

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248**

WATER QUALITY BASED EFFLUENT LIMIT CALCULATIONS FOR FRESHWATER

WQBELs Calculation Summary

Facility Name:	IID El Centro Generating
NPDES Number:	CA0104248
Session ID:	14
Session Name:	FW Run No. 1
User Name:	Carmj
Session Date:	2/21/03

	AMEL(ug/l)	MDEL(ug/l)
Copper (Cu)	22.1674	44.4887
Cyanide (CN)	4.2570	8.5436
Selenium (Se)	4.0933	8.2150
Thallium (Tl)	6.3000	12.6437

Period used for effluent data: From 5/2/01 to 12/11/01
Period used for ambient data: From 6/7/01 to 12/11/01

STREAM CONDITIONS:

Ambient TSS (mg/l):	30
Ambient Hardness (mg/l CaCO3):	348
Ambient pH (SU):	7.37

MIXING CONDITIONS:

Acute Receiving Water Flow (cfs):	1
Facility Maximum Daily Flow (MGD):	1
Acute Dilution Ratio:	0
Chronic Receiving Water Flow (cfs):	1
Facility 4-day avg Daily max flow (MGD):	1
Chronic Dilution Ratio:	0
Human Health Receiving Water Flow (cfs):	1
Long Term Mean Flow (MGD):	1
Human Health Dilution Ratio:	0

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248**

WATER QUALITY BASED EFFLUENT LIMIT CALCULATIONS FOR SALT WATER

WQBELs Calculation Summary

Facility Name:	IID El Centro Generating
NPDES Number:	CA0104248
Session ID:	16
Session Name:	SW Run No. 1
User Name:	Carmj
Session Date:	2/21/03

	AMEL(ug/l)	MDEL(ug/l)
Copper (Cu)	2.3917	4.8000
Cyanide (CN)	0.4983	1.0000
Nickel (Ni)	6.7130	13.4727
Thallium (Tl)	6.3000	12.6437
Zinc (Zn)	44.8444	90.0000

Period used for effluent data: From 5/2/01 to 12/11/01
Period used for ambient data: From 6/7/01 to 12/11/01

STREAM CONDITIONS:

Ambient TSS (mg/l):	30
Ambient Hardness (mg/l CaCO3):	348
Ambient pH (SU):	7.29

MIXING CONDITIONS:

Acute Receiving Water Flow (cfs):	1
Facility Maximum Daily Flow (MGD):	1
Acute Dilution Ratio:	0
Chronic Receiving Water Flow (cfs):	1
Facility 4-day avg Daily max flow (MGD):	1
Chronic Dilution Ratio:	0
Human Health Receiving Water Flow (cfs):	1
Long Term Mean Flow (MGD):	1
Human Health Dilution Ratio:	0

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
 FOR IID El Centro Generating PERMIT NO.CA0104248
 COMPLIANCE SUMMARY REPORT**

Compliance Summary Report

Facility Name:	IID El Centro Generating
NPDES Number:	CA0104248
Session ID:	14
Session Name:	FW Run No. 1
User Name:	Carmj
Session Date:	2/21/03

Cyanide (CN)		MDEL (ug/l) = 8.543631	ML (ug/l) = 5
Value	Detect	Date	Compliance
10	True	5/2/01	Non Compliant
Selenium (Se)		MDEL (ug/l) = 8.21503	ML (ug/l) = 1
Value	Detect	Date	Compliance
10	True	5/2/01	Non Compliant
9	True	12/11/01	Non Compliant
Thallium (Tl)		MDEL (ug/l) = 12.64372	ML (ug/l) = 1
Value	Detect	Date	Compliance
14	True	12/11/01	Non Compliant

Compliance Summary Report

Facility Name:	IID El Centro Generating
NPDES Number:	CA0104248
Session ID:	16
Session Name:	SW Run No. 1
User Name:	Carmj
Session Date:	2/21/03

