



VALLEY CENTER MUNICIPAL WATER DISTRICT

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Item No. 6
Supporting Document No. 5

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November 9, 2015

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Subject: Comments on Tentative Order No. R9-2015-0104
Valley Center Municipal Water District
Woods Valley Ranch Water Reclamation Facility
272975:acali

Dear Mr. Gibson:

Thank you for the opportunity to comment on Tentative Order No. R9-2015-0104. Tentative Order No. R9-2015-0104 would establish master water recycling requirements for the proposed expanded Woods Valley Ranch Water Reclamation Facility (WVRWRF).

The District appreciates the Regional Water Board's efforts to encourage recycled water use within the Tentative Order by allowing expansion of the WVRWRF to a capacity of 0.275 million gallons per day (mgd). The District's comments on Tentative Order No. R9-2015-0104 are limited to provisions of the Tentative Order that address compliance with the Basin Plan groundwater quality objective for nitrate.

Overview of Nitrate Compliance Issues. The State Water Resources Control Board on June 19, 2012 adopted the *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy). In conformance with recommendations established within the OWTS Policy, the Regional Water Board on April 15, 2015 modified the Basin Plan groundwater quality objective for the Valley Center Hydrologic Subarea (HSA 903.14) from 10 mg/l (as NO₃) to the State of California drinking water nitrate standard of 45 mg/l (as NO₃). The District understands that Office of Administrative Law approval of the Regional Water Board's revised Basin Plan nitrate groundwater quality objective is anticipated prior to the completion of the WVRWRF expansion.

As documented in testimony presented by the State Water Board Division of Drinking Water at the Regional Water Board's December 11, 2014 and April 15, 2015 meetings, noncompliance with the state drinking water standard of 45 mg/l (as NO₃) is rare within

the San Diego Region, and is limited to a few remote east county groundwater wells that are not affected by recycled water irrigation operations.

The District recognizes that nitrogen-rich activities such as animal confinement operations, fertilizer storage sites, OWTS discharges, or wastewater injection operations may represent realistic threats to increased groundwater nitrate concentrations, as these operations involve recharging higher concentrations of nitrogen directly to groundwater. Unlike these activities, however, recycled water irrigation use involves applying modest concentrations of nitrogen to the land surface where a significant majority of the nutrients are taken up by vegetation prior to percolation to groundwater. As a result, while the San Diego Region features more than a half-century history of recycled water irrigation use at numerous locations, not one instance has occurred where recycled water irrigation has resulted groundwater nitrate concentrations that threaten non-compliance with the State of California 45 mg/l (as NO₃) drinking water standard for nitrate.

The lack of potential for recycled water irrigation impacts to groundwater nitrate concentrations can be most convincingly demonstrated by comparing nitrate loads in recycled water (which is applied to the land surface) with OWTS nitrate loads allowed within the OWTS Policy that are deemed to not represent a threat to groundwater quality. In support of establishing state-wide OWTS requirements, the State Water Board's June 2012 *OWTS Policy Final Substitute Environmental Document* evaluated allowable OWTS nitrate loads to groundwater and groundwater quality protection needs to ensure compliance with the 45 mg/l (as NO₃) state drinking water standard for nitrate. On the basis of this evaluation, the OWTS Policy establishes minimum OWTS discharge standards under which local agencies (e.g. counties) are allowed to regulate OWTS discharges of up to 10,000 gallons per day (gpd) without the need for water quality impacts review or the issuance of Regional Water Board waste discharge requirements.

Table 1 (page 3) summarizes nitrogen loads to groundwater from OWTS discharges that are allowable under the OWTS Policy. As shown in Table 1, consistent with protecting groundwater quality, the OWTS Policy allows potential OWTS nitrogen loads that can exceed several hundred pounds per year per acre. For comparison, Table 2 presents nitrogen loads applied to the land surface from typical recycled water irrigation operations. As noted, unlike OWTS discharges that directly recharge and impact groundwater, recycled water is applied to the land surface where vegetation may beneficially utilize applied nutrients. As a result, only a fraction of the nutrient loads applied to the land surface under recycled water irrigation operations recharges groundwater. Consequently, the potential for recycled water irrigation operations to influence groundwater nitrate concentrations is considerably less than OWTS discharges that are deemed under the OWTS Policy as not representing a water quality threat.

