

**California Regional Water Quality Control Board
Santa Ana Region**

March 23, 2018

Item: 8

**Subject: Consideration of Acceptance of the 2015 TDS and Nitrate-Nitrogen
Groundwater Management Zones Ambient Water Quality Determinations –
Resolution No. R8-2018-0027**

BACKGROUND

In 2004, the Regional Board approved amendments to the Water Quality Control Plan for the Santa Ana Basin (Basin Plan) that incorporated a revised Total Dissolved Solids (TDS) and Nitrogen Management Plan (Salt Management Plan). The revised Salt Management Plan addresses total dissolved solids (TDS) and nitrogen in both surface waters and groundwaters throughout the Santa Ana River basin in order to control the excess salt buildup in the Region's waters. In part, the 2004 amendments require that the average TDS and nitrate-nitrogen concentrations in every groundwater management zone be reassessed every 3 years. Groundwater management zones are shown in Figure 1-1 (below).

The Regional Board uses this analysis to determine: 1) whether TDS and nitrate-nitrogen water quality objectives are being met; 2) how much assimilative capacity exists in each groundwater management zone; and 3) if some change in the nitrogen and/or TDS management strategy or wasteload allocations for wastewater treatment plant discharges is necessary to protect and/or improve water quality. These determinations are necessary in order to develop appropriate waste discharge requirements.

In 2005, local water supply and wastewater agencies formed the Basin Monitoring Program Task Force (BMPTF), administered by the Santa Ana Watershed Project Authority (SAWPA), to implement some of the monitoring and reporting requirements specified in the 2004 Salt Management Plan. Specifically, the BMPTF accepted responsibility for conducting the recomputation of the ambient average concentration of TDS and nitrate-nitrogen in each groundwater management zone every 3 years.

The first recomputation covered the 20-year period from 1978 to 1997 (WEI, 2000); the second update covered the period from 1984 to 2003 (WEI, 2005); the third update covered the period from 1987 to 2006 (WEI, 2008); the fourth covered the period from 1990 to 2009 (WEI, 2011); and the fifth covered the period from 1992 to 2012 (WEI, 2014). In 2016, the BMPTF contracted with CDM-Smith, Inc. and D.B. Stephens, Inc. to perform the sixth update which covers the 20-year period from 1996 to 2015. The summary report for this recent update has been submitted to the Regional Board for final acceptance (DBS&A, 2017).

No substantive computational changes have been made to the ambient water quality calculation procedure since the Regional Board first approved the methods in 2004. In all cases, the current ambient concentration of nitrate-nitrogen and TDS is calculated as a 20-year running volume-weighted average. All available groundwater data for the most recent 20-year monitoring period are used to ensure that the computed ambient water quality concentrations account for both temporal and spatial variability, as recommended in the State Board's Administrative Procedures Update #90-004.

All of the data undergoes a rigorous quality assurance/quality control (QA/QC) review before beginning the recomputation procedure. In addition, over the years, several minor improvements have been made, to better identify potential data errors and anomalies in order to assure high confidence in the resulting analysis; questionable data is flagged when the master database is being updated. These procedural improvements and QA/QC review results are documented in the final reports.

For some management zones, there is not sufficient available data for calculation of TDS and/or nitrate-nitrogen ambient water quality. In those cases, the Basin Plan specifies that these management zones are assumed to have no assimilative capacity. Dischargers to these management zones may demonstrate that assimilative capacity for TDS and/or nitrate-nitrogen is available, and if the Regional Board approves this demonstration, then the discharger would be regulated accordingly.

