

# SNMP GLOSSARY

*(not in alphabetical order)*

## Spatial Terms

**AQUIFER:** A body of rock or sediment that is sufficiently porous and permeable to store, transmit and yield significant or economic quantities of groundwater to wells or springs. (DWR)

**BASIN:** A groundwater basin is an alluvial aquifer comprised of soils and sediments that are sufficiently porous and permeable to store, transmit and yield significant or economic quantities of water to wells or springs. Groundwater basins have a definable bottom and well-defined lateral boundaries that are usually characterized by impermeable formations of rock or clay or by subsurface gradients that physically constrain subsurface flows to a limited direction. The California DWR has identified XX groundwater basins or sub-basins in the Central Valley Region (see SNMP Appendix XX).

**SUB-BASIN:** A sub-basin is a smaller, but contiguous, area of the aquifer within a larger groundwater basin. The sub-basin boundaries can be defined both vertically and horizontally by a number of factors including, but not limited to: mineral or chemical concentrations, pumping practices, porosity, ownership, overlying land uses, jurisdictional oversight, flow gradients, tributary relationships, or other variables that merit the sub-basin be managed differently from adjacent areas in the same larger groundwater basin. The California DWR has identified XX groundwater basins or sub-basins in the Central Valley Region (see SNMP Appendix XX).

**SATURATED ZONE:** The area, below the land surface, in which all pore space between soil, sand and rock particles is filled with water. The Saturated Zone is below the Unsaturated Zone and excludes areas of soil moisture where water is held by capillary action in the upper unsaturated soil or rock.

**UNSATURATED ZONE:** The area, below the land surface, in which the pore space between soil, sand and rock particles contains varying degrees of both air and water in ratios that inhibit extraction of significant or economic quantities of groundwater extraction. The term "Unsaturated Zone" is generally considered to be synonymous with the term "Vadose Zone."

**PERCHED GROUNDWATER:** Groundwater that is supported by a zone of material of low permeability located above an underlying main body of groundwater with little or no hydrologic connectivity to the underlying main aquifer. In most cases, Perched Groundwater is excluded when characterizing the Production Zone, Upper Zone or Shallow Zone of the main Aquifer which makes up a given DWR Basin or Sub-basin.

## **Spatial Terms** (cont.)

**PRODUCTION ZONE:** The portion of a basin or sub-basin from which the vast majority (~90%) of groundwater being pumped and utilized. It generally extends from the top of the saturated zone to the bottom of the lowest screened production well. The production zone may be further subdivided into the Upper Zone and the Lower Zone. Groundwater in storage below the Lower Zone is not included when describing or characterizing the Production Zone. (see Fig. 1)

**UPPER ZONE:** The portion of a groundwater basin or sub-basin from which most domestic wells draw water. It generally extends from the top of the saturated zone to the bottom of the lowest screened domestic wells or to the top of the Corcoran Clay layer where this layer exists. The lower boundary of the upper zone varies based on well construction information for a given basin or sub-basin (as described in Section 2 of LWA/LSCE; Region 5: Updated Groundwater Quality Analysis and High Resolution Mapping for Central Valley Salt and Nitrate Management Plan; June, 2016).

**LOWER ZONE:** The remaining portion of a groundwater basin or sub-basin's Production Zone excluding the Upper Zone. Wells located in the Lower Zone are generally used for crop irrigation although some wells in the lower zone are also used for municipal supply. The upper boundary of the Lower Zone varies based on well construction information for a given basin or sub-basin (see reference citation in the definition of Upper Zone. Where it exists, the Corcoran Clay layer defines that upper boundary of the Lower Zone.

**SHALLOW ZONE:** The uppermost portion of the Upper Zone where viable production wells first begin to support beneficial use of groundwater from a given basin or sub-basin. For regulatory purposes, the term "Shallow Zone" should be used in lieu of the phrase "first-Encountered Groundwater."

**RECEIVING WATER(S):** A surface waterbody (lake or stream) or a groundwater Basin or Sub-basin into which pollutants are discharged.

**AREA-OF-INFLUENCE:** The portion(s) of Basin or Sub-basin where a discharge or discharges will co-mingle with the receiving water and where the presence of such discharge(s) would likely be detected in a subsequent tracer study.

