

## WORKING DRAFT ATTACHMENT B

### CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD CENTRAL VALLEY REGION

#### MONITORING AND REPORTING PROGRAM ORDER NO. R5-2007-\_\_\_\_\_

#### APPLICABLE DEFINITIONS AND ACRONYMS FOR COALITION GROUP FOR DISCHARGES FROM IRRIGATED LANDS

The following information is presented to provide definition and clarification of terminology and acronyms used within the Monitoring and Reporting Program documents.

#### **Definitions**

The following definitions apply to the Monitoring and Reporting Program as related to discharges from irrigated lands as described in this Order and all attached documents.

1. **Accuracy** - The closeness or agreement of the observed value or test response to the true or acceptable reference value or the test response from a reference method. It is influenced by both random error (precision) and systematic error (bias). The terms "bias" and "precision" are often used in lieu of "accuracy".
2. **Analytical Batch** - A group of 20 or fewer samples and associated quality control that is processed by the same instrument within a 24-hour period. Multiple sample batches can comprise an analytical batch.
3. **Analytical Run** - The quantification of a single discrete sample or its associated quality control.
4. **Assessment** - A general evaluation process used to evaluate the performance, effectiveness and processes of a management and/or technical system.
5. **Batch** - A group of 20 or fewer samples, to include quality control samples, which is to be collected and/or analyzed in one, test run or inspected together within a specific time limit and traceable as a unit.
6. **Bias** - The constant or systematic distortion of a measurement process that manifests itself as a persistent positive or negative deviation from the known or true value. This can result from improper data collection, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques.
7. **Blank** - A specimen that is intended to contain none of the analytes of interest and which is subjected to the usual analytical or measurement process to establish method purity, a zero baseline or background value.

- 8. Calibration** - A comparison of a measurement standard, instrument, or item with one having higher accuracy to detect, quantify, and record any inaccuracy or variation; the process by which an instrument setting is adjusted based on response to a standard to eliminate the inaccuracy.
- 9. Calibration Standard** - A reference solution or substance of known value or chemical concentration used to establish a correct instrument reading.
- 10. Certified Reference Materials** - A substance or solution for which the composition or concentration of a particular chemical constituent is known, and which is traceable with documentation pertaining to its composition and uniformity to an established standardization organization such as the National Institute for Standards and Technology (NIST) or the American Association for Laboratory Accreditation (A2LA).
- 11. Chain-of-Custody** - An unbroken, documented trail of accountability that ensures the physical security and/or integrity of samples, data, and records.
- 12. Coalition Group** – A group of dischargers and/or organizations that choose to comply with the Conditional Waiver by forming a group which is approved by the Central Valley Regional Water Quality Control Board. Coalition Groups can be organized on a geographic basis or can be groups with other factors in common such as commodity groups.
- 13. Coefficient of Variation** - The standard deviation divided by the mean; a unit-free measure of variability.
- 14. Comparability** - A measure of the confidence with which one data set, element, or method can be considered as similar to another, e.g., taken from the same location, taken in a similar manner, etc.
- 15. Completeness** - A measure of the amount of valid data obtained from a measurement system, compared to the planned or expected amount.
- 16. Contamination** - The unintentional addition of analytical constituents to a sample or system.
- 17. Continuing Calibration Verification** - A periodic standard used to assess instrument drift between calibrations.
- 18. Control Chart** - A graphic representation of the variability in a measurement process generally plotted in order over time.
- 19. Control Limit** - The upper and lower acceptable ranges of process data used to judge whether the process is within or outside of statistical limitations. Control limits are determined by the variation in a process data set expressed as the mean value plus or minus a pre-determined number of standard deviations (typically three standard deviations from the mean).

