Attachment B

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290
WATER QUALITY BASED EFFLUENT LIMIT CALCULATIONS

WQBELs Calculation Summary

Facility Name: IV College
NPDES Number: CA0104299
Session ID: 21
Session Name: SW Run No. 1
User Name: Carmj
Session Date: 2/26/03

_____

	AMEL(ug/l)	MDEL(ug/l)
Copper (Cu)	2.3917	4.8000

_____

Period used for effluent data: From 12/5/01 to 12/5/01
Period used for ambient data: From 12/5/01 to 12/5/01

STREAM CONDITIONS:
      Ambient TSS (mg/l):   130
      Ambient Hardness (mg/l CaCO3):   400
      Ambient pH (SU):   7.7

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

WQBELs Calculation Summary

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290
WATER QUALITY BASED EFFLUENT LIMIT CALCULATIONS

Facility Name: IV College
NPDES Number: CA0104299
Session ID:
Session Name: FW Run No. 1
User Name: larkk
Session Date: 3/15/04
_____

	AMEL(ug/l)	MDEL(ug/l)
Selenium (Se)	4.0933	8.2150

_____

Period used for effluent data: From 12/3/03 to 12/3/03
Period used for ambient data: From 12/3/03 to 12/3/03

STREAM CONDITIONS:
        Ambient TSS (mg/l):   130
        Ambient Hardness (mg/l CaCO3):   400
        Ambient pH (SU):   7.7

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 IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS

Compliance Summary Report

   Facility Name: IV College
   NPDES Number: CA0104299
   Session ID: 21
   Session Name: SW Run No. 1
   User Name: Carmj
   Session Date: 2/26/03

  _____

Copper (Cu)   MDEL (ug/l) = 4.8   ML (ug/l) = 0.5

Value	Detect	Date	Compliance
8.5	True	12/5/01	Non Compliant

   REASONABLE POTENTIAL ASSESSMENT

     Facility Name   : IV College
     NPDES Number   : CA0104299

     CAPWTT Session ID   : 21
     CAPWTT Session Name : SW Run No. 1
     CAPWTT Session Date   : 2/26/03

_____
_____

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

EFFLUENT DATA SUMMARY:
This pollutant was detected 1 times out of 1 observations. The MEC is set to the maximum detected value.

MEC = 8.5 ug/L (detect)

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

_____
_____

   CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS WITH SSOs

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS

Facility Name   : IV College
NPDES Number   : CA0104299

CAPWTT Session ID   : 21
CAPWTT Session Name   : SW Run No. 1
CAPWTT Session Date   : 2/26/03

 Ambient TSS (mg/l)   :   130
 Ambient Hardness (mg/l CaCO3)   :   400
 Ambient pH (SU)   :   7.7
_____

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

_____
_____

Compliance Summary Report

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS

Facility Name: IV College
NPDES Number: CA0104299
Session ID:
Session Name: FW Run No. 1
User Name: larkk
Session Date: 3/15/04

_____

Selenium (Se)   MDEL (ug/l) = 8.2   ML (ug/l) = 5.0
   Value   Detect   Date   Compliance
   14.0   True   12/3/03   Non Compliant

   REASONABLE POTENTIAL ASSESSMENT

      Facility Name   : IV College
      NPDES Number   : CA0104299
      CAPWTT Session ID   :
      CAPWTT Session Name   : FW Run No. 1
      CAPWTT Session Date   : 3/15/04
_____
_____

Pollutant :   Selenium (Se)
ISWP Criteria :   5.000 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 = 14.0 ug/L (detect)

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

_____
_____
   CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS WITH SSOs

      Facility Name   : IV College
      NPDES Number   : CA0104299
      CAPWTT Session ID   : 21

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

CRITERIA CALCULATION SUMMARY FOR METALS & POLLUTANTS

CAPWTT Session Name   : FW Run No. 1
CAPWTT Session Date   : 3/15/04

 Ambient TSS (mg/l)   :   130
 Ambient Hardness (mg/l CaCO3)   :   400
 Ambient pH (SU)   :   7.7

_____

Copper (Cu)
EPA CF Factors

CF Acute   : 1
CF Chronic : 1

Acute Criteria (ug/l)   : NA
Chronic Criteria (ug/l)   : 5.0
Human Health Criteria (ug/l)   : NA

_____
_____

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

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:

$ECA = C + D (C - B)$ when $C > B$, and
$ECA = C$ when $C <= B$,

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 CALCULATON

Pollutant	Ambient B	C Acute	D Acute	ECA Acute	C Chronic	D Chronic	ECA Chronic	C HH	D HH	ECA HH
Copper	9.1	4.8	0.00	4.8	3.1	0.00	3.1	NA	0.00	NA
Selenium	12.0	NA	0.000	NA	5.000	0.000	5.000	NA	0.00	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 SELENIUM (acute)
$ECA_{ACUTE} = C_{ACUTE} + D_{ACUTE} \times (C_{ACUTE} - \text{Ambient B})$
$ECA_{ACUTE} = NA$

FOR SELENIUM (chronic)
$ECA_{CHRONIC} = C_{CHRONIC} + D_{CHRONIC} \times (C_{CHRONIC} - \text{Ambient B})$
$ECA_{CHRONIC} = 5.00$

Pollutant	ECA $_{Acute}$ (µg/L)	ECA $_{Chronic}$ (µg/L)
Copper	4.8	3.1
Selenium	NA	5.00

STEP 2 CALCULATIONS OF LONG TERM AVERAGES (LTA)