**MANAGEMENT ZONE:** A discrete and contiguous subdivision of a larger groundwater basin or sub-basin for which compliance with water quality standards is regulated and evaluated separately. Management Zones, which must be approved by the Regional Board, are intended to encourage permitted dischargers within the zone to protect beneficial uses and meet water quality standards by implementing more effective and efficient collective action strategies. By definition, a Management Zone must include the Area of Influence for all dischargers participating in the Management Zone.

## **Concentration Terms**

**CURRENT GROUNDWATER QUALITY:** The volume-weighted Average Concentration of a chemical constituent in a given Basin or Sub-basin. Current water quality can be computed separately for the Production Zone, Upper Zone, Lower Zone, Shallow Zone, Management Zone.

**EXISTING GROUNDWATER QUALITY:** The lowest volume-weighted average (mean) concentration of a chemical constituent consistently attained in a given groundwater Basin or Sub-basin since the relevant water quality objective for that same constituent was established or since October 28, 1968, whichever is later, unless the Regional Board has subsequently authorized a different water quality baseline consistent with the state Antidegradation Policy (Resolution No. 68-16).

**AVERAGE CONCENTRATION:** The mean concentration of a chemical constituent computed using all reasonably available, representative and reliable well data collected in a given Basin or Sub-basin during the most recent 10 year sampling period. The Regional Board may authorize longer or shorter averaging periods where necessary and appropriate. Statistical tools and transformations may be used to identify and disqualify outliers, to normalize data, or to spatially and temporally de-cluster well data to reduce the potential for sampling bias when estimating a mean concentration. See [INSERT SNMP CITATION HERE] for a more detailed description of technical methods previously accepted for use in estimating average chemical concentrations in groundwater.

**ASSIMILATIVE CAPACITY:** The difference between the average concentration of a chemical constituent in a given groundwater Basin or Sub-basin and the relevant water quality objective for the same chemical constituent. For the purpose of calculating available assimilative capacity, and in accordance with §9(c)(1) of the Recycled Water Policy (Res. No. 2009-0011), the most recent 5 years of available data should be used unless a different data set is approved by the Regional Board's Executive Officer.

**NATURALLY-OCCURRING BACKGROUND CONCENTRATION:** The average concentration of a chemical constituent that is likely to be present in a given groundwater Basin or Sub-basin without the influence of any anthropogenic activities that may have occurred over time. Acceptable methods for estimating the naturally-occurring background concentration are described in [INSERT SNMP CITATION HERE]. Other scientifically-defensible methods for estimating the naturally occurring background concentration may also be approved by the Regional Board's Executive Officer.

**IMPERCEPTIBLE IMPROVEMENT IN WATER QUALITY:** A calculable but relatively insignificant reduction in pollutant concentration that does not materially alter a typical person's willingness or ability to make beneficial use of the receiving water or substantially change the risk of doing so.

## **Use Impairment Terms**

**POLLUTION:** Per CWC §13050(l), an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects the waters for beneficial uses or the facilities which serve these beneficial uses. Pollution may include contamination. Naturally-occurring background concentrations are not considered a pollution.

**NUISANCE:** Per CWC §13050(m), 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 individual may be unequal; 3] Occurs during, or as the result of, the treatment or disposal of wastes.

**CONTAMINATION:** Per CWC §13050(k), an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to public health through poisoning or through the spread of disease. Contamination includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

**THREATENING TO BE EXCEEDED:** For a given groundwater Basin, Sub-basin, or Management Zone, water quality objectives are threatening to be exceeded when: 1) the volume-weighted average concentration of a chemical constituent is greater than 50% of the relevant water quality objective and long-term monitoring data confirms that there is a clear rising trend in the average concentration for that constituent; or 2) the volume weighted average concentration of a chemical constituent is greater than 75% of the relevant water quality objective unless long-term monitoring data confirms that there is a clear declining trend in the average concentration for that constituent. For individual wells, water quality objectives are threatening to be exceeded when: 1) the average concentration of a chemical constituent in recent and representative samples is greater than 50% of the relevant water quality objective and long-term monitoring data confirms that there is a rising trend in the measured concentrations of that constituent; or 2) the average concentration of a chemical constituent in recent and representative samples is greater than 75% of the relevant water quality objective.

**WILL NOT UNREASONABLY AFFECT BENEFICIAL USES:** Discharges shall be initially presumed to not unreasonably affect beneficial uses of water provided that: 1) the discharge does not cause the average concentration of a given chemical constituent in a groundwater Basin or Sub-basin to exceed 75% of the relevant water quality objective; or 2) the discharge does not cause the concentration of a given chemical constituent to exceed 50% of the relevant water quality objective at any individual well where the beneficial use is likely to occur. These are rebuttable presumptions with the burden of proof on those seeking to make such a rebuttal.