- 20. Corrective Action** - Any measures taken to rectify conditions adverse to quality and/or to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent reoccurrence.
- 21. Data Quality Assessment** - A statistical and scientific evaluation of a data set to determine the validity and performance of the data collection design and execution, and to determine the adequacy of the data set for its intended use.
- 22. Data Quality Indicators** - The quantitative statistics and qualitative descriptors that are used to interpret the degree of acceptability or utility of information to the user. The principal DQIs are precision, accuracy (or bias), representativeness, comparability, completeness, and sensitivity.
- 23. Data Quality Objectives** - Qualitative and quantitative statements derived from the DQO Planning Process that clarify the purpose of the study, define the most appropriate type of information to collect, determine the most appropriate conditions from which to collect that information, and specify tolerable levels of potential decision errors.
- 24. Data Quality Objectives Process** - A systematic strategic development tool based on the scientific method that identifies and defines the type, quality, and quantity of information needed to satisfy a specified use, including data precision, accuracy and completeness requirements.
- 25. Data Validation** - An analyte- and sample-specific process that evaluates analytical information after the verification process (i.e., determination of method, procedural, or contractual compliance) to determine analytical quality and any limitations on the data.
- 26. Data Verification** - The process of evaluating the completeness, correctness, and conformance/compliance of a specific information set against the method, procedural, or contractual specifications for that activity.
- 27. Discharger** - The owner and/or operator of irrigated lands or a Water District, which accepts or receives discharges from irrigated lands, who discharges or threatens to discharge: irrigation return flows, tailwater, operational spills, drainage water, subsurface drainage generated by irrigating crop land or by installing drainage systems to lower the water table below irrigated lands (tile drains) and/or stormwater runoff flowing from irrigated lands to waters of the State.
- 28. Discharges from irrigated lands** - Include surface discharges (also known as irrigation return flows or tailwater), operational spills, drainage water discharges, subsurface discharges through drainage systems that lower the water table below irrigated lands (also known as tile drains), stormwater runoff flowing from irrigated lands, and stormwater runoff conveyed in channels or canals resulting from the discharge from irrigated lands. For the purpose of this Coalition Group

Monitoring and Reporting Program, stormwater discharges to surface waters resulting from any size storm can be covered by this Conditional Waiver.

- 29. Drift** - The deviation in instrument response from its set or reference value over a period of time.
- 30. Equipment Blank** - An aliquot of reagent water that is subjected to all aspects of sample collection and analysis, including contact with all sampling devices and apparatus. The purpose of the equipment blank is to determine if the sampling devices and apparatus for sample collection have been adequately cleaned prior to use.
- 31. Field Blank** - An aliquot of reagent water which is exposed to sampling conditions, returned to the laboratory, and treated as an environmental sample. This blank is used to provide information about contaminants that may be introduced during sample collection, storage, and transport.
- 32. Field Duplicate (Co-located)** - An independent specimen collected from (as closely as possible) the same point in time and space as the primary specimen. This would include duplicate sample containers filled simultaneously and in close proximity to one another from the same medium, or duplicate containers filled in rapid succession from the same location or source.
- 33. Field Duplicate (Sub-sample) or Field Split** - A test specimen that is homogenized before being divided into two or more portions with the same laboratory analyzing all portions, to evaluate sampling and analysis precision. This type of field duplicate (or split) sample analysis can also be performed by more than one lab to evaluate inter-laboratory precision.
- 34. Field Measurements** - Those activities associated with performing analyses or measurements in the habitat being examined.
- 35. Holding Time** - The period of time a sample may be stored following collection, preservation, extraction, or analysis. While exceeding the holding time does not necessarily negate the validity of analytical results, associated analytical data are typically qualified as estimated.
- 36. Indicators** - Items, elements, or measures used to determine or identify a basic condition or how well a process or program is meeting its objectives.
- 37. Inter-comparison** - An exercise in which samples are prepared and split by a reference laboratory, then analyzed by one or more testing laboratories and the reference laboratory. The inter-comparison, with a reputable laboratory as the reference laboratory, serves as a test of the precision and accuracy of the analyses from different laboratories at natural environmental levels.
- 38. Interference** - An element, compound, or other matrix effect present in a sample, which disturbs the detection of a target analyte leading to inaccurate concentration results for the target analyte.

