

Order No. R1-2014-0050

Modification of Waste Discharge Requirements
National Pollutant Discharge Elimination System Permit

For

City of Arcata Wastewater Treatment Facility
Order No. R1-2012-0031
NPDES No. CA0022713 WDID No. 1B82114OHUM

Humboldt County

The California Regional Water Quality Control Board, North Coast Region, hereinafter referred to as the Regional Water Board, finds that:

1. The City of Arcata (hereinafter referred to as the Permittee) is currently discharging under Order No. R1-2012-0031 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0022713 (hereinafter Order No. R1-2012-0031). Order No. R1-2012-0031 will expire on July 31, 2017.
2. The Permittee has requested that the Regional Water Board modify interim and final copper effluent limitations in Order No. R1-2012-0031 based upon the development of a Permittee-specific Water Effects Ratio (WER study).
3. On December 20, 2012, the Permittee submitted a request for modification of final copper effluent limitations and supporting documentation entitled *Water Effects Ratio Study for Discharges of Copper at the Arcata Wastewater Treatment Facility*.
4. Regional Water Board staff has reviewed the request and finds that the evidence provided by the Permittee supports the application of a WER for copper at Outfalls 001 and 002.
5. Among other things, Order R1-2012-0031 establishes final effluent limitations for copper in accordance with the California Toxics Rule and procedures set forth in the State Water Resources Control Board (State Water Board) Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (State Implementation Policy or SIP). Section 1.2 of the SIP allows the Regional Water Board to adjust the criteria/objective for metals with Permittee-specific WERs established in accordance with U.S. Environmental Protection Agency (EPA) guidance as established in Interim Guidance on Determination and Use of Water Effect Ratios for Metals (EPA-823-B-94-001) or Streamlined Water Effect Ratio Procedure for Discharges of Copper (EPA-822-R-01-005) (Streamlined Procedure). The Streamlined Procedure determines site-specific values for a WER, a criteria adjustment factor accounting for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life.

6. During the term of Order No. R1-2012-0031 the Permittee conducted an individual WER study to determine the site-specific toxicity of copper in the receiving water at two points of discharge. The study concluded that a site-specific WER of 7.51 for total recoverable copper at Pt. 9 (Outfall 002 under split basin mode) and 5.76 at Outfall 001 (also represents Outfall 002 under combined basin mode) apply to the discharge. Regional Water Board staff evaluated the results of the study and determined that 1) the results of the study are within the expected range for a WER for a municipal wastewater discharge, 2) the study was conducted in accordance with applicable U.S. EPA guidance for Streamlined Procedure EPA-822-R-01-005, and 3) the results of the study are supported by data that generated scientifically defensible results.

Discharge Location	Applicable Site Specific Toxicity Multipliers		Most Stringent Site Specific Criteria µg/L		Highest Observed Copper Effluent Concentration µg/L
	WER Combined Mode	WER Split Mode	Combined Mode	Split Mode	
Outfall 001	5.76	7.51	168.65	219.89	7.6
Outfall 002	5.76	7.51	36.17	47.16	7.6

Based on this new information, effluent copper concentrations no longer demonstrate reasonable potential to exceed the WER-adjusted water quality criteria for copper.

7. Conditions that support a major modification of an NPDES permit are described in 40 CFR 122.62 and include circumstances where new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance. Since Order No. R1-2012-0031 was adopted, the Permittee has performed a study to determine a site-specific WER for the City of Arcata Wastewater Treatment Facility (Facility), providing new information that was not available at the time of permit issuance. As explained herein, this new information would have justified new permit conditions at the time of issuance because, with the application of the WER, there is no reasonable potential for toxicity to organisms from copper in the effluent from Outfall 001 and Outfall 002. Consequently, based on this finding of no reasonable potential, effluent limitations or discharge specifications for copper at Outfall 001 and Outfall 002 would not have been included in Order No. R1-2012-0031 at the time of permit issuance.
8. This Order, which modifies Order No. R1-2012-0031 to remove effluent limitations and discharge specifications for copper at Outfall 001 and Outfall 002, is consistent with antibacksliding requirements set forth in 40 CFR section 122.44. Effluent limitations for copper have been removed from the permit at these two outfall locations based upon site-specific conditions at the Facility. The new information provided by the Permittee indicates that, based upon the relative bioavailability of copper to aquatic organisms, there is no reasonable potential for toxicity to those organisms from copper at concentrations detected in the effluent. Therefore, the