Copper (Cu)		MDEL (ug/l) = 4.8	ML (ug/l) = 0.5
Value	Detect	Date	Compliance
32	True	5/2/01	Non Compliant
13	True	12/11/01	Non Compliant
Cyanide (CN)		MDEL (ug/l) = 1	ML (ug/l) = 5
Value	Detect	Date	Compliance
10	True	5/2/01	Non Compliant
Thallium (Tl)		MDEL (ug/l) = 12.64372	ML (ug/l) = 1
Value	Detect	Date	Compliance
14	True	12/11/01	Non Compliant

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO. CA0104248
REASONABLE POTENTIAL ASSESSMENT REPORT**

REASONABLE POTENTIAL ASSESSMENT

Facility Name : IID El Centro Generating
NPDES Number : CA0104248

CAPWTT Session ID : 14
CAPWTT Session Name : FW Run No. 1
CAPWTT Session Date : 2/21/03

Pollutant : Copper (Cu)
ISWP Criteria : 27.078 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 2 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 32 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Copper (Cu).

Pollutant : Cyanide (CN)
ISWP Criteria : 5.200 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 1 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 10 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Cyanide (CN).

Pollutant : Selenium (Se)
ISWP Criteria : 5.000 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 2 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 10 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Selenium (Se).

Pollutant : Thallium (Tl)
ISWP Criteria : 6.300 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 1 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 14 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Thallium (Tl).

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID EI Centro Generating PERMIT NO.CA0104248
REASONABLE POTENTIAL ASSESSMENT REPORT**

REASONABLE POTENTIAL ASSESSMENT

Facility Name : IID EI Centro Generating
NPDES Number : CA0104248

CAPWTT Session ID : 16
CAPWTT Session Name : SW Run No. 1
CAPWTT Session Date : 2/21/03

Pollutant : Copper (Cu)
ISWP Criteria : 3.100 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 2 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 32 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Copper (Cu).

Pollutant : Cyanide (CN)
ISWP Criteria : 1.000 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 1 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 10 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Cyanide (CN).

Pollutant : Nickel (Ni)
ISWP Criteria : 8.200 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 1 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 12 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Nickel (Ni).

Pollutant : Thallium (Tl)
ISWP Criteria : 6.300 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 1 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 14 ug/L (detect)

REASONABLE POTENTIAL:

MEC is GREATER THAN the criterion requiring an effluent limitation for Thallium (Tl).

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
REASONABLE POTENTIAL ASSESSMENT REPORT**

Pollutant : Zinc (Zn)
ISWP Criteria : 81.000 ug/l
WQBEL Required?: YES

EFFLUENT DATA SUMMARY:

This pollutant was detected 2 times out of 2 observations. The MEC is set to the maximum detected value.

MEC = 78 ug/L (detect) and is LESS THAN the criterion requiring analysis of ambient data.

AMBIENT DATA SUMMARY:

This pollutant was detected 2 times out of 2 observations. The B is set to the maximum detected value.

B = 103 ug/l

REASONABLE POTENTIAL:

B (detect) is GREATER THAN the criterion requiring an effluent limitation for Zinc (Zn).

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID EI Centro Generating PERMIT NO.CA0104248
CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS

CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS WITH SSOs

Facility Name : IID EI Centro Generating
NPDES Number : CA0104248

CAPWTT Session ID : 14
CAPWTT Session Name : FW Run No. 1
CAPWTT Session Date : 2/21/03

Ambient TSS (mg/l) : 30
Ambient Hardness (mg/l CaCO₃) : 348
Ambient pH (SU) : 7.37

Copper (Cu)
EPA CF Factors

CF Acute : 0.96
CF Chronic : 0.96

Acute Criteria (ug/l) : 45.32891
Chronic Criteria (ug/l) : 27.0776
Human Health Criteria (ug/l) : NA

Cyanide
EPA CF Factors

CF Acute : 1
CF Chronic : 1

Acute Criteria (ug/l) : 22
Chronic Criteria (ug/l) : 5.2
Human Health Criteria (ug/l) : 220000