- 39. Internal Standard** - Pure analyte (s) added to a sample, extract, or standard solution in known amount(s) and used to measure the relative responses of other method analytes that are components of the same sample or solution. The internal standard must be an analyte that is not a sample component.
- 40. Irrigated Lands** - Lands where water is applied for the purpose of producing crops, including, but not limited to, land planted to row, vineyard, pasture, field and tree crops, commercial nurseries, nursery stock production, managed wetlands, rice production, and greenhouse operations with permeable floors that do not currently discharge under waste discharge requirements (WDRs), including Municipal Separate Storm Sewer System or other National Pollutant Discharge Elimination System permits are considered irrigated lands.
- 41. Irrigation Season** - The time of year when water is applied to fields for the purpose of promoting crop growth, for distributing nutrients or other chemicals to crop lands or for the purposes of counteracting the effects of frost during cold season months.
- 42. Irrigation Return Flow** - Surface and subsurface water which leaves the field following application of irrigation water.
- 43. Laboratory Blank (also known as a Method Blank)** - An aliquot of reagent water (or for solid matrices, an inert solid similar to the sample matrix) that is prepared by the laboratory and treated exactly as a sample, including exposure to all glassware, equipment, solvents, reagents, internal standards, and surrogates that are used with samples. The laboratory blank is used to determine if method analytes or interferences are present in the laboratory environment, the reagents, or the apparatus.
- 44. Laboratory Duplicate** - Two or more representative portions taken from one homogeneous sample by the laboratory analyst and analyzed in the same testing facility to evaluate the effects of laboratory conditions on analytical precision.
- 45. Laboratory Control Sample** - A specimen of known composition prepared using contaminant-free reagent water, or an inert solid, that is spiked with the analyte of interest at the midpoint of the calibration curve or at the level of concern; and then analyzed using the same preparation, reagents, and analytical methods employed for regular specimens and at the intervals set in the Quality Assurance Project Plan.
- 46. Matrix** - The material of which the sample is composed or the substrate containing the analyte of interest, such as drinking water, waste water, air, soil/sediment, biological material, etc. Also called medium or media.
- 47. Matrix Spike** - A test specimen that is prepared by adding a known concentration of the target analyte(s) to a specified amount of a specific homogenized specimen and is then subjected to the entire analytical protocol.

- 48. Matrix Spike Duplicate** - A sample prepared simultaneously as a split with the matrix spike sample with each specimen being spiked with identical, known concentrations of targeted analyte.
- 49. Measurement Quality Objectives** - The individual performance or acceptance goals (or requirements) for the individual Data Quality Indicators such as precision or bias.
- 50. Metadata** - The information about a data set, which may include descriptive information about the context, quality and condition, or characteristics of a data set. For geographical data this may include the source of the data; its creation date and format; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard.
- 51. Method** - A procedure, technique, or tool for performing a scientific activity.
- 52. Method Detection Limit** - The minimum concentration of an analyte that undergoes the entire measurement process and can be reported with a stated level of confidence that the analyte concentration is greater than zero.
- 53. Method Linearity** – The ability of an analytical method to demonstrate an increase in sample concentration of a given analyte, as the instrument response also increases. Demonstration of instrument linearity, as well as the upper and lower limits of linearity, is considered part of a laboratory method validation procedure and should take place before the procedure is used to report analytical results.
- 54. Monitoring** - All types of monitoring undertaken in connection with determining water quality conditions and factors that may affect water quality conditions, including but not limited to, in-stream water quality monitoring undertaken in connection with agricultural activities, monitoring to identify short and long-term trends in water quality, active inspections of operations, and management practice implementation and effectiveness monitoring.
- 55. Negative Control** - Measures taken to insure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results.
- 56. Operational Spill** – Irrigation water that is diverted from a source such as a river, but is discharged without being delivered to or used on an individual field.
- 57. Parameter** - A statistical quantity, usually unknown, such as a mean or a standard deviation, which characterizes a population or defines a system. The term Parameter (or sometimes “Analytical Parameter”) can also be defined as a measured analytical constituent such as an individual chemical, a group of chemicals, or a physical property (i.e. Total Organic Carbon, electrical Conductivity, etc.).
- 58. Performance Based Measurement System** - A set of processes wherein the data needs, mandates, or limitations of a program or project are specified and

serve as criteria for selecting appropriate methods to meet those needs in a cost-effective manner.