## **Implementation Terms**

**BEST PRACTICABLE TREATMENT OR CONTROL (BPTC):** Proven, cost-effective and reliable methods for reducing the mass or concentration of potential pollutants in the discharge or the receiving water. BPTC may be discerned by evaluating performance data from a range of alternative pollutant reduction technologies/techniques, particularly those strategies successfully implemented by similarly-situated dischargers. BPTC is conceptually comparable (but not legally synonymous) with other similar phrases commonly used to proscribe the most effective, efficient and affordable means for minimizing pollution, such as: Best Available Technology Economically Achievable (BATEA), Best Practicable Control Technology (BPT), Best Conventional Pollution Control Technology (BCT), Best Efforts, and Best Management Practices (BMP). However, the phrase BPTC applies exclusively to situations where receiving water quality is better than relevant water quality objectives and an Antidegradation Analysis is being performed as required by Res. No. 68-16.

**BEST EFFORTS:** The highest level of water quality that can be reliably achieved using the most effective and affordable methods generally available to reduce the discharge of pollutants or mitigate potential adverse effects of such discharges on the receiving waters. The term "Best Efforts" has historically been used to: 1) establish more stringent waste discharge requirements than necessary to meet water quality objectives where such limits can be met without undue hardship to the discharger, or 2) assure the lowest pollutant concentrations reasonably achievable, in conjunction with authorizing an exception or variance from water quality standards, where a discharge is unable to otherwise assure compliance with relevant water quality objectives. Best Efforts is conceptually comparable (but not legally synonymous) with other similar phrases commonly used to proscribe the most effective, efficient and affordable means for minimizing pollution, such as: Best Available Technology Economically Achievable (BATEA), Best Practicable Control Technology (BPT), Best Conventional Pollution Control Technology (BCT), and Best Management Practices (BMP). However, unlike the phrase BPTC, use of the term Best Efforts is not confined to situations where receiving water quality is better than relevant water quality objectives. Factors that should be considered when ascertaining what constitutes "Best Efforts" include, but are not limited to: the water supply available to the discharger, past discharge quality, quality of discharge achieved by other similarly-situated dischargers, good faith efforts by the discharger to limit the discharge of the relevant chemical constituent, the measures necessary to achieve compliance and the cost of such measures, and the feasibility and effect of prohibiting a discharge which is unable to demonstrate compliance with applicable water quality objectives.

## **Implementation Terms (cont).**

**BEST MANAGEMENT PRACTICES (BMP):** Structural or non-structural (operational) control techniques designed to reduce the discharge of pollutants into receiving waters, especially for non-point sources where conventional wastewater treatment technologies are not a feasible or practicable compliance option. First applied to stormwater discharges to surface waters [CWA §319(a)(1)(C)], the obligation to implement BMPs has since been cross-applied to various non-point discharges to groundwater in lieu of imposing numeric effluent limitations. Waste discharge requirements requiring BMPs also obligate dischargers to: 1) adopt practices adapted to site-specific or regional-specific conditions; 2) monitor to assure that these practices are properly applied and are effective; 3) immediately mitigate problems where monitoring indicates that BMPs are not effective; and 4) improve existing BMPs or implement additional BMPs as needed to attain and maintain water quality standards. The BMP approach is an iterative and adaptive process designed to make reasonable progress toward eventual attainment of water quality standards where immediate compliance is not generally feasible or practicable. According to the SWRCB (WQ 2000-11) factors that should be considered when determining if a BMP will reduce pollutants to the maximum extent practicable include, but are not limited to: 1) technical feasibility, 2) effectiveness, 3) public acceptance, 4) the economic and social costs (tangible and intangible) to both the discharger and the surrounding community, including an evaluation of the ability to bear such costs and a consideration of these costs compared to the environmental benefit likely to be gained.

**INFEASIBLE, IMPRACTICABLE OR UNREASONABLE:** a detailed and well-documented demonstration that a discharge or discharges cannot comply with water quality standards due to insurmountable technical, logistic or resource limitations and that such constraints cannot be overcome without incurring significant adverse impacts (including widespread and substantial economic hardship) that are generally deemed worse for the affected community than those caused by the non-compliant discharges. Such a demonstration also requires an evaluation of the regulatory option to prohibit non-compliant discharges. Notably, dischargers remain obligated to implement Best Efforts to reduce pollutant loads as much as is reasonably possible even if it is not feasible or practicable to achieve full compliance with water quality standards.

