Attachment A-8

Drought and Water Conservation Policy

Commented [A1]: The tone of this policy is that it only applies to drought conditions although it does note that conservation practices "that result from drought" also result in elevated concentrations. We are in an era where conservation and reuse are being mandated due to limited resources and where capital investments occur, those practices will continue. We need to capture that concept. I included language in the SNMP, but am finding it more difficult to include the concept in the structure of this document.

1.0 Background

1) In the Recycled Water Policy (Resolution No. 2009-0011), the State Water Resources Control Board ("State Water Board") found that severe drought "*challenges California's ability to provide the clean water needed to support a healthy population, a healthy environment and a healthy economy now and in the future."*[1]

2) In adopting the Recycled Water Policy the State Water Board declared its *"independence from relying on the vagaries of annual precipitation and move towards sustainable management of surface water and groundwater, together with enhanced water conservation, water reuse and the use of stormwater."*[2] The Recycled Water Policy directs each Regional Water Quality Control Board ("Regional Board") to *"exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws."*[3]

3) *"When used in compliance with this [Recycled Water] Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses…*[4] *The State Water Board [also] finds that the use of recycled water in accordance with this Policy, that is, which supports the sustainable use of groundwater and/or surface water, which is sufficiently treated so as not to adversely impact public health or the environment and which ideally substitutes for use of potable water, is presumed to have a beneficial impact."*[5]

4) The Recycled Water Policy requires Regional Boards to develop and implement regional and sub-regional salt and nutrient management plans to encourage greater use of recycled water while assuring compliance with applicable water quality standards. The degree of specificity within these plans will vary with a number of site-specific factors, including stormwater recharge. "*It is also the intent of the State Water Board that because stormwater is typically lower in nutrients and salts and can augment local water supplies, inclusion of significant stormwater use and recharge component within the salt/nutrient management plans is critical to the long-term sustainable use of water in California."*[6]

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[1] Recycled Water Policy, Section 1 (Preamble), page 1
[2] Recycled Water Policy, Section 1 (Preamble), page 1
[3] Recycled Water Policy, Section 4 (Mandate for Use of Recycled Water), page 3; also, increasing the use of recycled water during drought conditions is consistent with Governor Brown's Executive Order (April 25, 2014) directing the State Water Board to *"adopt statewide general WDRs to facilitate the use of treated wastewater that meets the standards set by the CDPH in order to reduce demand on potable water supplies."*
[4] Recycled Water Policy, Sections 1 (Preamble), page 2
[5] Recycled Water Policy, Section 3 (Benefits of Recycled Water), pages 2-3.
[6] Recycled Water Policy, Section 6(b)(1)(a) (Salt/Nutrient Management Plans), page 5

2.0 Regulatory Issues

1) Waste Discharge Requirements (WDRs) may include restrictions on the salt concentration in the final effluent or in treated municipal wastewater (aka "recycled water"). The limits may be based on one of the following:

   a) The applicable narrative or numeric water quality objective;

   b) High quality receiving water;

   c) Maximum allowable increase in Total Dissolved Solids (TDS) compared to the average salinity concentration in the water supply source; or

   d) Best demonstrated performance using representative historical discharge data.

2) Historically, waste discharge requirements (WDRs) rarely included any special provision or consideration for variations in effluent quality, directly or indirectly related to recurrent drought conditions that are beyond the control of the discharger. In addition, the occasions when discharge quality is substantially better than required are not usually considered when assessing whether that discharge is causing or contributing to an exceedance of water quality objectives. This creates unnecessary compliance issues for groundwaters that have longer water quality "memory" than do flowing streams.

3) Extended periods of below normal precipitation (aka "droughts") can create compliance issues for some WDRs governing salinity for the following reasons:

   a) During droughts and for a period of time after a drought, there is generally less high quality (low TDS or electrical conductivity [EC]) surface water available and water agencies commonly increase their reliance on lower quality (higher TDS/EC) groundwater or recycled water sources to augment their water supply. Most municipal and some industrial wastewater treatment systems are not designed to remove TDS/C. Consequently, higher salinity in the water supply tends to result in higher salinity in effluent.

   b) Mandatory conservation measures undertaken in response to prolonged drought may significantly alter the behavior of water users (restricted lawn watering, shorter showers, larger laundry loads, less frequent flushing, less industrial water use, etc.). The cumulative effect of these behavioral changes combine to reduce water use, which previously helped dilute the average TDS/EC concentration in raw sewage and treated wastewater.

   c) Drought-related changes in water quality temporarily aggravate the more permanent long-term trend toward increasing TDS/EC caused by widespread adoption of high efficiency, low-flow fixtures and appliances and greater use of in-home water softening technologies that increase TDS/EC discharged to sewer systems.

   d) The net result of changes in water use is that, even where municipal or industrial wastewater treatment plants have been able to cope with the long-term trend of rising TDS/EC in the treatment plant influent, drought-related conditions may temporarily eliminate the small but critical buffer needed to assure consistent compliance with salinity-based permit requirements (including for TDS, EC, and various individual salt ions, such as chloride, sodium and sulfate).

e) Drought conditions create similar concerns for agricultural operators and other dischargers (e.g., food processors). Reduced availability of high quality (low TDS) surface water forces increased reliance on lower quality (high TDS/EC) sources (e.g., groundwater and/or reuse of irrigation return flows) to maintain crop yields or assure long-term survival for vines and orchards, or to run operations. Periods of low rainfall reduce the flushing of salts from the root zone. The net result is temporarily higher TDS/EC concentrations recharging to groundwater below the root zone. For land discharge application, similar concerns exist.