Selenium (Se)
EPA CF Factors

CF Acute : 1
CF Chronic : 1

Acute Criteria (ug/l) : NA
Chronic Criteria (ug/l) : 5
Human Health Criteria (ug/l) : NA

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID EI Centro Generating PERMIT NO.CA0104248
CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS**

CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS WITH SSOs

Facility Name : IID EI Centro Generating
NPDES Number : CA0104248

CAPWTT Session ID : 16
CAPWTT Session Name : SW Run No. 1
CAPWTT Session Date : 2/21/03

Ambient TSS (mg/l) : 30
Ambient Hardness (mg/l CaCO₃) : 348
Ambient pH (SU) : 7.29

Copper (Cu)
EPA CF Factors

CF Acute : 0.83
CF Chronic : 0.83

Acute Criteria (ug/l) : 4.8
Chronic Criteria (ug/l) : 3.1
Human Health Criteria (ug/l) : NA

Cyanide
EPA CF Factors

CF Acute : 1
CF Chronic : 1

Acute Criteria (ug/l) : 1
Chronic Criteria (ug/l) : 1
Human Health Criteria (ug/l) : 220000

Nickel (Ni)
EPA CF Factors

CF Acute : 0.99
CF Chronic : 0.99

Acute Criteria (ug/l) : 74
Chronic Criteria (ug/l) : 8.2
Human Health Criteria (ug/l) : 4600

Zinc (Zn)
EPA CF Factors

CF Acute : 0.946
CF Chronic : 0.946

Acute Criteria (ug/l) : 90
Chronic Criteria (ug/l) : 81
Human Health Criteria (ug/l) : NA

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO. CA0104248
CALCULATIONS FOR AMEL AND MDEL**

PART 1 CALCULATION OF EFFLUENT CONCENTRATION ALLOWANCES (ECA)

For each water quality criterion/objective, calculate the effluent concentration allowance (*ECA*) using the following steady-state mass balance equation:

$$ECA = C + D (C - B) \text{ when } C > B, \text{ and}$$

$$ECA = C \text{ when } C \leq B,$$

where $C =$ the priority pollutant criterion/objective, adjusted (as described in section 1.2), if necessary, for hardness, pH, and translators (as described in section 1.4.1);

$D =$ the dilution credit (as determined in section 1.4.2); and

$B =$ the ambient background concentration. The ambient background concentration shall be the observed maximum as determined in accordance with section 1.4.3.1 with the exception that an *ECA* calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the ambient background concentration as an arithmetic mean determined in accordance with section 1.4.3.2.

The concentration units for C and B must be identical. Both C and B shall be expressed as total recoverable, unless inappropriate. The dilution credit is unitless.

VALUES USED IN ECA CALCULATION

Pollutant	Ambient B	C Acute	D Acute	ECA Acute	C Chronic	D Chronic	ECA Chronic	C HH	D HH	ECA HH
Copper	27	4.8	0	4.8	3.1	0	3.1	NA	0	NA
Cyanide	10	1	0	1	1	0	1	220000	0	220000
Nickel	14	74	0	74	8.2	0	8.2	4600	0	4600
Selenium	11	NA	0	NA	5	0	5	NA	0	NA
Thallium	15	NA	0	NA	NA	0	NA	6.3	0	6.3
Zinc	103	90	0	90	81	0	81	NA	0	NA