**REASONABLE PROGRESS TOWARD ATTAINMENT:** a detailed and well documented demonstration that an iterative and adaptive program for implementing Best Management Practices (BMPs) is effectively reducing the mass or concentration of certain chemical constituents discharged to or measured within the receiving waters in accordance with a series of targets, deadlines and metrics (collectively "milestones") established by the Regional Board.

## **Programmatic Terms**

**ALTERNATIVE COMPLIANCE PROGRAM (ACP):** for discharges that are unable to achieve compliance with traditional receiving water limitations, project(s) designed to provide the same or higher level of intended protection to water users that may be adversely affected by the discharge. For example, where a discharge is unable to comply with water quality objectives for nitrate, the discharger may seek an exception and offer to provide a safe and reliable alternative water supply for nearby drinking water wells that exceed or threaten to exceed the primary MCL for nitrate. This approach is considered a form of Alternative Compliance because it assures protection of the beneficial use, where that use actually occurs, by other means. Alternative Compliance Programs are used in conjunction with other non-traditional regulatory options (incl.: variances, exceptions, offsets, management zones and assimilative capacity allocations) to mitigate the adverse effects from pollution until a feasible, practicable and reasonable means for meeting water quality objectives becomes available for certain regulated discharges.

**EXCEPTION TO WATER QUALITY STANDARD:** A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows a discharge to groundwater, subject to various conditions, without an obligation to comply with certain water quality objectives that would normally apply to the given discharge. Exceptions are limited to a specific term that is determined by the Regional Board. Exceptions must be periodically reviewed by the Regional Board to assure compliance with the requirements which were imposed as a condition for granting the exception. Exceptions apply solely to groundwater Basins, Sub-basins or Management Zones or to discharges thereto.

**VARIANCE TO WATER QUALITY STANDARD:** A special authorization, adopted by the Regional Board through the normal public review and approval process, that allows a discharge to surface waters, subject to various conditions, without an obligation to comply with certain water quality objectives that would normally apply to the given discharge. Variances are limited to specific terms governed by federal law and must also be approved by U.S. EPA. Variances apply solely to surface waterbodies or discharges to those surface waters.

**TRIGGER(s):** A concentration or level for a specific constituent (e.g. TDS) or parameter (e.g. Electrical Conductivity) which, when equaled or exceeded, may require some dischargers to initiate certain actions or implement certain measures.

## **Programmatic Terms** (cont.)

**OFFSET PROGRAM:** Project(s) implemented in conjunction with, but separately from, a discharge that are designed to demonstrate that the collective net impact of both on the receiving water quality is better than what is expected to occur if the discharge complied with the Waste Discharge Requirements (WDRs) that would normally be imposed in the absence of any Offset Program. For example, a discharge with TDS concentrations higher than the applicable water quality objectives to a groundwater basin lacking assimilative capacity for TDS, may demonstrate compliance by increasing the recharge of sufficient low TDS stormwater to the same groundwater basin so that the volume-weighted average of the discharge and the proposed offset project is less than the applicable water quality objective and the net effect of the combined effort would improve (reduce) average TDS concentrations in the receiving water. Alternatively, another discharger in similar circumstances, may propose to construct and operate a reverse osmosis system designed to remove more salt from the aquifer than the increment over and above the water quality objective that is added to the aquifer by the discharge. For both examples, the minimum acceptable offset ratio would be determined by the Regional Board. Because an Offset Program computes compliance based on a volume-weighted average, an Alternative Compliance Program may or may not also be required to mitigate the potential to cause or contribute to an area of localized impairment depending on the relative location of the discharge and the related offset project and their proximity to water supply wells.

**EARLY ACTION PLAN (EAP):** A plan that identifies specific activities, and a schedule for implementing those activities, that will be undertaken to assure immediate access to safe drinking water for those who are dependent on groundwater from wells that exceed or threaten to exceed the Primary MCL for nitrate. An EAP must be prepared and submitted by any discharger or group of dischargers seeking an exception or variance from water quality standards and must be implemented pending approval of a final exception or variance with its attendant conditions. In some cases, an EAP must also be submitted when a discharger or group of dischargers seek an allocation of assimilative capacity in order to address areas of localized water quality impairment.

**Fig. 1: Subdivisions of a Groundwater Basin or Sub-basin**

