

NITRATE OPTION
Proposed NPDES Permit Renewal
City of Stockton
Regional Wastewater Control Facility

OPTION 1: Allow dilution for Nitrate plus Nitrite and calculate water quality-based effluent limitations based on Department of Public Health Maximum Contaminant Level (MCL).

Make the following changes to the proposed NPDES permit contained in the agenda package:

- 1. Limitations and Discharge Requirements.** Section IV.A.1.a., Table 4., change effluent limitation for Nitrate plus Nitrite (as N), see underline bold and strikethrough below:

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Nitrate + Nitrite (as N) <u>April 1 – September 30</u>	mg/L	1026	--	--	--	--
Nitrate + Nitrite (as N) <u>October 1 – March 31</u>	<u>mg/L</u>	<u>30</u>	--	--	--	--

- 2. Limitations and Discharge Requirements.** Remove Section IV.A.2.b and Table 5, see strikethrough below, and renumber following tables:

~~**b. Nitrate plus Nitrite, as N. Effective immediately and ending on 1 June 2024,** the Discharger shall maintain compliance with the interim effluent limitation specified in Table 5. This interim effluent limitation shall apply in lieu of the corresponding final effluent limitations specified in Section IV.A.1.a.~~

Table 5. Interim Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Nitrate + Nitrite (as N)	mg/L	-	-	31	-	-

- 3. Limitations and Discharge Requirements.** Remove pollution prevention plan requirement for Nitrate plus Nitrite (as N), Section VI.C.1.d., see strikethrough below:

~~**d. Pollution Prevention.** This Order requires the Discharger implement pollution prevention plans following Water Code section 13263.3(d)(3) for mercury, nitrate plus nitrite and salinity. Based on a review of the pollution prevention plans, this Order may be reopened for addition and/or modification of effluent limitations and requirements for this constituent.~~

- 4. Limitations and Discharge Requirements.** Remove compliance schedule for Nitrate plus Nitrite (as N), Section VI.7.c., see strikethrough below:

~~**c. Compliance Schedule for Nitrate plus Nitrite.** This Order requires compliance with the final effluent limitations for nitrate plus nitrite in Section IV.A.1.a of this Order by **1 June 2024**. The Discharger shall comply with the following time schedule to ensure compliance with these requirements:~~

ENCLOSURE 1 – NITRATE PLUS NITRITE OPTION
 CITY OF STOCKTON REGIONAL WASTEWATER CONTROL FACILITY
 PROPOSED NPDES PERMIT RENEWAL

	<u>Task</u>	<u>Date Due</u>
i.	Submit Method of Compliance Workplan. Submit workplan that ensures compliance with final effluent limitations for nitrate plus nitrite by the final compliance date.	31 December 2014
ii.	Submit and Implement Pollution Prevention Plan (PPP) for Nitrate Plus Nitrite in accordance with Water Code section 13263.3(d)(3). The PPP shall be prepared and implemented in accordance with Attachment F, Section VI.B.3.	31 December 2014
iii.	Progress Reports. The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.	30 June, annually, beginning June 2015 until final compliance.
iv.	Complete Treatment Technology Evaluation and Pilot Testing. Submit with the annual progress report confirmation of compliance with this task.	30 June 2016
v.	Select Preferred Treatment Option and Complete Preliminary Design. Submit with the annual progress report confirmation of compliance with this task.	30 June 2017
vi.	Complete Financing Plan. Submit with the annual progress report a financing plan for the selected compliance project(s) and a schedule for obtaining funding.	30 June 2019
vii.	Complete CEQA Documentation for Implementation of the Preferred Treatment Option. File CEQA Submit environmental documents to the State Clearinghouse.	31 December 2019
viii.	Award Construction Bid. Submit a letter confirming and describing detailed information on awarded construction bid process (e.g. date awarded, company, etc.).	31 December 2020
ix.	Obtain Funding. Submit with the annual progress report confirmation of compliance with this task.	30 June 2021
x.	Complete Construction of Preferred Treatment Option. Submit construction approval documentation.	31 December 2023
xi.	Final Compliance. Submit report demonstrating compliance with the final effluent limits for nitrate plus nitrite.	1 June 2024