2014 BASIN PLAN AMENDMENTS

On April 25, 2014, the Regional Board approved Basin Plan amendments that revised, in part, the Regional Board's process for updating the TDS and nitrate-nitrogen ambient water quality and assimilative capacity findings (Resolution No. R8-2014-0005). Beginning with the 2012 recomputation of ambient water quality, the Regional Board must officially approve each triennial Ambient Water Quality Update (AWQU) but a formal Basin Plan amendment is no longer required. Instead, after the BMPTF submits a final report, the Regional Board provides public notice of its intent to rely on the findings in future permitting actions and solicits public comment on the report. The notice also specifies that a public hearing will be conducted for the Regional Board to hear testimony as it considers the most recent AWQU. If approved by the Regional Board, the updated finding will be posted on the Regional Board's website and can, thereafter, be used for various related regulatory purposes.

2015 GROUNDWATER MANAGEMENT ZONE AMBIENT TDS AND NITRATE-NITROGEN UPDATE

As indicated above, the Basin Monitoring Program Task Force completed the 1996 to 2015 ambient determination. The final report is entitled: "Recomputation of Ambient Water Quality in the Santa Ana Watershed for the Period 1996 to 2015" (Sept. 2017). A full and complete copy of the report has been posted to the Regional Board's website as downloadable PDF files. Links to that report, and the related technical appendix, are provided below.

https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/docs/SMP/2017/AWQ-Tech-Memo_9-22-2017.pdf

https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/docs/SMP/2017/Appendix-B.pdf

A summary of the TDS and nitrate-nitrogen ambient water quality determinations for each management zone, including the final 1996–2015 ambient TDS and nitrate-nitrogen and assimilative capacity findings, are attached as Table 3-1 and Table 3-2 to Resolution No. R8-2018-0027). For the management zones where "maximum benefit" programs are in effect, the assimilative capacity determinations are based on the "maximum benefit" water quality objectives not the "antideg" objectives also shown in the tables.

When the current ambient average concentration is less than the water quality objective, then a groundwater management zone is deemed to have assimilative capacity available. The amount of assimilative capacity available is indicated by a positive numeric value in the far right column of each table. Zero or negative values in this column indicate that the groundwater management zone has no assimilative capacity for TDS and/or nitrate-nitrogen. Higher positive values indicate more assimilative capacity is available and larger negative values indicate that average ambient TDS and/or nitrate-nitrogen concentrations are significantly worse than the applicable water quality objective.

Of the thirty-seven (37) management zones, 29 lack assimilative capacity for TDS and 28 lack assimilative capacity for nitrate-nitrogen. There are 7 management zones for which there were insufficient data to calculate the current average concentration of TDS and nitrate-nitrogen. Therefore, these 7 management zones are assumed to have no assimilative capacity available for TDS or nitrate-nitrogen. Additional data will be needed if and when new projects using recycled water are proposed for these 7 groundwater management zones.