FOR COPPER (acute)

$$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$$

$$ECA_{ACUTE} = 4.8$$

FOR COPPER (chronic)

$$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$$

$$ECA_{CHRONIC} = 3.1$$

FOR CYANIDE (acute)

$$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$$

$$ECA_{ACUTE} = 1$$

FOR CYANIDE (chronic)

$$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$$

$$ECA_{CHRONIC} = 1$$

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

FOR NICKEL (acute)

$$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$$

$$ECA_{ACUTE} = 74$$

FOR NICKEL (chronic)

$$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$$

$$ECA_{CHRONIC} = 8.2$$

FOR SELENIUM (acute)

$$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$$

$$ECA_{ACUTE} = \text{NA}$$

FOR SELENIUM (chronic)

$$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$$

$$ECA_{CHRONIC} = 5$$

FOR THALLIUM (acute)

$$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$$

$$ECA_{ACUTE} = \text{NA}$$

FOR THALLIUM(chronic)

$$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$$

$$ECA_{CHRONIC} = \text{NA}$$

FOR ZINC (acute)

$$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$$

$$ECA_{ACUTE} = 90$$

FOR ZINC (chronic)

$$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$$

$$ECA_{CHRONIC} = 81$$

Pollutant	ECA _{Acute} (µg/L)	ECA _{Chronic} (µg/L)
Copper	4.8	3.1
Cyanide	1	1
Nickel	74	8.2
Selenium	NA	5
Thallium	NA	NA
Zinc	90	81

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

STEP 2 CALCULATIONS OF LONG TERM AVERAGES (LTA)

For each *ECA* based on an aquatic life criterion/objective, determine the long-term average discharge condition (*LTA*) by multiplying the *ECA* with a factor (multiplier) that adjusts for effluent variability. The multiplier shall be calculated as described below, or shall be found in Table 1. To use Table 1, the *coefficient of variation (*CV*) for the effluent pollutant concentration data must first be calculated. If (a) the number of effluent data points is less than ten, or (b) at least 80 percent of the data are reported as not detected, the *CV* shall be set equal to 0.6. When calculating *CV* in this procedure, if an effluent data point is below the detection limit for the pollutant in that sample, one-half of the detection limit shall be used as a value in the calculations. Multipliers for acute and chronic criteria/objectives that correspond to the *CV* can then be found in Table 1.

Cv	WLa Multipliers		
	95th percentile	99 percentile	
0.1	0.853	0.797	<u>Acute</u>
0.2	0.736	0.643	
0.3	0.644	0.527	
0.4	0.571	0.44	
0.5	0.514	0.373	
0.6	0.468	0.321	<u>Table 5-1</u>
0.7	0.432	0.281	
0.8	0.403	0.249	
0.9	0.379	0.224	
1	0.360	0.204	
1.1	0.344	0.187	
1.2	0.330	0.174	
1.3	0.319	0.162	
1.4	0.310	0.153	
1.5	0.302	0.144	
1.6	0.296	0.137	
1.7	0.290	0.131	
1.8	0.285	0.126	
1.9	0.281	0.121	
2	0.277	0.117	

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

Cv	WLa Multipliers		
	95th percentile	99 percentile	
0.1	0.922	0.891	<u>Chronic</u>
0.2	0.853	0.797	
0.3	0.791	0.715	
0.4	0.736	0.643	
0.5	0.687	0.581	
0.6	0.644	0.527	<u>Table 5-1</u>
0.7	0.606	0.481	
0.8	0.571	0.440	
0.9	0.541	0.404	
1	0.514	0.373	
1.1	0.490	0.345	
1.2	0.468	0.321	
1.3	0.449	0.300	
1.4	0.432	0.281	
1.5	0.417	0.264	
1.6	0.403	0.249	
1.7	0.390	0.236	
1.8	0.379	0.224	
1.9	0.369	0.214	
2	0.360	0.204	

LTA Equations

$LTA_{Acute} = ECA_{Acute} * ECA \text{ multiplier}_{Acute}^{99}$ (from Table 1)

$LTA_{Chronic} = ECA_{Chronic} * ECA \text{ multiplier}_{Chronic}^{99}$ (from Table 1)

VALUES USED IN LTA CALCULATION

Pollutant	CV Q	Sigma	Mult Acute	Mult Chronic	LTA Acute	LTA Chronic	LTA Min
Copper	0.6	0.555	0.321	0.527	1.541	1.635	1.541
Cyanide	0.6	0.555	0.321	0.527	0.321	0.527	0.321
Nickel	0.6	0.555	0.321	0.527	23.75	4.324	4.324
Selenium	0.6	0.555	0.321	0.527	NA	2.637	2.637
Thallium	0.6	0.555	0.321	0.527	NA	NA	NA
Zinc	0.6	0.555	0.321	0.527	28.885	42.712	28.885