protection afforded under the modified permit results in a level of protection for beneficial uses equal to the previous conditions of Order No. R1-2012-0031. Additionally, this Order is consistent with section 303 (d)(4)(B) of the Clean Water Act, which allows for changes to effluent limitations or other permitting standards provided that the quality of receiving waters equals or exceeds levels necessary to protect the beneficial uses for such waters and the change is consistent with the antidegradation policy. Consistency with the anti-degradation policy is addressed below.

9. The antidegradation policy provides that the lowering of water quality can be allowed only if beneficial uses are protected, and if there is a maximum benefit to the people of the State. The removal of copper effluent limits at Outfall 001 and Outfall 002 will not result in any increase in the amount of copper discharged to the water body when compared with the amount that would be discharged in compliance with the existing effluent limitations, because the Permittee will continue to provide the same level of treatment and discharge the same quality of effluent. The removal of effluent limitations and discharge specifications is predicated on a finding that there is no reasonable potential for toxicity to organisms from copper in the effluent. Accordingly, this action will result in no less protection of beneficial uses and will maintain water quality.

Furthermore, discharges regulated in accordance with Order No. R1-2012-0031 are for a publicly owned treatment works (POTW) achieving secondary treatment and equivalent to secondary standards. Further reduction of copper from the effluent may require construction of additional treatment facilities. The significant costs associated with additional treatment that would be required are not in the best interest of the public given that beneficial uses are already shown to be protected. Any resources available for water quality improvements should be used for nonattainment waters or other pressing water quality issues as opposed to treating effluent beyond what is required for protecting beneficial uses.

10. The State Water Board amended the SIP in 2005 to allow WERs to be established through the normal NPDES permit modification processes, rather than through the Basin Planning process. The procedures followed to develop the copper WER identified in this Order and in Order No. R1-2012-0031 are consistent with the amended SIP and the requirements to consider California Water Code section 13241 factors and California Environmental Quality Act (CEQA) are not triggered. Under Water Code section 13389, this action to modify an NPDES permit is exempt from the provisions of Chapter 3 of CEQA.
11. Pursuant to 40 CFR sections 124.5(c)(2) and 122.62, only those conditions to be modified by this Order shall be reopened with this amendment. All other aspects of the existing NPDES permit shall remain in effect and are not subject to modification by this amendment.

12. The Permittee and interested agencies and persons have been notified of the Regional Water Board’s intent to modify waste discharge requirements for the existing discharge and have been provided opportunities for public meetings and to submit their written views and recommendations. Notification was provided through posting on the Regional Water Board’s Internet site at: http://www.waterboards.ca.gov/northcoast/public_notices/public_hearings/npdes_permits_and_wdrs.shtml and through publication in the Eureka Times-Standard on August 19, 2014. On November 20, 2014, after due notice to the Permittee and all other affected persons, the Regional Water Board conducted a public hearing and evidence was received regarding adoption of Order No. R1-2014-0050 modifying Order No. R1-2012-0031.

IT IS HEREBY ORDERED that the Permittee, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder and the provisions of the Clean Water Act as amended, shall comply with the following revisions identified in underline and strikethrough format to indicate language to be modified in Order No. R1-2012-0031:

1. Section IV.A.1.a. Final Effluent Limitations – Outfall 001 (Humboldt Bay)

The Permittee shall maintain compliance with the following final effluent limitations at Outfall 001, with compliance measured at Monitoring Location EFF-001, as described in the attached MRP. These limitations apply only to flows allowed in accordance with Prohibition III.I.