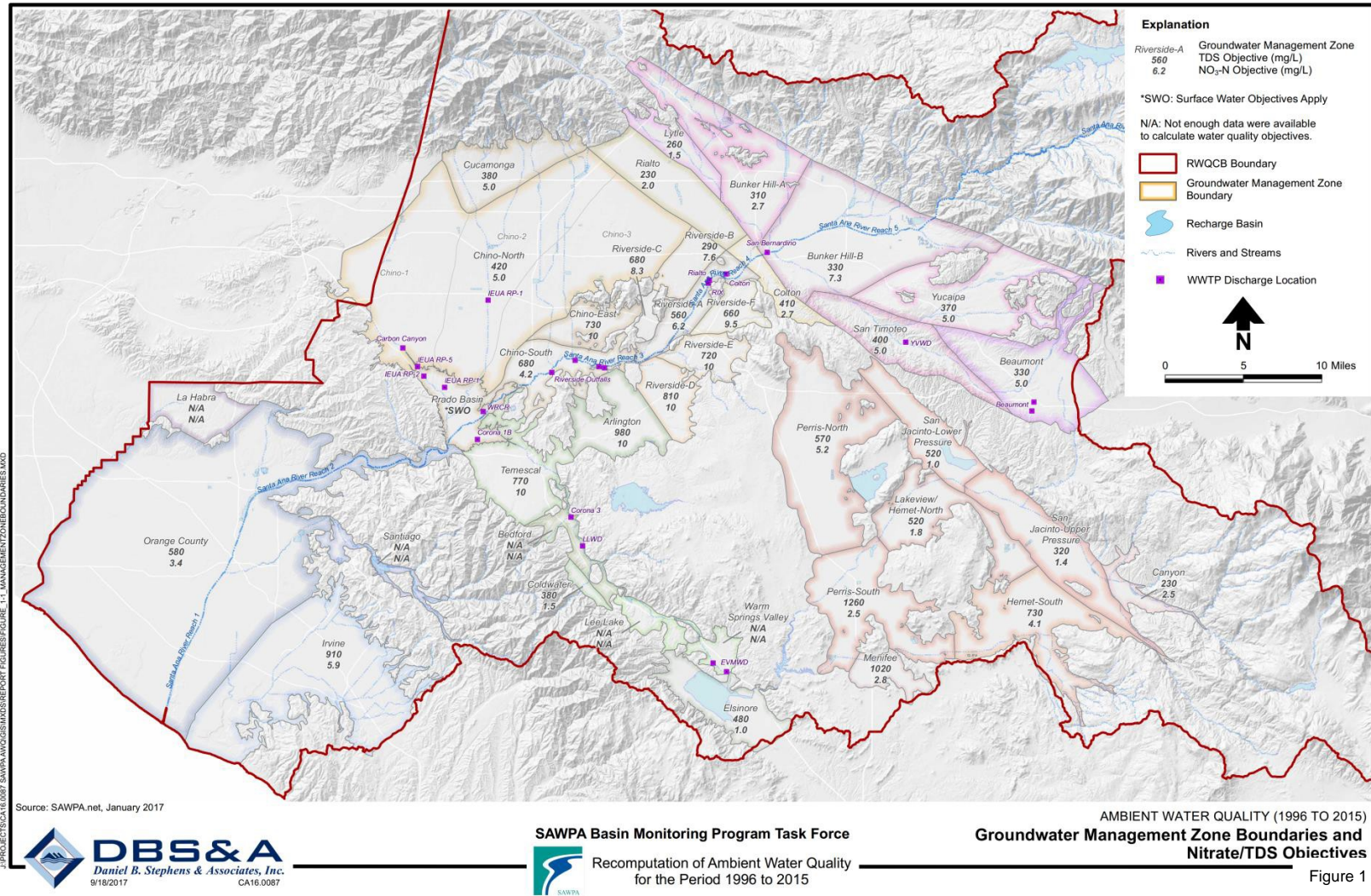
At a workshop held on December 15, 2017 the BMPTF and their consultants (DBS&A) summarized the most recent AWQU report in a presentation to the Regional Board. The presentation described the methods used, the updated estimate of average TDS and nitrate-nitrogen concentrations, the amount of assimilative capacity available in each groundwater management zone, and the long-term water quality trends for each groundwater basin for which there was sufficient data to perform the necessary calculations.

It should be noted that, in addition to documenting the current average TDS and nitrate-nitrogen concentrations in each groundwater management zone, the latest report also provides a wealth of additional information on groundwater levels, the amount of groundwater in storage and how these values change over time. The report also presents high resolution maps showing how water quality varies within each management zone. Key well data are also provided to help understand and interpret long-term trends more accurately.

Regional Board staff reviewed the draft report and provided written comments to the BMPTF. Staff also reviewed the final report and confirmed that all of the previous comments were adequately addressed in the revised document. Therefore, staff concludes that the AWQU report recently completed by the Task Force meets the requirements specified in the 2004 Basin Plan amendment and is consistent with the related monitoring and reporting plan approved by the Regional Board in 2005 (Res. No. R8-2005-0063).