- 59. Positive Control** - A prepared standard which undergoes an analytical procedure to provide comparison with an unknown specimen thereby monitoring recovery to assure that a test and/or its components are working properly and producing correct or expected results.
- 60. Precision** - A measure of mutual agreement between two or more individual measurements of the same property, obtained under similar conditions.
- 61. Proficiency Test** - A type of external assessment in which a stable sample, the composition of which is unknown to the analyst, is provided to determine whether the analyst/laboratory can produce analytical results within the specified acceptance criteria. Also known as a Performance Evaluation Test.
- 62. Proficiency Test Sample** - A test specimen of known composition and/or chemical concentration that mimics an actual specimen in all possible aspects, except that its composition is unknown to the laboratory at the time of analysis, and which is used to assess the laboratory's capability to produce results within acceptable criteria.
- 63. Qualified Data** - Any numerical information that may be of limited use for a specific function, and is identified (flagged) as such.
- 64. Quality Assurance** - An integrated system of management activities (planning, implementation, assessment, reporting, and quality improvement) that focuses on providing confidence in the data or product by ensuring that it is of the type and worth needed and expected for its expressed, intended use.
- 65. Quality Assurance Officer** - The individual designated within an organization having management oversight and responsibilities for planning, documenting, coordinating, and assessing the system effectiveness for ensuring the value of the work.
- 66. Quality Assurance Project Plan** - A document that describes the intended technical activities and project procedures that will be implemented to ensure that the results of the work to be performed will satisfy the stated performance or acceptance criteria. The amount of information presented and the planned activities to ensure the value of the work will vary according the type of study and the intended use of the data.
- 67. Quality Control** - The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established; operational techniques and activities that are used to fulfill requirements.

- 68. Quality Control Sample** - One of any number of test specimens, such as a Proficiency Test or blank, intended to demonstrate that a measurement system or activity is in check.
- 69. Quality Management Plan** - A document that describes an organization's system in terms of its organizational structure, policy and procedures, staff functional responsibilities, lines of authority, and interfaces for those planning, implementing, documenting, and assessing all activities conducted.
- 70. Quality Objectives** - The combined characteristics of Data Quality Objectives and Measurement Quality Objectives; the overall criteria related to sample design and analytical measurements intended to assure that analytical data meet the requirements associated with the intended use.
- 71. Quantitation Limit or Practical Quantitation Limit (PQL)** - The level above which numerical results may be obtained with a specified degree of confidence, the minimum concentration of an analyte, or category of analytes, in a specific matrix that can be identified and quantified within specified limits of precision and accuracy during routine analytical operating conditions. The manner of establishing the quantitation limit is method-specific, and typically involves the successful (within established acceptance criteria) analysis of calibration standards at the quantitation limit concentration -- either as part of the instrument calibration procedure, or as a routine control sample.
- 72. QC Set (Quality Control Set)** - A group of quality control samples (i.e. a method blank, a matrix spike and matrix spike duplicate, etc.) used to evaluate (control) a specific set or batch of samples.
- 73. Receiving waters** - Surface waters that receive or have the potential to receive discharges from irrigated lands.
- 74. Recovery** - The measure of accuracy for an analytical procedure, including determining whether or not the methodology measures all of the analyte contained in a sample, often expressed in percent recovered.
- 75. Reference Toxicant** - A substance used as a positive control for toxicological analyses to test the sensitivity of the test organisms to a known toxic substance, and to assure appropriate lab procedures have been performed.
- 76. Relative Percent Difference** - The absolute value of the difference of two measurements divided by the statistical mean of the same two measurements, used to evaluate the precision of duplicate samples analysis, or two repeated measurements.
- 77. Relative Standard Deviation** - The standard deviation divided by the mean; a unit-free measure of variability.