Table 5. Effluent Limitations for Outfall 001 (Humboldt Bay)

Parameter	Units	Effluent Limitations		
		Average Monthly ¹	Average Weekly ²	Maximum Daily
BOD ₅	mg/L	45	65	---
	lbs/day ³	863	1304	---
TSS	mg/L	66	95	---
	lbs/day ⁴	1266	1822	---
Settleable Solids	mL/L	0.1	---	0.2
Fecal Coliform	MPN/100ml	14 ⁴		43 ⁵
Chlorine, Total Residual	mg/L	0.01		0.02

1 Compliance with average monthly effluent limitations shall be based on averages derived from measurements in the calendar month.
 2 Compliance with average weekly effluent limitations shall be based on averages derived from measurements in the calendar week (i.e., Sunday through Saturday).
 3 Mass-based limitations are based on the dry weather design flow of the WWTF of 2.3 mgd. During wet weather periods, when influent flow exceeds the dry weather design flow rate, mass emission limitations shall be calculated using the concentration-based effluent limitations and the actual daily average effluent flow rate (not to exceed the average wet weather design flow rate of 5.0 mgd).
 4 Median.
 5 Not more than 10% of samples collected in a 30-day period shall exceed the daily maximum.

Table 5. Effluent Limitations for Outfall 001 (Humboldt Bay)

Parameter	Units	Effluent Limitations		
		Average Monthly ¹	Average Weekly ²	Maximum Daily
pH	s.u.	6.0 – 9.0 at all times		
Cyanide	µg/L	0.5	---	1.0
2,3,7,8-TCDD Equivalents	µg/L	1.3 x 10 ⁻⁸	---	2.6 x 10 ⁻⁸
Carbon Tetrachloride	µg/L	0.25	---	0.50
Dichlorobromomethane	µg/L	0.56	---	1.12
Bis(2-Ethylhexyl)Phthalate	µg/L	1.8	---	3.6

2. Section IV.A.3.a. Interim Effluent Limitations – Outfall 001 (Humboldt Bay)

Until the activation of the upgraded WWTF configuration or December 1, 2016, whichever is sooner, the Permittee shall maintain compliance with the following interim effluent limitations at Outfall 001, with compliance measured at Monitoring Location EFF-001, as described in the attached MRP.

Table 7. Interim Effluent Limitations for Outfall 001 (Humboldt Bay)

Parameter	Units	Effluent Limitations		
		Average Monthly ²	Average Weekly ³	Maximum Daily
BOD ₅	mg/L	30	45	---
	lbs/day ⁴	575	863	---
TSS	mg/L	30	45	---
	lbs/day ⁴	575	863	---
Settleable Solids	mL/L	0.1	---	0.2
Fecal Coliform	MPN/100ml	14 ⁵		43 ⁶
Chlorine, Total Residual	mg/L	0.01		0.02
pH	s.u.	6.0 – 9.0 at all times		
Cyanide	µg/L	0.5	---	1.0
2,3,7,8-TCDD Equivalents	µg/L	1.3 x 10 ⁻⁸	---	2.6 x 10 ⁻⁸
Carbon Tetrachloride	µg/L	0.25	---	0.50
Dichlorobromomethane	µg/L	0.56	---	1.12
Bis(2-Ethylhexyl)Phthalate	µg/L	1.8	---	3.6

3. Section IV.B.1.a. Discharge Specifications – Outfall 002 (AMWS)

The Permittee shall maintain compliance with the following final discharge specifications at Outfall 002, with compliance measured at Monitoring Location EFF-002, as described in the attached MRP.

Table 8. Discharge Specifications for Outfall 002 (AMWS)

Parameter	Units	Discharge Specifications		
		Average Monthly ³	Average Weekly ⁴	Maximum Daily
BOD ₅	mg/L	45	65	---
TSS	mg/L	66	95	---
pH	s.u.	6.0 – 9.0 at all times		
Settleable Solids	mL/L	0.1	---	0.2
Chlorine, Total Residual ^[a]	mg/L	0.01		0.02

[a] Limitations for chlorine residual apply at all times. However, upon activation of the upgraded configuration, in the absence of chlorine usage prior to Outfall 002, it is assumed that there will be no chlorine residual at this discharge location.

4. Attachment E Table E-4 Effluent Monitoring, Monitoring Location EFF-001 and/or EFF-003 footnote 3:

³ Copper and total hardness monitoring requirements are applicable only at EFF-003.