STAFF RECOMMENDATION

Adopt Resolution No. R8-2018-0027, accepting the updated (2015) TDS and nitrate-nitrogen groundwater management zone ambient water quality determinations and assimilative capacity findings as shown in Table 1 and Table 2 attached to the resolution and direct staff to rely on these determinations and findings to develop appropriate effluent limitations and/or other waste discharge requirements needed to implement the Salt Management Plan as described in the Basin Plan.



California Regional Water Quality Control Board
Santa Ana Region

RESOLUTION NO. R8-2018-0027

Resolution Accepting the 1996 – 2015 Total Dissolved Solids and Nitrate-Nitrogen Groundwater Management Zones Ambient Water Quality Determinations as Required in the Salt Nitrogen Management Plan Specified in the Water Quality Control Plan for the Santa Ana River Basin

WHEREAS, the California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. An updated Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) was adopted by the Regional Board on March 11, 1994, approved by the State Water Resources Control Board (SWRCB) on July 21, 1994, and approved by the Office of Administrative Law (OAL) on January 24, 1995.
2. Amendments to the Basin Plan to incorporate a revised "Total Dissolved Solids and Nitrogen Management Plan" (Salt Management Plan) into the 1995 Basin Plan were approved by the Regional Board on January 22, 2004, by the State Water Resources Control Board on October 1, 2004 and by the Office of Administrative Law on December 23, 2004. The surface water components of the amendments were approved by the U.S. Environmental Protection Agency (EPA) on January 20, 2007.
3. The 2004 amendments to the Basin Plan established total dissolved solids (TDS) and nitrate-nitrogen water quality objectives for groundwater management zones throughout the region. These water quality objectives are based on historical water quality ("antidegradation objectives").¹
4. The Basin Monitoring Program Task Force (BMPTF) was formed in 2005 to conduct studies related to the implementation of the Salt Management Plan, including overseeing the recalculation of ambient TDS and nitrate-nitrogen water quality. The BMPTF is comprised of 20 water supply and wastewater agencies throughout the Region. Regional Board staff attends all Task Force meetings and serve in an advisory role to the group. The BMPTF effort is coordinated by the Santa Ana Watershed Project Authority.
5. The Salt Management Plan addresses TDS and nitrogen in both surface waters and groundwater management zones throughout the Santa Ana River basin and requires that the update of ambient TDS and nitrate-nitrogen water quality for each groundwater management zone be conducted every three 3 years. Recomputation of ambient TDS and nitrate-nitrogen water quality has been conducted five times and includes ambient water quality determinations for the following 20-year periods: 1978-1997, 1984-2003, 1987-2006, 1990- 2009, and 1990-2009 and 1993-2012. The most recent computational update, which is the subject of this Resolution, encompasses the 20-year period from 1996 to 2015.


¹ TDS and nitrate-nitrogen concentrations in each groundwater management zone for the period 1954-1973 were evaluated to establish historic ambient quality for each zone. This period brackets 1968, when the SWRCB adopted the state's antidegradation policy (Resolution No. 68-16). The antidegradation policy established a benchmark for assessing and considering authorization of future degradation of water quality. The historic ambient TDS and nitrate-nitrogen concentrations for each management zone were established by the Regional Board as the "antidegradation" objectives for each zone (Resolution No. R8-2004-0001).