Table 1
Nitrate Loads Discharged Directly to Groundwater
Allowed Under the State Water Board OWTS Policy¹

Parameter	Value	
Typical maximum OWTS nitrate concentration ²	90 mg/l as N	
Maximum allowable OWTS discharge flow ³	10,000 gallons per day	
Total nitrogen load from single 10,000 gpd OWTS discharge	7.51 lbs/day ⁴	
Allowable OWTS nitrogen load to groundwater from:	10,000 gpd OWTS discharge on barren 20-acre lot ⁵	137 lbs/year/acre ⁶
	10,000 gpd OWTS discharge on barren 10-acre lot ⁵	274 lbs/year/acre ⁷
Maximum allowable OWTS nitrogen load allowed under the OWTS Policy	Soil percolation rate of less than 5 minutes per inch ⁸	14,300 lbs/year/acre ⁸
	Soil percolation rate of 60 minutes per inch ⁹	2,380 lbs/year/acre ⁹

- 1 Nitrate loads deemed under the 2012 State Water Board OWTS Policy as being consistent with protecting groundwater quality and ensuring that groundwater nitrate concentrations do not exceed the state nitrate drinking water standard of 45 mg/l (as NO₃).
- 2 Typical maximum OWTS total nitrogen effluent concentration, as presented within Table 4-9 of the *OWTS Policy Final Substitute Environmental Document* (State Water Board, June 2012).
- 3 The OWTS Policy establishes minimum requirements for OWTS discharges that allow local authorities to regulate OWTS discharges of up to 10,000 gallons per day without the need for water quality impacts review or issuance of Regional Water Board waste discharge requirements.
- 4 Based on 10,000 gpd OWTS discharge containing a total nitrogen concentration of 90 mg/l as nitrogen.
- 5 Non-irrigated barren lot where the OWTS discharge is the only source of nitrogen recharge to groundwater.
- 6 Based on 10,000 gpd OTWS discharge containing a nitrate concentration of 90 mg/l (as N) spread out over a 20 acre-lot.
- 7 Based on 10,000 gpd OWTS discharge containing a nitrate concentration of 90 mg/l (as N) spread out over a 10 acre-lot.
- 8 The OWTS Policy (see Table 3 of the OWTS Policy) allows a maximum OWTS application rate of 1.2 gallons per square foot per day in soils that have a percolation rate of 5 minutes per inch or less. At an OWTS nitrate concentration of 90 mg/l (as N), this translates to a nitrogen application rate directly to groundwater of approximately 14,300 lbs/year/acre (36.2 lbs/day/acre).
- 9 The OWTS Policy (see Table 3 of the OWTS Policy) allows a maximum OWTS application rate of 0.2 gallons per square foot per day in soils that have a percolation rate of 60 minutes per inch. At an OWTS nitrate concentration of 90 mg/l (as N), this translates to a nitrogen application rate directly to groundwater of approximately 2,380 lbs/year/acre (6.53 lbs/day/acre).

Table 2
Typical Recycled Water Irrigation Nitrate Loads Applied to the Land Surface¹

Parameter	Typical Lower Value	Typical Upper Value
Recycled water nitrogen nitrate concentration	15 mg/l (as N) ²	20 mg/l (as N) ²
Typical irrigation rate	3 feet per year ³	3.5 feet per year ³
Nitrogen application rate to land surface	120 lb/year/acre ^{1,4}	190 lb/year/acre ^{1,5}

- 1 Total nitrogen loads to groundwater would be a fraction of the loads to the land surface due to nutrient uptake by irrigated vegetation.
- 2 Tertiary filtered recycled water nitrate concentrations may typically range from 15 to 20 mg/l, depending on nitrification/denitrification effects within secondary treatment and ambient temperatures. Quarterly monitoring will be conducted pursuant to Order No. R9-2015-0104 to assess WVRWRF effluent nitrogen concentrations.
- 3 Irrigation rates may vary with site conditions and weather. The above values represent typical application rates.
- 4 Based on 3 feet per year irrigation application rate and 15 mg/l (as N) recycled water nitrate concentration.
- 5 Based on 3.5 feet per year irrigation application rate and 20 mg/l (as N) recycled water nitrate concentration.

COMMENTS ON TENTATIVE ORDER NO. R9-2015-0104

Recognizing that recycled water irrigation represents no realistic threat to noncompliance with the state nitrate drinking water standard of 45 mg/l (as NO₃), the District wishes to ensure that the Tentative Order (1) does not discourage recycled water use through the imposition of unnecessary reporting requirements, and (2) is not misinterpreted as requiring the District to establish and enforce numerical limits on nitrogen at each reuse site. Consistent with these goals, the District recommends the following modifications to Tentative Order No. R9-2015-0104.

Comment No. 1 - Special Provision VII.C

The District is concerned that, as currently drafted, Special Provision VII.C of Tentative Order No. R9-2015-0104 could be misinterpreted as requiring the District to:

- develop or establish quantifiable agronomic rates for each and every reuse site, and/or
- control or regulate recycled water and fertilizer use at each site to ensure that nitrogen applications are within assigned quantified agronomic limits at each site.