4) Inability to assure consistent permit compliance for salinity discourages the routine use of recycled water for landscape or crop irrigation. In addition, these requirements may inadvertently discourage greater implementation of more efficient (drip-style) irrigation systems.

5) This problem is compounded by the fact that permit requirements for TDS may be evaluated instantaneously or using relatively short-term averaging periods (e.g., daily, weekly, monthly averages or means). Since droughts typically persist for several years, even limits expressed as an annual average may be practically impossible to meet given the elevated salinity concentrations in the best available water supplies at such times.

3.0 Recommendations

1) For discharges to groundwater, calculate compliance with the applicable narrative or numeric salinity objectives using a long-term (10+ year) flow-weighted average while also taking into consideration the expected recharge and potential dilution from natural precipitation and streambed percolation to the same basin or sub-basin.[7]

   The above approach would be consistent with the Recycled Water Policy by accounting for the influence of stormwater recharge over the long-term. It is also consistent with the State Water Board's previous precedential orders encouraging consideration of dilution and system mixing.[8] This approach also accounts for times when discharge quality is substantially better than required to meet WDRs.

   Many of the short-term averaging periods that are commonly used originated in EPA regulations intended to protect instream uses such as aquatic life in surface waters (see, for example, 40 CFR 122.45(d)). These averaging periods are unnecessarily restrictive where discharges to groundwater take several years to pass through the vadose zone and reach the underlying aquifer.

   Most important, this approach would continue to protect water quality by assuring that compliance with a receiving water limitation for salinity is evaluated holistically, based on the cumulative net effects of all sources of recharge to the receiving water.

2) Authorize the use of offset projects consistent with the CV-SALTS Offsets Policy, particularly increased stormwater capture and recharge, to demonstrate compliance with WDRs governing salinity discharges.[9] Allow offset credits to be created and banked by constructing and operating

[7] Recharge models and long-term precipitation estimates should be periodically reassessed and updated to assure protections are based on best available data.
[8] State Water Board, Water Quality Order No. 81-5; City of Lompoc
[9] Projects designed to generate compliance credits by harvesting and recharging stormwater must not interfere with downstream water rights, environmental (flushing) flows, or unreasonably affect downstream water quality.

such projects or by discharging well below the WDR threshold in non-drought years. Recognize that the credits needed to achieve compliance during periods of drought must be generated at times of above normal precipitation (especially El Niño winters) and, as such, must remain valid over a sufficiently long planning horizon, i.e., at least 20 years in order to be useful.

3) Consider amending the Basin Plans to establish a temporary variance/exception from salinity-related standards during certain drought conditions. The variance/exception would be automatically activated when one of the following triggers occurs: (a) a drought emergency is declared by an authorized federal or state authority;[10] (b) during an extended dry period in Reach 83 of the Lower San Joaquin River (Merced to Vernalis) as defined by the SRSJR Basin Plans;[11] or (c) declaration of a local emergency consistent with the California Emergency Services Act.[12] At such times, more appropriate interim WDRs or effluent limits would apply.[13] .

   In general, the purpose of this approach is to temporarily exempt dischargers from compliance when exceedances/violations are caused by the loss of high quality (lower TDS) water supplies and/or salinity increases directly related to mandatory conservation measures. The drought-related temporary variance/exception would be terminated when the conditions that triggered the variance/exception (as defined above) no longer exist.

4) Consider amending the Basin Plans to establish a temporary variance/exception from salinity-related standards where the TDS/EC concentration in the permitted discharge is better (lower) than the TDS/EC concentration in the receiving water and will improve receiving water quality (even when the receiving water quality is higher than the SMCL) because it promotes maximum use/reuse of available water supplies. Potential impacts to downstream/downgradient water quality must also be evaluated as part of this demonstration.

5) In lieu of authorizing a temporary variance/exception, consider pre-authorizing an automatic allocation of assimilative capacity (where it exists, or can be provided by the discharger, e.g., via an offset project) to accommodate higher TDS concentrations in the discharge/recharge during drought conditions.

Commented [A2]: How does this work when conservation practices continue after a drought? All these exceptions assume that dilution will be available in the future and that conservation will cease.

[10] California Government Code Section Title 2, Division 1, Chapter 7, California Emergency Services Act; also see http://www.water.ca.gov/waterconditions/declaration.cfm

[11] See proposed Basin Plan amendment: *Establishment of Salinity Water Quality Objectives in the Lower San Joaquin River, from the Mouth of the Merced River to Vernalis.* http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/upstream_salt_boron/index.shtml

[12] California Government Code Section Title 2, Division 1, Chapter 7, California Emergency Services Act.

[13] For example, reasonable increment of use or mass-based limits may continue to work as interim restrictions.