6. For each groundwater management zone, TDS and nitrate-nitrogen assimilative capacity is determined based on a comparison of ambient TDS and nitrate-nitrogen water quality to the respective management zone water quality objectives. Assimilative capacity findings are utilized in the development of waste discharge requirements.
7. On April 25, 2014, the Regional Board approved amendments to the Basin Plan that contained revisions to the Assimilative Capacity Findings specified in the Salt Management Plan (Resolution No. R8-2014-0005). The Basin Plan amendment deleted from the Basin Plan reference to Tables 5-3 and 5-4 that contain the 1958 to 1997 ambient TDS and nitrate-nitrogen ambient water quality and modified the Basin Plan language to specify that the TDS and nitrate-nitrogen water quality will be updated every 3 years, and those updated values will be reported to the Regional Board for acceptance following public review and input. The amendments were approved by the State Water Resources Control Board on July 15, 2014 (Resolution No. 2014-0034) and approved by the Office of Administrative Law on October 29, 2014.
8. In compliance with the Monitoring Program Requirements of the Salt Management Plan Implementation Plan, Section V.B., the BMPTF submitted the Final 2015 Ambient Recomputation Report Technical Memorandum to the Regional Board on September 26, 2017. This Report updates the TDS and nitrate-nitrogen ambient water quality for the 20-year period from 1996 to 2015.
9. The Regional Board has reviewed the Final 2015 Ambient Recomputation Technical Memorandum and finds that the report complies with the Salt Management Plan's Monitoring and Reporting Requirements specified in the Basin Plan and is consistent with the Surface Water and Groundwater Monitoring Program approved by the Regional Board on April 15, 2005 (Res. No. R8-2005-0063).

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The Regional Board accepts the Basin Monitoring Task Force submittal of the updated 2015 TDS and nitrate-nitrogen ambient management zone water quality determinations and assimilative capacity findings as shown in Table 1 and Table 2 attached to Resolution No. R8-2018-0027.
2. The updated (2015) determinations of ambient groundwater quality comply with the Salt Management Plan Monitoring Program Requirements as specified in the Basin Plan.
3. The Regional Board directs staff to rely on the updated ambient TDS and nitrate-nitrogen determinations and assimilative capacity findings to develop appropriate waste discharge requirements or water recycling requirements.

I, Hope A. Smythe, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Santa Ana Region, on March 23, 2018.



Hope A. Smythe
Executive Officer

Attachments to Resolution No. R8-2018-0027

Table 3-1: TDS Water Quality Objectives,
Ambient Water Quality and Assimilative Capacity

Table 3-2: Nitrate Water Quality Objectives,
Ambient Water Quality and Assimilative Capacity

Note: Table 3-1 and Table 3-2 were excerpted from the DBS&A report entitled:

*"Recomputation of Ambient Water Quality in the
Santa Ana River Watershed for the Period 1996 to 2015"*

A copy of DBS&A's full report can be downloaded
from the Regional Board's website using the following link:

https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/docs/SMP/2017/AWQ-Tech-Memo_9-22-2017.pdf

**Table 1. TDS Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity Page
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Groundwater Management Zone	Total Dissolved Solids Concentration (mg/L)									Assimilative Capacity
	Water Quality Objective	Historical Ambient	1997 Ambient	2003 Ambient	2006 Ambient	2009 Ambient	2012 Ambient	2015 Ambient	Difference from 2012 to 2015	
<i>San Bernardino Valley and Yucaipa/Beaumont Plains</i>										
Beaumont, "max benefit"	330	233	290	260	260	280	290	290	0	40
Beaumont, "antideg"	230	233	290	260	260	280	290	290	0	-60
Bunker Hill-A	310	313	350	320	330	340	340	330	-10	-20
Bunker Hill-B	330	332	260	280	280	270	280	290	10	40
Lytle	260	264	240	230	230	240	240	240	0	20
San Timoteo, "max benefit"	400	303	300	?	?	420	410	420	10	-20
San Timoteo, "antideg"	300	303	300	?	?	420	410	420	10	-120
Yucaipa, "max benefit"	370	319	330	310	310	320	320	320	0	50
Yucaipa, "antideg"	320	319	330	310	310	320	320	320	0	0
<i>San Jacinto Basins</i>										
Canyon	230	234	220	420	370	420	340	380	40	-150
Hemet-South	730	732	1030	850	920	910	940	920	-20	-190
Lakeview/Hemet-North	520	519	830	840	880	890	860	850	-10	-330
Menifee	1,020	1,021	3,360	2,220	2,140	2,050	2,030	1,970	-60	-950
Perris-North	570	568	750	780	730	770	760	720	-40	-150
Perris-South	1,260	1,258	3,190	2,200	2,600	2,470	2,400	2,340	-60	-1,080
San Jacinto-Lower	520	520	730	950	810	800	800	780	-20	-260
San Jacinto-Upper, "max benefit"	500	321	370	370	350	350	350	370	20	130
San Jacinto-Upper, "antideg"	320	321	370	370	350	350	350	370	20	-50

Footnote explanations and definitions are provided at the end of the table.