5. Attachment E Table E-5 Effluent Monitoring, Monitoring Location EFF-002.

Table E-5. Effluent Monitoring, Monitoring Location EFF-002

Parameter	Reporting Units	Sample Type	Minimum Sampling Frequency	Required Analytical Method
Flow ²	mgd	Continuous	Continuous	Meter
BOD ₅	mg/L	24-hr composite	Weekly	SM 5210 B
TSS	mg/L	24-hr composite	Weekly	SM 2540 D
Settleable Solids	mL/L/hr	Grab	Daily	SM 2540 F
pH	s.u.	Grab	Daily	40 CFR 136
Acute Toxicity	% Survival	24-hr composite	concurrent with special study	concurrent with special study

6. Attachment F section III.C.4. Applicable Plans, Policies, and Regulations, State and Federal Regulations, Policies, and Plans, State Implementation Policy

Section 1.2 of the SIP allows the Regional Water Board to adjust the criteria/objective for metals with discharger-specific Water Effect Ratios (WER) established in accordance with U.S. EPA guidance – Interim Guidance on Determination and Use of Water Effect Ratios for Metals (EPA-823-B-94-001) or Streamlined Water-Effect Ratio Procedure for Discharges of Copper (EPA-822-R-01-005) (Streamlined Procedure). The Streamlined Procedure determines site-specific values for a WER, a criteria adjustment factor accounting for the effect of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life.

7. Attachment F section VI.C.1. Water Quality-Based Effluent Limitations (WQBELs) Scope and Authority

8. Attachment F section VI.C.3.b. Determining the Need for WQBELs - Priority Pollutants

During the term of Order No. R1-2012-0031 the Permittee conducted an individual WER study to determine the site-specific toxicity of copper in the receiving water at the point of discharge. The study was conducted in accordance with applicable U.S. EPA guidance for Streamlined Procedure EPA-822-R-01-005 and concluded that site-specific WERs of 5.76 and 7.51 for total recoverable copper apply to the discharge at Outfall 001 and 002, respectively.

Using the worst-case measured hardness from the receiving water (400 mg/L as CaCO₃ at Outfall 001 and 66 mg/L as CaCO₃ at Outfall 002), the U.S. EPA-recommended dissolved-total translator of 0.96, and the site-specific WER, the applicable acute criterion (maximum 1-hour average concentration) is adjusted to 33.3 ug/L at Outfall 001 and 71.1 ug/L at Outfall 002. The applicable chronic criterion (maximum 4-day average concentration) is adjusted to 16.6 ug/L at Outfall 001 and 35.4 ug/L at Outfall 002. The maximum effluent concentration (MEC) measured for total copper was 7.6 ug/L, based on samples collected in **March 2014**. All effluent copper concentrations measured in accordance with Order No. R1-2012-0031 are below the applicable criteria. Based on new WER information, effluent copper concentrations do not demonstrate reasonable potential to exceed water quality criteria for copper at Outfalls 001 or 002.

The RPA for discharges to Humboldt Bay (which includes the brackish marsh) demonstrated reasonable potential to cause or contribute to exceedances of applicable water quality criteria for bis(2-ethylhexyl)phthalate, cyanide, TCDD equivalents, carbon tetrachloride, and dichlorobromomethane. Because the WER study did not present data collected in association with Outfall 003 to the brackish marsh, the RPA associated with Outfall 003 also indicates reasonable potential for copper to cause or contribute to exceedances of applicable water quality criteria. The following tables summarize the RPA for each priority, toxic pollutant that has been measured in effluent in samples collected on December 30, 2005, May 3, 2006, September 9, 2009, and January 27, 2010 as well as copper data from March 5, 2014. No other pollutants with applicable, numeric water quality criteria from the NTR, CTR, and the Basin Plan (which includes the title 22 MCLs for protection of drinking water supplies in Humboldt Bay) were measured above non-detect (ND) concentrations.

