosphere in the roots of leguminous plants, nitrogen released through the decomposition of soil organic matter and crop residues, and nitrogen applied in irrigation water. Nitrogen can be removed from the field in harvested material, returned to the soil through crop residue incorporation, incorporated into permanent structures of perennial crops, leached beyond the root zone in irrigation or storm water, released to the atmosphere through denitrification, volatilization or crop residue burning.

28. Perched groundwater – Groundwater separated from an underlying body of groundwater by an unsaturated zone.

29. Piper Diagram – A graphical representation of the chemistry of a water sample. The relative abundance of cations as percentages of milli-equivalents per liter (meq/L) of sodium, potassium, calcium, and magnesium are first plotted on the cation triangle. The relative abundance of chloride, sulfate, bicarbonate, and carbonate is then plotted on the anion triangle. The two data points on the cation and anion triangles are then combined into the quadrilateral field that shows the overall chemical property of the water sample.

30. Pollution – Defined in section 13050(l)(1) of the Porter-Cologne Water Quality Control Act as "…an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (A) The waters for beneficial uses. (B) Facilities which serve these beneficial uses."

[5] Descriptions of sources and losses of plant nutrients are available through UC Davis and UC Cooperative Extension. For example see Peacock, B. Pub. NG2-96, UCCE Tulare County http://cetulare.ucanr.edu/files/82026.pdf

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31. Qualified scientist – A person who has earned a professional degree in a scientific discipline that relates to engineering, environmental science, or chemistry with additional experience related to pesticides and water quality. This person should be familiar with the related local, state, and federal regulations.

32. Requirements of applicable water quality control plans – Water quality objectives, prohibitions, total maximum daily load implementation plans, or other requirements contained in water quality control plans adopted by the Central Valley Water Board and approved according to applicable law.

33. Stiff Diagram – A graphical representation of the chemistry of a water sample. A polygon shaped figure created from four parallel horizontal axes using the equivalent charge concentrations (meq/L) of cations and anions. Cations are plotted on the left of the vertical zero axis and anions are plotted on the right.

34. Stormwater runoff – The runoff of precipitation from irrigated lands.

35. Subsidiary or Affiliated Operation – a Subsidiary or Affiliated Operation of a specified Farming Operation means a Farming Operation of which the principal(s) of the specified Farming Operation or the shares possessed by the specified Farming Operation have a controlling interest. A controlling interest is having 50 percent or more of the voting or management authority of the operation.

36. Subsurface drainage – Water generated by installing and operating drainage systems to lower the water table below irrigated lands. Subsurface drainage systems, deep open drainage ditches, or drainage wells can generate this drainage.

37. Surface water – Water pooled or collected at or above ground level. Surface waters include, but are not limited to, natural streams, lakes, wetlands, creeks, constructed agricultural drains, agricultural dominated waterways, irrigation and flood control channels, or other non-stream tributaries. Surface waters include all waters of the United States and their tributaries, interstate waters and their tributaries, intrastate waters, and all impoundments of these waters. For the purposes of this Order, surface waters do not include water in agricultural fields.

38. Tailwater – The runoff of irrigation water from an irrigated field.

39. Toxicity – Refers to the toxic effect to aquatic organisms from waste contained in an ambient water quality sample.

40. Unsaturated Zone – The unsaturated zone is characterized by pore spaces that are incompletely filled with water. The amount of water present in an unsaturated zone varies widely and is highly sensitive to climatic factors.

41. Vadose Zone – See unsaturated zone.

42. Waste – Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal as defined in California Water Code section 13050(d). Wastes from irrigated lands that conform to this definition include, but are not limited to, earthen materials (such as soil, silt, sand, clay, rock), inorganic materials (such as metals, salts,

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boron, selenium, potassium, nitrogen, phosphorus), organic materials such as pesticides, and biological materials, such as pathogenic organisms. Such wastes may directly impact beneficial uses (e.g., toxicity of metals to aquatic life) or may impact water temperature, pH, and dissolved oxygen.

43. Waste discharges from irrigated lands – The discharge or release of waste to surface water or groundwater. Waste discharges to surface water include, but are not limited to, irrigation return flows, tailwater, drainage water, subsurface (tile) drains, stormwater runoff flowing from irrigated lands, aerial drift, and overspraying of pesticides. Waste can be discharged to groundwater through pathways including, but not limited to, percolation of irrigation or storm water through the subsurface, backflow of waste into wells (e.g., backflow during chemigation), discharges into unprotected wells and dry wells, and leaching of waste from tailwater ponds or sedimentation basins to groundwater.