**Table1. TDS Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity Page
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Groundwater Management Zone	Total Dissolved Solids Concentration (mg/L)									Assimilative Capacity
	Water Quality Objective	Historical Ambient	1997 Ambient	2003 Ambient	2006 Ambient	2009 Ambient	2012 Ambient	2015 Ambient	Difference from 2012 to 2015	
<i>Chino, Rialto/Colton, and Riverside Basins</i>										
Chino-North, "max benefit"	420	260	300	320	340	340	350	360	10	60
Chino 1, "antideg"	280	280	310	330	340	340	350	350	0	-70
Chino 2, "antideg"	250	250	300	340	360	360	380	380	0	-130
Chino 3, "antideg"	260	260	280	280	310	320	320	320	0	-60
Chino-East	730	733	760	620	650	770	770	840	70	-110
Chino-South	680	676	720	790	940	980	990	940	-50	-260
Colton	410	407	430	430	450	430	440	480	40	-70
Cucamonga, "max benefit"	380	212	260	250	250	250	260	260	0	120
Cucamonga, "antideg"	210	212	260	250	250	250	260	260	0	-50
Rialto	230	230	230	220	230	230	230	240	10	-10
Riverside-A	560	560	440	440	440	430	420	440	20	120
Riverside-B	290	289	320	310	340	340	340	360	20	-70
Riverside-C	680	684	760	750	740	740	730	?	?	?
Riverside-D	810	812	?	?	?	?	?	?	?	?
Riverside-E	720	721	720	700	710	700	740	730	-10	-10
Riverside-F	660	665	580	570	570	570	560	560	0	100
Prado Basin	Surface water objective applies	618	819	—	—	—	—	—	—	—

Footnote explanations and definitions are provided at the end of the table.

Table 1. TDS Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity
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Groundwater Management Zone	Total Dissolved Solids Concentration (mg/L)									Assimilative Capacity
	Water Quality Objective	Historical Ambient	1997 Ambient	2003 Ambient	2006 Ambient	2009 Ambient	2012 Ambient	2015 Ambient	Difference from 2012 to 2015	
<i>Elsinore/Temescal Valleys</i>										
Arlington	980	983	?	1,020	960	1,020	1,030	1,020	-10	-40
Bedford	?	?	?	740	?	?	?	?	?	?
Coldwater	380	381	380	400	420	440	440	460	20	-80
Elsinore	480	476	480	460	470	470	490	490	0	-10
Lee Lake	?	?	?	?	?	?	?	?	?	?
Temescal	770	771	780	700	780	790	790	810	20	-40
Warm Springs Valley	?	?	?	?	?	?	?	?	?	?
<i>Orange County Basins</i>										
Irvine	910	908	910	880	920	910	940	920	-20	-10
La Habra	?	?	?	?	?	?	?	?	?	?
Orange County ^a	580	585	560	560	590	600	610	600	-10	-20
Santiago	?	?	?	?	?	?	?	?	?	?

See Sections 4 and 5 of WEI (2000) for a detailed description of the methodologies used to calculate ambient water quality.

Historical ambient period is 1954-1973. 1997 ambient period is 1978-1997. 2003 ambient period is 1984-2003. 2006 ambient period is 1987-2006. 2009 ambient period is 1990-2009. 2012 ambient period is 1993-2012. 2015 ambient period is 1996-2015.