Table F-5. Summary of RPA Results – Humboldt Bay

CTR #	Priority Pollutants	C or Most Stringent WQO/WQC (µg/L)	MEC or Minimum DL (µg/L) ⁶	RPA Result	Reason
2	Arsenic	36	0.96	No	MEC<C & B is ND
5a	Chromium (III)	50	1	No	MEC<C & B is ND
6	Copper ⁷	168.7	7.6	No	MEC<C & B is ND
6	Copper ⁸	2.9	7.6	Yes	MEC>C
7	Lead	8.5	0.59	No	MEC<C & B is ND
8	Mercury	0.050	0.0067	No	;MEC<C & B is ND
9	Nickel	8	3.7	No	MEC<C & B is ND
11	Silver	2.2	0.1	No	MEC<C & B is ND
12	Thallium	1.7	0.01	No	MEC<C & B is ND
13	Zinc	86	8	No	MEC<C & B is ND
14	Cyanide	1.0	4.3	Yes	MEC>C
16	2,3,7,8 TCDD	1.3E-08	5.77E-07	Yes	MEC>C
21	Carbon Tetrachloride	0.25	0.3	Yes	MEC>C
23	Chlorodibromomethane	0.40	0.2	No	MEC<C & B is ND
26	Chloroform	No Criteria	8	Uo	No Criteria
27	Dichlorobromomethane	0.56	1.2	Yes	MEC>C
34	Methyl Bromide	48	2.9	No	MEC<C & B is ND
36	Methylene Chloride	4.7	0.18	No	MEC<C & B is ND
39	Toluene	150	3.8	No	MEC<C & B is ND
68	Bis(2-Ethylhexyl)Phthalate	1.8	6.6	Yes	MEC>C
77	1,4-Dichlorobenzene	5.0	0.06	No	MEC<C & B is ND

Table F-6. Summary of RPA Results – AMWS

CTR #	Priority Pollutants	C or Most Stringent WQO/WQC (µg/L)	MEC or Minimum DL (µg/L) ⁷	RPA Result	Reason
2	Arsenic	50	0.96	No	MEC<C & B is ND
5a	Chromium (III)	50	0.54	No	MEC<C & B is ND
6	Copper	36.17	7.6	No	MEC<C & B is ND
7	Lead	1.6	0.59	No	MEC<C & B is ND
8	Mercury	0.05	0.0067	No	MEC<C & B is ND
9	Nickel	37	4.4	No	MEC<C & B is ND
13	Zinc	84	4.4	No	MEC<C & B is ND
68	Bis(2-Ethylhexyl)Phthalate	1.8	1.1	No	MEC<C & B is ND

6 The Maximum Effluent Concentration (MEC) or maximum background concentration (B) is the actual detected concentration unless it is preceded by "<", in which case the value shown is the minimum detection level as the analytical result was reported as not detected (ND).

7 Applies only to Humboldt Bay discharge at Outfall 001.

8 Applies only to the brackish marsh discharge at Outfall 003.

9. Attachment F section VI.C.4. Determining the Need for WQBELs - WQBEL Calculations

Table F-7. Determination of Long Term Averages

Pollutant	ECA		ECA Multiplier		LTA (µg/L)	
	Acute	Chronic	Acute	Chronic	Acute	Chronic
Outfall 001						
Cyanide	1	0.5	0.32	0.53	0.32	0.53
Outfall 003						
Copper	5.8	2.9	0.32	0.53	1.86	1.97
Cyanide	1	0.5	0.32	0.53	0.32	0.53

Table F-8. Determination of Final WQBELs Based on Aquatic Life Criteria

Pollutant	LTA (µg/L)	MDEL Multiplier	AMEL Multiplier	MDEL (µg/L)	AMEL (µg/L)
Outfall 001					
Cyanide	0.327	3.11	1.55	1.0	0.5
Outfall 003					
Copper	1.86	3.11	1.55	5.8	2.9
Cyanide	0.327	3.11	1.55	1.0	0.5

Final effluent limits presented above for copper at Outfall 003 are based on a receiving water hardness of 400 mg/L.