FOR COPPER (acute)

$LTA_{ACUTE} = ECA_{ACUTE} * ECA \text{ multiplier}_{Acute}^{99}$

$LTA_{ACUTE} = 4.8 * 0.321 = 1.54$

FOR COPPER (chronic)

$LTA_{CHRONIC} = ECA_{CHRONIC} * ECA \text{ multiplier}_{Chronic}^{99}$

$LTA_{CHRONIC} = 3.1 * 0.527 = 1.63$

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

FOR CYANIDE (acute)

$$LTA_{ACUTE} = ECA_{ACUTE} \times ECA \text{ multiplier}_{Acute}^{99}$$

$$LTA_{ACUTE} = 1 \times 0.321 = 0.321$$

FOR CYANIDE (chronic)

$$LTA_{CHRONIC} = ECA_{CHRONIC} \times ECA \text{ multiplier}_{Chronic}^{99}$$

$$LTA_{CHRONIC} = 1 \times 0.527 = 0.527$$

FOR NICKEL (acute)

$$LTA_{ACUTE} = ECA_{ACUTE} \times ECA \text{ multiplier}_{Acute}^{99}$$

$$LTA_{ACUTE} = 74 \times 0.321 = 23.75$$

FOR NICKEL (chronic)

$$LTA_{CHRONIC} = ECA_{CHRONIC} \times ECA \text{ multiplier}_{Chronic}^{99}$$

$$LTA_{CHRONIC} = 8.2 \times 0.321 = 4.324$$

FOR SELENIUM (acute)

$$LTA_{ACUTE} = ECA_{ACUTE} \times ECA \text{ multiplier}_{Acute}^{99}$$

$$LTA_{ACUTE} = NA \times NA = NA$$

FOR SELENIUM (chronic)

$$LTA_{CHRONIC} = ECA_{CHRONIC} \times ECA \text{ multiplier}_{Chronic}^{99}$$

$$LTA_{CHRONIC} = 5 \times 0.527 = 2.637$$

FOR THALLIUM (acute)

$$LTA_{ACUTE} = ECA_{ACUTE} \times ECA \text{ multiplier}_{Acute}^{99}$$

$$LTA_{ACUTE} = NA \times NA = NA$$

FOR THALLIUM (chronic)

$$LTA_{CHRONIC} = ECA_{CHRONIC} \times ECA \text{ multiplier}_{Chronic}^{99}$$

$$LTA_{CHRONIC} = NA \times NA = NA$$

FOR ZINC (acute)

$$LTA_{ACUTE} = ECA_{ACUTE} \times ECA \text{ multiplier}_{Acute}^{99}$$

$$LTA_{ACUTE} = 90 \times 0.321 = 28.8$$

FOR ZINC (chronic)

$$LTA_{CHRONIC} = ECA_{CHRONIC} \times ECA \text{ multiplier}_{Chronic}^{99}$$

$$LTA_{CHRONIC} = 81 \times 0.527 = 42.7$$

Select the lowest (most limiting) of the *LTA*s for the pollutant derived in *Step 2*.