^a For purposes of regulating discharges other than those associated with projects implemented within the Orange County GMZ to facilitate project and/or to address legacy contamination, no assimilative capacity is assumed to exist.

mg/L = Milligrams per liter

? = Not enough data to estimate TDS concentrations

Table 2. Nitrate Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity
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Groundwater Management Zone	Nitrate as Nitrogen Concentration (mg/L)									Assimilative Capacity
	Water Quality Objective	Historical Ambient	1997 Ambient	2003 Ambient	2006 Ambient	2009 Ambient	2012 Ambient	2015 Ambient	Difference from 2012 to 2015	
<i>San Bernardino Valley and Yucaipa/Beaumont Plains</i>										
Beaumont, "max benefit"	5.0	1.5	2.6	2.0	1.6	2.5	2.9	2.9	0.0	2.1
Beaumont, "antideg"	1.5	1.5	2.6	2.0	1.6	2.5	2.9	2.9	0.0	-1.4
Bunker Hill-A	2.7	2.7	4.5	4.3	4.0	4.0	4.0	3.9	-0.1	-1.2
Bunker Hill-B	7.3	7.3	5.5	5.8	5.4	5.4	5.6	5.8	0.2	1.5
Lytle	1.5	1.5	2.8	2.7	2.7	2.6	2.5	2.4	-0.1	-0.9
San Timoteo, "max benefit"	5.0	2.7	2.9	?	?	0.8	2.3	2.0	-0.3	3.0
San Timoteo, "antideg"	2.7	2.7	2.9	?	?	0.8	2.3	2.0	-0.3	0.7
Yucaipa, "max benefit"	5.0	4.2	5.2	5.4	5.3	6.2	6.3	6.2	-0.1	-1.2
Yucaipa, "antideg"	4.2	4.2	5.2	5.8	5.3	6.2	6.3	6.2	-0.1	-2.0
<i>San Jacinto Basins</i>										
Canyon	2.5	2.5	1.6	2.1	1.9	2.7	2.0	2.0	0.0	0.5
Hemet-South	4.1	4.1	5.2	5.4	5.5	5.2	5.7	5.7	0.0	-1.6
Lakeview/Hemet-North	1.8	1.8	2.7	3.4	2.7	2.6	2.5	2.6	0.1	-0.8
Menifee	2.8	2.8	5.4	6.0	4.7	4.4	4.6	4.5	-0.1	-1.7
Perris-North	5.2	5.2	4.7	6.7	6.5	7.4	7.3	7.4	0.1	-2.2
Perris-South	2.5	2.5	4.9	5.9	5.5	5.8	5.8	6.0	0.2	-3.5
San Jacinto-Lower	1.0	1.0	1.9	1.8	1.2	1.1	1.1	1.5	0.4	-0.5
San Jacinto-Upper, "max benefit"	7.0	1.4	1.9	1.7	1.6	1.5	1.4	1.6	0.2	5.4
San Jacinto-Upper, "antideg"	1.4	1.4	1.9	1.7	1.6	1.5	1.4	1.6	0.2	-0.2

Footnote explanations and definitions are provided at the end of the table.