5. Monitoring and Reporting Program (Attachment E). Modify Table E-12, see strikethrough below:

Special Provision	Reporting Requirements
Pollution Prevention Plan for Mercury and Compliance Schedule for Methylmercury, Progress Reports (Provisions VI.C.3.a and VI.C.7.a)	30 January , annually, beginning 30 January 2015
Pollution Prevention Plan for Salinity, Progress Reports (Provision VI.C.3.b)	1 June , annually, beginning 1 June 2015
Phase 1 Methylmercury Control Study Progress Report (Special Provision VI.C.7.a)	20 October 2015
Groundwater Limitations and BPTC Compliance Schedule, Progress Reports (Special Provision VI.C.7.b)	1 June , annually, beginning 1 June 2016

6. Fact Sheet (Attachment F). Replace Section IV.C.2.c.v. as follows:

- v. **Evaluation of Available Dilution for Nitrate plus Nitrite, as N (Human Health Criteria).** The Discharger requested a maximum dilution credit of 2.5:1 for nitrate plus nitrite, and a mixing zone extending 1.4 miles upstream and 1.7 miles downstream of the diffuser. The affected beneficial use is municipal and domestic water supply (MUN), where the most stringent objective is the California Department of Public Health primary maximum contaminant level (MCL) for nitrate plus nitrite of 10 mg/L (as N). Considering protection of the MUN beneficial use and the primary MCL, the nitrate plus nitrite mixing zone meets the requirements of the SIP as follows:
 - (a) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, “If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.” The San Joaquin River is approximately 330 miles long. The nitrate plus nitrite mixing zone is small as compared to the San Joaquin River. Therefore, with respect to protection of the MUN beneficial use the nitrate plus nitrite mixing zone does not compromise the integrity of the entire waterbody.
 - (b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – Nitrate plus nitrite is not acutely toxic to aquatic life at the levels proposed in the nitrate plus nitrite mixing zone. Therefore, acutely toxic conditions will not occur in the mixing zone.
 - (c) *Shall not restrict the passage of aquatic life* – The discharge of nitrate plus nitrite at the levels proposed in the nitrate plus nitrite mixing zone is not toxic to aquatic life. Therefore, the mixing zone will not restrict the passage of aquatic life.
 - (d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – Nitrate plus nitrite is not toxic to aquatic life at the levels proposed in the nitrate plus nitrite mixing zone. Therefore, with respect to protection of the MUN beneficial

use the mixing zone will not impact biologically sensitive or critical habitats within the mixing zone.

- (e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – Based on a study conducted by RBI, Inc, the abundance of nuisance algal species within the mixing zone were not significantly different than at the reference sites. Therefore, with respect to protection of the MUN beneficial use the mixing zone meets this requirement.
- (f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The nitrate plus nitrite mixing zone is small relative to the water body, so it will not dominate the water body. The mixing zone is approximately 10 miles from the nearest drinking water intake and does not overlap a mixing zone from a different outfall.
- (g) *Shall not be allowed at or near any drinking water intake* – Section 1.4.2.2 of the SIP provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for protection of human health, the TSD states that, “...*the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes.*” There are no drinking water intakes within the nitrate plus nitrite mixing zone requested by the Discharger. The nearest drinking water intake is more than 10 miles from the discharge.

Therefore, considering protection of the MUN beneficial use and the primary MCL, the nitrate plus nitrite mixing zone complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. The MUN beneficial use will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA's *Water Quality Standards Handbook, 2nd Edition* (updated July 2007), Section 5.1, and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

7. Fact Sheet (Attachment F). Section IV.C.2.c., add vi.(c) as follows:

- (c) **Nitrate plus Nitrite.** The receiving water contains assimilative capacity for nitrate plus nitrite and a human health mixing zone for these constituents meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, “*A mixing zone shall be as small as practicable.*”, and Section 1.4.2.2.B requires, “*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.*” As discussed in the Discharger's mixing zone study, the mixing zone was sized based on Facility performance and does not allow use of the entire assimilative capacity for compliance with the primary MCL. Therefore, the mixing zone is as small as practicable and complies with the Antidegradation Policy, because the water quality-based effluent limits result in the Discharger implementing BPTC of the discharge necessary to assure that a pollution or

nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained.