LTA

Pollutant	<i>LTA</i> _{Acute} (µg/L)	<i>LTA</i> _{Chronic} (µg/L)
Copper	1.541	
Cyanide	0.321	
Nickel		4.324
Selenium	NA	2.637
Thallium	NA	NA
Zinc	28.885	

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

**STEP 3 CALCULATIONS OF AVERAGE MONTHLY EFFLUENT LIMITATION (AMEL)
AND MAXIMUM DAILY EFFLUENT LIMITATION (MDEL)**

Calculate water quality-based effluent limitations (an *average monthly effluent limitation, AMEL, and a *maximum daily effluent limitation, MDEL) by multiplying the most limiting *LTA* (as selected in *Step 2*) with a factor (multiplier) that adjusts for the averaging periods and exceedance frequencies of the criteria/objectives and the effluent limitations, and the effluent monitoring frequency as follows:

$$AMEL_{\text{aquatic life}} = LTA * AMEL_{\text{multiplier95}} \text{ (from Table 5-2)}$$

$$MDEL_{\text{aquatic life}} = LTA * MDEL_{\text{multiplier99}} \text{ (from Table 5-2)}$$

The AMEL and MDEL multipliers shall be calculated as described below, or shall be found in Table 5-2 using the previously calculated *CV* and the monthly sampling frequency (*n*) of the pollutant in the effluent. If the sampling frequency is four times a month or less, *n* shall be set equal to 4. For this method only, maximum daily effluent limitations shall be used for publicly-owned treatment works (POTWs) in place of average weekly limitations.

Cv	LTA multipliers		
	95th percentile	99 percentile	
0.1	1.170	1.25	<u>Maximum Daily Limit MDL</u>
0.2	1.360	1.55	
0.3	1.550	1.9	
0.4	1.750	2.27	
0.5	1.950	2.68	
0.6	2.130	3.11	
0.7	2.310	3.56	
0.8	2.480	4.01	
0.9	2.640	4.46	
1	2.780	4.9	
1.1	2.910	5.34	<u>Table 5-2</u>
1.2	3.030	5.76	
1.3	3.130	6.17	
1.4	3.230	6.56	
1.5	3.310	6.93	
1.6	3.380	7.29	
1.7	3.450	7.63	
1.8	3.510	7.95	
1.9	3.560	8.26	
2	3.600	8.55	

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

Cv	LTA Multipliers									
	95th percentile					99 percentile				
	n=1	n=2	n=4	n=10	n=30	n=1	n=2	n=4	n=10	n=30
0.1	1.170	1.12	1.08	1.06	1.03	1.25	1.18	1.121	1.08	1.04
0.2	1.360	1.25	1.17	1.12	1.06	1.55	1.37	1.25	1.16	1.09
0.3	1.550	1.38	1.26	1.18	1.09	1.9	1.59	1.4	1.24	1.13
0.4	1.750	1.52	1.36	1.25	1.12	2.27	1.83	1.55	1.33	1.18
0.5	1.950	1.66	1.45	1.31	1.16	2.68	2.09	1.72	1.42	1.23
0.6	2.130	1.8	1.55	1.38	1.19	3.11	2.37	1.9	1.52	1.28
0.7	2.310	1.94	1.65	1.45	1.22	3.56	2.66	2.08	1.62	1.33
0.8	2.480	2.07	1.75	1.52	1.26	4.01	2.96	2.27	1.73	1.39
0.9	2.640	2.2	1.85	1.59	1.29	4.46	3.28	2.48	1.84	1.44
1	2.780	2.33	1.95	1.66	1.33	4.9	3.59	2.68	1.96	1.5
1.1	2.910	2.45	2.04	1.73	1.36	5.34	3.91	2.9	2.07	1.56
1.2	3.030	2.56	2.13	1.8	1.39	5.76	4.23	3.11	2.19	1.62
1.3	3.130	2.67	2.23	1.87	1.43	6.17	4.55	3.34	2.32	1.68
1.4	3.230	2.77	2.31	1.94	1.47	6.56	4.86	3.56	2.45	1.74
1.5	3.310	2.86	2.4	2	1.5	6.93	5.17	3.78	2.58	1.8
1.6	3.380	2.95	2.48	2.07	1.54	7.29	5.47	4.01	2.71	1.87
1.7	3.450	3.03	2.56	2.14	1.57	7.63	5.77	4.23	2.84	1.93
1.8	3.510	3.1	2.64	2.2	1.61	7.95	6.06	4.46	2.98	2
1.9	3.560	3.17	2.71	2.27	1.64	8.26	6.34	4.68	3.12	2.07
2	3.600	3.23	2.78	2.33	1.68	8.55	6.61	4.9	3.26	2.14

Average Monthly Limit (AML) Table 5-2

For the applicable human health criterion/objective, set the AMEL equal to the *ECA* (from *Step 1*).