Table F-10. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Outfall 001 and Outfall 003			
Cyanide	µg/L	0.5	1.0
TCDD Equivalentents	µg/L	1.3 x 10 ⁻⁸	2.6 x 10 ⁻⁸
Carbon Tetrachloride	µg/L	0.25	0.50
Dichlorobromomethane ⁹	µg/L	0.56	1.12
Bis(2-Ethylhexyl)Phthalate	µg/L	1.8	3.6
Chlorine, Total Residual ¹⁰	mg/L	0.01	0.02
Fecal Coliform	MPN/100ml	14 ¹¹	43 ¹²

9 Dichlorobromomethane is not applied to discharges at Outfall 003 because, dichlorobromomethane is a byproduct of chlorination and when Outfall 003 is in use, disinfection will be accomplished using ultraviolet technology.

10 Chlorine Residual applies to discharges at Outfall 001 when chlorination is used to treat the effluent.

11 Median.

12 Not more than 10% of samples collected in a 30-day period shall exceed the daily maximum.

Table F-10. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Outfall 003			
Copper	µg/L	2.9	5.8

10. Attachment F section VI.D.1. Final Effluent Limitations - Satisfaction of Anti-Backsliding Requirements

...Effluent limitations for zinc and oil and grease have been removed from this Order because data did not demonstrate reasonable potential to cause or contribute to an excursion above the respective water quality criteria for zinc or oil and grease. In addition, based upon a site-specific water effects ratio (WER) study conducted in 2012, copper limitations applicable to Outfalls 001 or 002 have been removed. The WER study provided information to justify application of a site-specific objective for copper at the Outfalls 001 and 002 discharge locations. As such, effluent data do not demonstrate reasonable potential to cause or contribute to an excursion above the WER-adjusted water quality criteria for copper. The relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations, based on the consideration of new information (i.e., discharge monitoring reports and RPA).

11. Attachment F section VI.D.2. Final Effluent Limitations - Satisfaction of Antidegradation Policy

... The removal of copper effluent limits at Outfall 001 and Outfall 002 will not result in an increase in the amount of copper discharged to the water body when compared with the amount that would be discharged in compliance with the existing effluent limitations, because the Permittee will continue to provide the same level of treatment and discharge the same quality of effluent. The removal of copper effluent limitations is predicated on a finding that there is no reasonable potential for toxicity to organisms from copper in the effluent. Accordingly, this action will result in no less protection of beneficial uses and will maintain water quality.

Furthermore, discharges regulated in accordance with Order No. R1-2012-0031 are for a publicly owned treatment works (POTW) achieving secondary treatment and equivalent to secondary standards. Further reduction of copper from the effluent may require construction of additional treatment facilities. The significant increase in costs for additional treatment that would be required to remove low levels of copper at this POTW are not in the best interest of the public given that beneficial uses are already shown to be protected. The activities allowed in accordance with these modifications to the waste discharge requirements apply to existing facilities. Discharges from the WWTF are required to maintain protection of the beneficial uses of the receiving water and comply with applicable provisions of the Basin Plan.

12. Attachment F section X.A. Public Participation, Notification of Interested Parties

The Permittee and interested agencies and persons have been notified of the Regional Water Board's intent to modify waste discharge requirements for the existing discharge and have been provided opportunities for public meetings and to submit their written views and recommendations. Notification was provided through posting on the Regional Water Board's Internet site at:

http://www.waterboards.ca.gov/northcoast/public_notices/public_hearings/npdes_permits_and_wdrs.shtml and through publication in the Eureka Times-Standard on [August 7, 2014](#). On November 20, 2014, after due notice to the Permittee and all other affected persons, the Regional Water Board conducted a public hearing and evidence was received regarding adoption of Order No. R1-2014-0050 modifying Order No. R1-2012-0031.

13. Attachment F section X.B. Public Participation, Written Comments

To be fully responded to by staff and considered by the Regional Water Board, written comments on modifications to Order No. R1-2012-0031 contained in Order No. R1-2014-0050 should be received at the Regional Water Board offices by 5:00 p.m. on [September 18, 2014](#).

Certification:

I, Matthias St. John, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, North Coast Region, on November 20, 2014.

Matthias St. John
Executive Officer