8. Fact Sheet (Attachment F). Section IV.C.3.d., replace subsection vii. as follows:

vii. **Nitrate and Nitrite**

- (a) **WQO.** DPH has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

- (b) **RPA Results.** The maximum observed effluent concentration (MOEC) for nitrate was 28 mg/L while the maximum observed upstream receiving water concentration was 3.3 mg/L. The MOEC for nitrite was 0.44 mg/L while the maximum observed upstream receiving water concentration was 0.18 mg/L. Therefore, nitrate plus nitrite in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL.
- (c) **WQBELs.** As described further in section IV.C.2.c of this Fact Sheet, assimilative capacity is available and dilution credits of 2.1:1 (April 1 – September 30) and 2.5:1 (October 1 – March 31) are appropriate for calculating effluent limitations for nitrate plus nitrite. Therefore, this Order establishes AMELs for nitrate plus nitrite of 26 µg/L and 30 µg/L, for April 1 – September and October 1 – March 31, respectively. These effluent limitations are included in this Order to assure the treatment process adequately protects the beneficial use of municipal and domestic supply in the San Joaquin River.
- (d) **Plant Performance and Attainability.** Based on available nitrate and nitrite data, the Central Valley Water Board finds the Discharger will be able to immediately comply with the final WQBELs for nitrate plus nitrite.

9. Fact Sheet (Attachment F). Section IV.C.4., edit Table F-13 as follows:

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Nitrate + Nitrite, Total (as N) April 1 – September 30	mg/L	40 26	--	--	--	--
Nitrate + Nitrite, Total (as N) October 1 – March 31	mg/L	30	--	--	--	--

10. Fact Sheet (Attachment F). Section IV.C.6., edit Table F-15 as follows:

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Nitrate + Nitrite, Total (as N) April 1 – September 30	mg/L	<u>4026</u>	--	--	--	--
Nitrate + Nitrite, Total (as N) October 1 – March 31	<u>mg/L</u>	<u>30</u>	--	--	--	--

11. Fact Sheet (Attachment F). Section IV.E., remove interim effluent limitations for nitrate plus nitrite as follows:

E. Interim Effluent Limitations

The State Water Board’s Resolution 2008-0025 “*Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits*” (Compliance Schedule Policy) requires the Central Valley Water Board to establish interim numeric effluent limitations in this Order for compliance schedules longer than 1 year. As discussed in section VI.B.6 of this Fact Sheet, the Central Valley Water Board is approving a compliance schedule longer than 1 year for the effluent limitations for methylmercury and ~~nitrate plus nitrite (as N)~~. The Compliance Schedule Policy requires that interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent.

The interim effluent limitations for mercury and ~~nitrate plus nitrite~~ are based on Facility performance.

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~~**3. Interim Limits for Nitrate plus Nitrite, as N.** The interim effluent limitation for nitrate plus nitrite consists of a statistically-calculated performance-based MDEL derived using sample data provided by the Discharger. The interim effluent limitation was developed using the statistical approach provided in the TSD. The TSD provides guidance on estimating the projected maximum effluent concentration using a lognormal distribution of the observed effluent concentrations at a desired confidence level, as detailed in Section 3.3 of the TSD. The multipliers in Table 3-1 of the TSD were used to calculate the 99th percent confidence level and 99th percentile of the dataset based on the number of effluent samples and the coefficient of variation. The multipliers from the table were multiplied by the highest observed effluent concentration to estimate the maximum expected effluent concentration; this value was used as the interim MDEL.~~

Table F-17. Interim Nitrate plus Nitrite (as N) Effluent Limitation Calculation Summary