- 78. Repeatability** - The degree of agreement between independent test results produced by the same analyst, using the same test method and equipment on random aliquots of the same sample within a short time period.
- 79. Reporting Limit (RL)** - the quantitation level required by the Irrigated Lands Program for reporting purposes. The RL is typically set at a laboratory quantitation level, but consideration may be made for lowering the level to the detection limit, if information about presence or absence of a contaminant is necessary. Similarly, if levels that are protective of water quality prove to be lower than the routine quantitation limit at a given laboratory, then the CVRWQCB may require an RL that is lower than the PQL, providing achieving that limit is economically feasible. The RL can sometimes be raised to some default value above the PQL, if the PQL is much lower than necessary to protect water quality, and if it is approved by the CVRWQCB.
- 80. Representativeness** - A measure of the degree to which data accurately and precisely represent characteristics of a population, parameter variations at a sampling point, a process condition, or an environmental condition.
- 81. Rinse Blank** - A dilute acid solution used to flush an instrument between samples in order to reduce memory interferences.
- 82. Sample Batch** - A group of 20 samples or fewer and associated quality control that is collected by the same entity within a 24-hour period.
- 83. Sensitivity** - The capability of a method or instrument to discriminate between measurement responses representing different levels of a variable of interest.
- 84. Spike** - A known quantity of an analyte added to a sample for the purpose of determining recovery or efficiency (analyst spikes), or for quality control (blind spikes).
- 85. Split** - Two or more representative portions taken from one specimen in the field or in the laboratory and analyzed by different analysts, methods, or laboratories.
- 86. Standard Deviation** - The measure of the dispersion or imprecision of a series of accepted results around the average, equal to the square root of the variance.
- 87. Standard Operating Procedure** - A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps and that is officially approved as the method for performing certain routine or repetitive tasks.
- 88. Stormwater runoff** – The runoff of precipitation from irrigated lands to surface waters from any size storm event.
- 89. Subsurface drainage** – Water generated by installing drainage systems to lower the water table below irrigated lands. Subsurface drainage systems, deep open drainage ditches, or drainage wells can generate this drainage.

- 90. Surrogate** - A pure substance with properties that mimics the analyte of interest (organics only) and which is unlikely to be found in environmental samples. It is added into a sample before sample preparation.
- 91. Tailwater** – The runoff of irrigation water from an irrigated field.
- 92. Travel Blank** - Analyte-free water placed in the same type of container as its associated field samples. It may be pre-preserved prior to shipment, but is not opened during the sample collection. Consequently, it helps isolate contamination associated with sample transport.
- 93. Waste** – As defined in California Water Code (Water Code) Section 13050. 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 or whatever nature prior to, and for the purposes of disposal. Waste specifically regulated by the Coalition Group Conditional Waiver includes: earthen materials, such as soil, silt, sand, clay, and rock; inorganic materials, such as metals, salts, boron, selenium, potassium, nitrogen, etc.; and organic materials, such as pesticides that enter or threaten to enter waters of the State. Examples of waste not specifically regulated by the Coalition Group Conditional Waiver include hazardous and human wastes.
- 94. Waters of the State** – As defined in Water Code Section 13050. Any surface water or groundwater, including saline waters, within the boundaries of the State. The Order and Coalition Group Conditional Waiver regulate discharges from irrigated lands to surface waters.

## Acronyms

The following acronyms apply to the Monitoring and Reporting Program as related to discharges from irrigated lands as described in this Order and all attached documents.

AMR	Annual Monitoring Report
CAL-EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CFR	Code of Federal Regulations
COC	Chain of Custody
CTR	California Toxics Rule
CWA	Clean Water Act
DFG	Department of Fish and Game
DHS	Department of Health Services
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DPR	Department of Pesticide Regulation
DQO	Data Quality Objective
DWR	Department of Water Resources
GC/MS	Gas chromatography/mass spectrometry
IDL	Instrument Detection Limit
GIS	Geographic Information System
ILP	Irrigated Lands Program
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
LTMS	Long-term Monitoring Strategy
ML	Minimum Level
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MRP	Monitoring and Reporting Program
MRPP	Monitoring and Reporting Program Plan
MP	Management Practices
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MUN	Municipal use of a water body as a source of drinking water
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTR	National Toxics Rule
ppm	Parts per million (mg/kg sediment and tissue; mg/l water)
ppb	Parts per billion (ug/kg or ng/g sediment and tissue; ug/l water)
PQL	Practical Quantitation Limit
QAMP	Quality Assurance Management Plan
QAPP	Quality Assurance Project (or Program)Plan

QA/QC	Quality Assurance/Quality Control
QO	Quality Objective
REC1	Contract recreation as a beneficial use for a water body
RL	Reporting Limit
RPD	Relative Percent Difference
RWQCB	Regional Water Quality Control Board
SAMR	Semi-annual Monitoring Report
SD	Standard Deviation
SOP	Standard Operating Procedure
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
SVOC	Semi-volatile organic carbon compounds
TIE	Toxicity Identification Evaluation
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRL	Target Reporting Limit
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WER	Watershed Evaluation Report
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compounds