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

CALCULATIONS FOR AMEL AND MDEL

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	
0.2	0.736	0.643	
0.3	0.644	0.527	
0.4	0.571	0.44	**Acute**
0.5	0.514	0.373	
0.6	0.468	0.321	
0.7	0.432	0.281	
0.8	0.403	0.249	
0.9	0.379	0.224	**Table 5-1**
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	

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

CALCULATIONS FOR AMEL AND MDEL

Cv	WLa Multipliers		
	95th percentile	99 percentile	
0.1	0.922	0.891	
0.2	0.853	0.797	
0.3	0.791	0.715	
0.4	0.736	0.643	**Chronic**
0.5	0.687	0.581	
0.6	0.644	0.527	
0.7	0.606	0.481	
0.8	0.571	0.440	
0.9	0.541	0.404	**Table 5-1**
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
$\text{LTA}_{Acute} = \text{ECA}_{Acute} * \text{ECA multiplier}_{Acute\,99}$ (from Table 1)

$\text{LTA}_{Chronic} = \text{ECA}_{Chronic} * \text{ECA multiplier}_{Chronic\,99}$ (from Table 1)

VALUES USED IN LTA CALCULATON

Pollutant	CV Q	Sigma	Mult Acute	Mult Chronic	LTA Acute	LTA Chronic	LTA Min
Copper	0.600	0.555	0.321	0.527	1.541	1.635	1.541
Selenium	0.600	0.555	0.321	0.527	NA	2.637	2.637

VALUES USED FOR ECA $_{Acute}$ and ECA $_{Chronic}$

Pollutant	ECA $_{Acute}$ (µg/L)	ECA $_{Chronic}$ (µg/L)
Copper	4.8	3.1
Selenium	NA	5.00

FOR COPPER (acute)
$\text{LTA}_{ACUTE} = \text{ECA}_{ACUTE} \times \text{ECA multiplier}_{Acute\,99}$
$\text{LTA}_{ACUTE} = 4.8 \times 0.321 = 1.541$

FOR COPPER (chronic)
$\text{LTA}_{CHRONIC} = \text{ECA}_{CHRONIC} \times \text{ECA multiplier}_{Chronic\,99}$
$\text{LTA}_{CHRONIC} = 3.1 \times 0.527 = 1.635$

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
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CALCULATIONS FOR AMEL AND MDEL

FOR SELENIUM (acute)
$\text{LTA}_{ACUTE} = \text{ECA}_{ACUTE} \times \text{ECA multiplier}_{Acute\ 99}$
$\text{LTA}_{ACUTE} = \text{NA}$

FOR SELENIUM (chronic)
$\text{LTA}_{CHRONIC} = \text{ECA}_{CHRONIC} \times \text{ECA multiplier}_{Chronic\ 99}$
$\text{LTA}_{CHRONIC} = 5 \times 0.527 = 2.637$

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

Pollutant	LTA $_{Acute}$ (µg/L)	LTA $_{Chronic}$ (µg/L)
Copper	1.541	1.635
Selenium		2.637

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:

$\text{AMEL}_{aquatic\ life} = LTA * \text{AMEL}_{multiplier95}$ (from Table 5-2)
$\text{MDEL}_{aquatic\ life} = LTA * \text{MDEL}_{multiplier99}$ (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.

NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   **PERMIT NO.CA0104290**

CALCULATIONS FOR AMEL AND MDEL

Cv	LTA multipliers		
	95th percentile	99 percentile	
0.1	1.170	1.25	
0.2	1.360	1.55	
0.3	1.550	1.9	
0.4	1.750	2.27	**Maximum Daily Limit MDL**
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	**Table 5-2**
1	2.780	4.9	
1.1	2.910	5.34	
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	

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NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
FOR IMPERIAL VALLEY COLLEGE   PERMIT NO.CA0104290

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*).

AMELhuman 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.

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NPDES CALCULATIONS BASED ON THE CALIFORNIA TOXIC RULE
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CALCULATIONS FOR AMEL AND MDEL

VALUES USED IN AMEL MDEL CALCULATON

Pollutant	LTA Min	CV Q	N samp	AMEL Mult	AMEL Aqua	MDEL Mult	MDEL Aqua	AMEL HH	MDEL/AMEL	MDEL HH
Copper	1.541	0.600	4.000	1.553	2.392	3.116	4.8	NA	2.0069	NA
Selenium	2.637	0.600	4.000	1.553	4.093	3.116	8.215	NA	2.0069	NA

FOR COPPER

$\text{AMEL}_{\text{aquatic life}}$ = LTA Min x AMEL Mult
$\text{AMEL}_{\text{aquatic life}}$ = 1.541 x 1.553 = 2.392 µg/L

$\text{MDEL}_{\text{aquatic life}}$ = LTA Min x MDEL Mult
$\text{MDEL}_{\text{aquatic life}}$ = 1.541 x 3.116 = 4.80 µg/L

FOR SELENIUM

$\text{AMEL}_{\text{aquatic life}}$ = LTA * $\text{AMEL}_{\text{multiplier95}}$
$\text{AMEL}_{\text{aquatic life}}$ = 2.637 x 1.553 = 4.09 µg/L

$\text{MDEL}_{\text{aquatic life}}$ = LTA * $\text{MDEL}_{\text{multiplier99}}$
$\text{MDEL}_{\text{aquatic life}}$ = 2.637 x 3.116 = 8.22µg/L

Pollutant	AMEL (µg/L)	MDEL (µg/L)
Copper	2.4	4.8
Selenium	4.1	8.2