Parameter	Units	Maximum Effluent Concentration	Mean	Standard Deviation	Number of Samples	CV	Multiplier	Interim Limitation
Nitrate Plus Nitrite, as N	mg/L	23.2	18.0	3.88	216	0.28	1.08	31

12. Fact Sheet (Attachment F). Section VI.B.1.b., remove pollution prevention requirement for nitrate plus nitrite as follows:

- b. **Pollution Prevention.** This Order requires the Discharger implement pollution prevention plans following Water Code section 13263.3(d)(3) for mercury, ~~nitrate plus nitrite (as N)~~ and salinity. This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the pollution prevention plans.

13. Fact Sheet (Attachment F). Section VI.C.3.i., modify first paragraph to remove reference to nitrate plus nitrite as follows:

- i. **Water Code Section 13263.3(d)(3) Pollution Prevention Plans.** A pollution prevention plan for mercury, ~~nitrate plus nitrite~~, and salinity is required in this Order per Water Code section 13263.3(d)(1)(C). The pollution prevention plans required in section VI.C.3 and in section VI.C.7 of this Order, shall, at a minimum, meet the requirements outlined in Water Code section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:

14. Fact Sheet (Attachment F). Section VI.B.6., remove compliance schedule rationale for nitrate plus nitrite as follows:

6. Compliance Schedules

In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 C.F.R. section 122.44(d). There are exceptions to this general rule. The State Water Board adopted the *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Resolution 2008-0025), which is the governing policy for compliance schedules in NPDES permits (hereafter "Compliance Schedule Policy"). The Compliance Schedule Policy allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed 10 years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric effluent limitations for that constituent or parameter, interim requirements and dates toward achieving compliance, and compliance reporting within 14 days after each interim date. The Order may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures.

In accordance with the Compliance Schedule Policy and 40 CFR 122.47, a Discharger who seeks a compliance schedule must demonstrate additional time is necessary to implement actions to comply with a more stringent permit limitation. The Discharger must provide the following documentation as part of the application requirements:

- Diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts;
- Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have established;
- A proposed schedule for additional source control measures or waste treatment;
- Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim, permit effluent limit to apply if a schedule of compliance is granted;
- The highest discharge quality that can reasonably be achieved until final compliance is attained;
- The proposed compliance schedule is as short as possible, given the type of facilities being constructed or programs being implemented, and industry experience with the time typically required to construct similar facilities or implement similar programs; and
- Additional information and analyses to be determined by the Regional Water Board on a case-by-case basis.

Based on information submitted with the infeasibility analyses, the Report of Waste Discharge, self-monitoring reports, pollution prevention plans, and other miscellaneous submittals, it has been demonstrated to the satisfaction of the Central Valley Water Board that the Discharger needs time to implement actions to comply with the new effluent limitations for methylmercury and nitrate plus nitrite.

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~~b. **Compliance Schedule for Nitrate plus Nitrite (as N).** The permit limitations for nitrate plus nitrite are more stringent than the limitations previously implemented. These new limitations are based on a new interpretation of a narrative objective. The Discharger has complied with the application requirements in paragraph 4 of the Compliance Schedule Policy, and the Discharger's infeasibility analysis demonstrates the need for additional time to implement actions to comply with the new limitations. Therefore, a compliance schedule for compliance with final effluent limitations for nitrate plus nitrite is established in this Order.~~

~~A compliance schedule is necessary because the Discharger must implement actions, including design and construction of facilities to provide denitrification, to comply with the more stringent effluent limitations.~~

~~The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and has documented the results of those efforts. The Discharger has collected routine monitoring for nitrate (once per week). The source of nitrate plus nitrite is from domestic sewage and the biological treatment system.~~

~~The compliance schedule is as short as possible. The Discharger needs time to design, fund, and construct the necessary facilities to achieve compliance with the effluent limitations for nitrate plus nitrite, and the compliance schedules and interim milestones in this Order are as short as possible given the type of facilities being constructed and industry experience with the time typically required to construct similar facilities.~~