To prevent such misinterpretation, the District recommends that the first sentence of Special Provision VII.C (top of page 15 of the Tentative Order) be modified as follows:

VII.C. The Discharger shall perform ~~must do~~ the following to ~~ensure that~~ encourage and promote recycled water and fertilizer use practices that are consistent with ~~applied in use sites at~~ typical agronomic rates.⁶

Comment No. 2 - Recycled Water Users Summary Reports, III.B.1.j

As currently drafted, Recycled Water Users Summary Report Requirement III.B.1.j would require the District and recycled water users to monitor and document fertilizer use at each and every reuse site on a perpetual basis. Compliance and reporting requirements levied on recycled water users are already significant. Requiring users to monitor and regulate fertilizer use in perpetuity may be impractical to implement for smaller users, and may discourage other potential customers from becoming recycled water customers. Given the lack of historic nitrate impacts from recycled water irrigation plus the fact that relaxed Basin Plan groundwater nitrate objectives will soon be implemented (once approved by the Office of Administrative Law), a requirement to perpetually monitor fertilizer applications at all District use sites is both unnecessary and inconsistent with the Regional Water Board and State of California goals of encouraging recycled water use.

In lieu of requiring perpetual fertilizer monitoring at each and every District use site, the District proposes that the lack of recycled water irrigation impacts on nitrate compliance can be adequately demonstrated within a one-time, 12-month-long study of nitrate use at

the District's largest reuse site (Woods Valley Ranch Golf Course). To implement this approach, the District recommends that Monitoring and Reporting Requirement III.B.1.j be deleted, and a new one-time study requirement be inserted prior to Monitoring and Reporting Requirement III.A, as follows:

III.A. The Discharger shall conduct a 12-month study at its largest reuse site that quantifies total applied nitrogen loads (nitrogen loads in recycled water plus nitrogen loads in applied fertilizers) applied to the site during the 12-month period, identifies target agronomic rates for the site, and documents how applied nitrogen loads are consistent with typical agronomic rates. Results of the study shall be reported to the Regional Water Board within 18 months of adoption of this Order. The report shall also include (1) a review of groundwater quality monitoring data, (2) an evaluation of groundwater nitrate concentrations in the vicinity of the use sites, and (3) a summary of actions the Discharger has taken to comply with requirements established within Special Provision VII.C of this Order.

~~III.B.1.j The amount of nitrogen (in pounds per acre) applied as fertilizer on each landscape irrigation site.~~

It should be noted that the results of this special one-time 12-month study can provide input useful for the District's development of the Salt and Nutrient Management Plan (SNMP), as required under Special Provision VII.K of Tentative Order No. R9-2015-0104.

Comment No. 3 - Groundwater Monitoring Requirement IV.A

As currently drafted, Table 2 of the Tentative Monitoring and Reporting program requires the District to conduct quarterly groundwater monitoring, but the proposed Monitoring and Reporting Program does not identify which wells are to be monitored. To address this oversight and allow for updating monitoring sites to match anticipated recycled water uses, it is recommended that Groundwater Monitoring Requirement IV.A and IV.B be modified as follows:

- IV.A Within 90 days of the adoption of this Order, the Discharger shall submit a proposed groundwater monitoring plan and map that identifies proposed groundwater monitoring wells for characterizing groundwater quality in the vicinity of the recycled water use sites. The Discharger shall provide a location map with each quarterly groundwater monitoring report that includes the location of the Facility, recycled water use sites, and monitoring wells.
- B. For each of the wells identified within the monitoring plan submitted pursuant to Groundwater Monitoring Requirement IV.A, ~~the~~ Discharger shall conduct groundwater monitoring in accordance with the groundwater monitoring program outlined in Table 2. Results of the groundwater monitoring program shall be submitted quarterly.

In developing the monitoring plan, the District will review historic monitoring data and select monitoring well locations that are characteristic of groundwater in the vicinity of recycled water use sites. In identifying the monitoring well sites, the District may also consider anticipated monitoring needs required to support development and

implementation of the SNMP required under Special Provision VII.K of Tentative Order No. R9-2015-0104.

Proposed SNMP Level of Effort. As a final comment, in accordance with the *Guidelines for Salinity/Nutrient Management Planning in the San Diego Region* (SNMP Guidelines), the District's SNMP work plan (to be submitted pursuant to Special Provision VII.K of the Tentative Order) will be reflective of the level of effort proposed within the SNMP Guidelines for "Tier C" basins.

Please contact me if you have any questions. Thank you for the opportunity for comment on Tentative Order No. R9-2015-0104.

Sincerely,



Wally Grabbe, P.E.
District Engineer/Deputy General Manager