Table 2. Nitrate Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity
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Groundwater Management Zone	Nitrate as Nitrogen Concentration (mg/L)									Assimilative Capacity
	Water Quality Objective	Historical Ambient	1997 Ambient	2003 Ambient	2006 Ambient	2009 Ambient	2012 Ambient	2015 Ambient	Difference from 2012 to 2015	
<i>Chino, Rialto/Colton, and Riverside Basins</i>										
Chino-North, "max benefit"	5.0	3.7	7.4	8.7	9.7	9.5	10.0	10.3	0.3	-5.3
Chino 1, "antideg"	5.0	5.0	8.4	8.9	9.3	9.1	10.0	10.5	0.5	-5.5
Chino 2, "antideg"	2.9	2.9	7.2	9.5	10.7	10.3	10.7	10.9	0.2	-8.0
Chino 3, "antideg"	3.5	3.5	6.3	6.8	8.2	8.4	8.5	8.9	0.4	-5.4
Chino-East	10.0	13.3	29.1	9.6	12.7	15.7	21.0	22.0	1.0	-12.0
Chino-South	5.0*	4.2	8.8	15.3	25.7	26.8	28.0	27.8	-0.2	-23.6
Colton	2.7	2.7	2.9	2.9	2.9	2.8	2.7	3.3	0.6	-0.6
Cucamonga, "max benefit"	5.0	2.4	4.4	4.3	4.0	4.1	4.1	4.3	0.2	0.7
Cucamonga, "antideg"	2.4	2.4	4.4	4.3	4.0	4.1	4.1	4.3	0.2	-1.9
Rialto	2.0	2.0	2.7	2.6	2.9	3.1	3.2	3.4	0.2	-1.4
Riverside-A	6.2	6.2	4.4	4.9	4.9	5.2	5.4	5.6	0.2	0.6
Riverside-B	7.6	7.6	8.0	7.8	8.3	8.4	6.7	6.6	-0.1	1.0
Riverside-C	8.3	8.3	15.5	15.3	15.3	14.8	14.5	?	?	?
Riverside-D	10.0	19.5	?	?	?	?	?	?	?	?
Riverside-E	10.0	13.3	14.8	15.4	15.3	15.2	10.2	10.4	0.2	-0.4
Riverside-F	9.5	12.1	9.5	10.6	10.3	10.6	10.1	10.9	0.8	-1.4
Prado Basin	Surface water objective applies	4.3	22.0	—	—	—	—	—	—	—

Footnote explanations and definitions are provided at the end of the table.

Table 2. Nitrate Water Quality Objectives, Ambient Water Quality, and Assimilative Capacity
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Groundwater Management Zone	Nitrate as Nitrogen Concentration (mg/L)									Assimilative Capacity
	Water Quality Objective	Historical Ambient	1997 Ambient	2003 Ambient	2006 Ambient	2009 Ambient	2012 Ambient	2015 Ambient	Difference from 2012 to 2015	
<i>Elsinore/Temescal Valleys</i>										
Arlington	10.0	25.5	?	26.0	20.4	18.1	18.3	17.5	-0.8	-7.8
Bedford	?	?	?	2.8	?	?	?	?	?	?
Coldwater	1.5	1.5	2.6	2.4	2.6	2.8	2.8	2.2	-0.6	-0.7
Elsinore	1.0	1.0	2.6	2.4	2.4	2.2	2.1	2.2	0.1	-1.2
Lee Lake	?	?	?	?	?	?	?	?	?	?
Temescal	10.0	11.8	13.2	12.8	12.6	12.0	10.9	10.9	0.0	-0.9
Warm Springs Valley	?	?	?	?	?	?	?	?	?	?
<i>Orange County Basins</i>										
Irvine	5.9	5.9	7.4	6.5	6.5	6.7	6.7	6.4	-0.3	-0.5
La Habra	?	?	?	?	?	?	?	?	?	?
Orange County	3.4	3.4	3.4	3.1	3.0	3.0	2.9	3.0	0.1	0.4
Santiago	?	?	?	?	?	?	?	?	?	?

See Sections 4 and 5 of WEI (2000) for a detailed description of the methodologies used to calculate ambient water quality.

Historical ambient period is 1954-1973. 1997 ambient period is 1978-1997. 2003 ambient period is 1984-2003. 2006 ambient period is 1987-2006. 2009 ambient period is 1990-2009. 2012 ambient period is 1993-2012. 2015 ambient period is 1996-2015.

mg/L = Milligrams per liter

? = Not enough data to estimate nitrate concentrations

*Nitrate-Nitrogen Objective for Chino-South GMZ raised to 5.0 mg/L by Res. No. R8-2017-0036 (Aug. 4, 2017) and SWRCB Res. No. 2018-0004 (Feb. 6, 2018)