    A discharge of waste subject to the Order is one that could directly or indirectly reach waters of the state, which includes both surface waters and groundwaters. Direct discharges may include, for example, discharges directly from piping, tile drains, wells, ditches or sheet flow to waters of the state, or percolation of wastes through the soil to groundwater. Indirect discharges may include aerial drift or discharges from one parcel to another parcel and then to waters of the state. See also the definition for “waste”.

44. Waters of the State – Is defined in Water Code section 13050 as “any surface water or groundwater, including saline waters, within the boundaries of the State.”

45. Water Quality Criteria – Levels of water quality required under section 303(c) of the Clean Water Act that are expected to render a body of water suitable for its designated uses. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes. The California Toxics Rule adopted by USEPA in April 2000 sets numeric water quality criteria for non-ocean surface waters of California for a number of toxic pollutants.

46. Water Quality Objectives – Defined in Water Code section 13050 as “limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area.” Water quality objectives may be either numerical or narrative and serve as water quality criteria for purposes of section 303 of the Clean Water Act.

47. Water quality problem – Exceedance of an applicable water quality objective or a trend of degradation that may threaten applicable Basin Plan beneficial uses.

48. Water Quality Standards – Provision of state or federal law that consist of the designated beneficial uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the uses of that particular waterbody, and an antidegradation statement. Water quality standards include water quality objectives in the Central Valley Water Board’s two Basin Plans, water quality criteria in the California Toxics Rule and National Toxics Rule adopted by USEPA, and/or water quality objectives in other applicable State Water Board plans and policies. Under section 303 of the Clean Water Act, each state is required to adopt water quality standards.

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Acronyms and Abbreviations

2014 Farm Bill	Agricultural Act of 2014
Basin Plans	*Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (4th Ed.) and *Water Quality Control Plan for the Tulare Lake Basin*
BPAW	Basin Plan Amendment Workplan
BPTC	best practicable treatment or control
Bureau	U.S. Bureau of Reclamation
CAC	county agricultural commissioner
CCA	Certified Crop Adviser
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CEDEN	California Environmental Data Exchange Network
Central Valley Water Board	California Regional Water Quality Control Board, Central Valley Region
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
COC	constituent of concern
CRHR	California Register of Historic Resources
CTR	California Toxics Rule
CV RDC	Central Valley Regional Data Center
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CWC	California Water Code
DO	dissolved oxygen
DPH	California Department of Public Health
DPM	diesel particulate matter
DPR	California Department of Pesticide Regulation
DWR	California Department of Water Resources
EC	electrical conductivity
ECR	Existing Conditions Report
EDD	electronic data deliverable
EIR	environmental impact report
E{A	U.S. Environmental Protection Agency
EQUIP	Environmental Quality Incentives Program
ESA	federal Endangered Species Act
GAF	Grassland Area Farmers
GAMA	Groundwater Ambient Monitoring and Assessment
GAR	Groundwater Quality Assessment Report
GBD	Grassland Basin Drainage
GDA	Grassland Drainage Area
GeoTracker	Geo Tracker Electronic Submittal of Information Online System
GHG	greenhouse gases
GIS	Geographic Information System
GMAW	Groundwater Monitoring Advisory Workgroup
GPS	Global Positioning System
GQMP	groundwater quality management plan

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GWPA	Groundwater Protection Area
HAP	hazardous air pollutants
ILRP	Irrigated Lands Regulatory Program
MCL	Maximum contaminant level
MDL	method detection limit
MMRP	mitigation monitoring and reporting program
MPEP	Management Practice Evaluation Program
MPER	Management Practice Evaluation Report
MRP	monitoring reporting program
MRPP	monitoring and reporting program plan
MWICR	Monitoring Well Installation Completion Report
MWISP	Monitoring Well Installation and Sampling Plan
NAD83	North American Datum 1983
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum 1988
NOA	notice of applicability
NOC	notice of certification
NOI	notice of intent
NOT	notice of termination
NOV	Notice of Violation
NPS	nonpoint source
NPS Policy	State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTR	National Toxics Rule
PCPA	Pesticide Contamination and Prevention Act
PRC	California Public Resources Code
PUR	pesticide use report, CA DPR
QAPP	quality assurance project plan
QA/QC	quality assurance and quality control
RCD	Resource Conservation District
RL	reporting limit
RWD	report of waste discharge
SB	Senate Bill
State Water Board	State Water Resources Control Board
Steering Committee	Grassland Basin Drainage Steering Committee
TAC	toxic air contaminant
TDS	total dissolved solids
TOC	total organic carbon
TRS	township, range, and section
TSS	total suspended solids
USEPA	U.S. Environmental Protection Agency
USFWS	U.S Fish and Wildlife Service
Water Authority	San Luis & Delta-Mendota Water Authority
WDRs	waste discharge requirements

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