AMEL_{human health} = *ECA*

To calculate the MDEL for a human health criterion/objective, multiply the *ECA* by the ratio of the MDEL multiplier to the AMEL multiplier.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

VALUES USED IN AMEL MDEL CALCULATION

Pollutant	LTA Min	CV Q	N samp	AMEL Mult	AMEL Aqua	MDEL Mult	MDEL Aqua	AMEL HH	MDEL/AMEL	MDEL HH
Copper	1.541	0.6	4	1.553	2.392	3.116	4.8	NA	2.0069	NA
Cyanide	0.321	0.6	4	1.553	0.498	3.116	1	220000	2.0069	441526
Nickel	4.324	0.6	4	1.553	6.713	3.116	13.473	4600	2.0069	9231
Selenium	2.637	0.6	4	1.553	4.093	3.116	8.215	NA	2.0069	NA
Thallium	NA	0.6	4	1.553	NA	3.116	NA	6.3	2.0069	12.644
Zinc	28.885	0.6	4	1.553	44.844	3.116	90	NA	2.0069	NA

FOR COPPER

AMEL_{aquatic life} = LTA * AMEL_{multiplier95}
 AMEL_{aquatic life} = 1.541 x 1.553 = 2.392 µg/L

MDEL_{aquatic life} = LTA * MDEL_{multiplier99}
 MDEL_{aquatic life} = 1.541 x 3.116 = 4.8 µg/L

FOR CYANIDE

AMEL_{aquatic life} = LTA * AMEL_{multiplier95}
 AMEL_{aquatic life} = 0.321 x 1.553 = 0.498 µg/L

MDEL_{aquatic life} = LTA * MDEL_{multiplier99}
 MDEL_{aquatic life} = 0.321 x 3.116 = 1.0 µg/L

FOR NICKEL

AMEL_{aquatic life} = LTA * AMEL_{multiplier95}
 AMEL_{aquatic life} = 4.324 x 1.553 = 6.713 µg/L

MDEL_{aquatic life} = LTA * MDEL_{multiplier99}
 MDEL_{aquatic life} = 2.637 x 3.116 = 13.473 µg/L

FOR SELENIUM

AMEL_{aquatic life} = LTA * AMEL_{multiplier95}
 AMEL_{aquatic life} = 2.637 x 1.553 = 4.0933 µg/L

MDEL_{aquatic life} = LTA * MDEL_{multiplier99}
 MDEL_{aquatic life} = 2.637 x 3.116 = 8.2150 µg/L

FOR THALLIUM

AMEL_{human health} = ECA
 AMEL_{human health} = 6.3 µg/L

MDEL_{human health} = ECA x MDEL_{multiplier}/AMEL_{multiplier}
 MDEL_{human health} = 6.3 x (2.0069) = 12.644 µg/L

FOR ZINC

AMEL_{aquatic life} = LTA * AMEL_{multiplier95}

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IID El Centro Generating PERMIT NO.CA0104248
CALCULATIONS FOR AMEL AND MDEL**

$AMEL_{\text{aquatic life}} = 28.885 \times 1.553 = 44.844 \text{ } \mu\text{g/L}$

$MDEL_{\text{aquatic life}} = LTA * MDEL_{\text{multiplier99}}$

$MDEL_{\text{aquatic life}} = 28.885 \times 3.116 = 90.0 \text{ } \mu\text{g/L}$

Pollutant	AMEL (µg/L)	MDEL (µg/L)
Copper	2.392	4.80
Cyanide	0.498	1.000
Nickel	6.713	13.473
Selenium	4.093	8.215
Thallium	6.3	12.6437
Zinc	44.844	90.0