CALCULATIONS OF NEW MEXICO WATER QUALITY-BASED EFFLUENT LIMITATIONS

NMAC 20.6.4. **2005** (Specify 2002 or 2005 Standards in CELL B2)

Calculations Specifications: Excel Revised as December 4, 2007

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STEP 1: REFERENCE IMPLEMENTATION PROCEDURES
INPUT FACILITY AND RECEIVING STREAM DATA
LIST SOURCE OF DATA INPUT

IMPLEMENTATION PROCEDURES

The State of New Mexico Standards for Interstate and Intrastate Surface Waters
are implemented in this spread sheet by using procedures established in the "Implementation Guidance for
State of New Mexico Standards for Interstate and Intrastatestreams", May 5, 1995.

FACILTY		DATA INPUT	
Permittee		City of Aztec	
NPDES Permit No.		NM0020168	
Outfall No.(s)		001	
Plant Effluent Flow (MGD)		1	For industrial and federal facility, use the highest monthly average flow
Plant Effluent Flow (cfs)		1.55	for the past 24 months. For POTWs, use the design flow.

RECEIVING STREAM		DATA INPUT	
Receiving Stream Name		Name of Receiving Water	
Basin Name		Basin Name	
Waterbody Segment Code No.		20.6.4.403	
Is a publicly owned lake or reservoir (enter "1" if it's a lake, "0" if not)		0	
Are acute aquatic life criteria considered (1= yes, 0= no) (MUST enter "1" for 2005 Standards)		1	
Are chronic aquatic life criteria considered (1= yes, 0=no)		1	
Are domestic water supply criteria considered (1= yes, 0=no)		0	
Are irrigation water supply criteria considered (1= yes, 0=no)		1	
Livestock watering and wildlife habitat criteria applied to all streams			
USGS Flow Station		USGS	
WQ Monitoring Station No.		SJR	
Receiving Stream TSS (mg/l)		17.08	For intermittent stream, enter effluent TSS
Receiving Stream Hardness (mg/l as CaCOs)	RANGE: 0 - 400	237	For intermittent stream, enter effluent Hardness (If no data, 20 mg/l is used)
Receiving Stream Critical Low Flow (4Q3) (cfs)		184	Enter "0" for intermittent stream and lake.
Receiving Stream Harmonic Mean Flow (cfs)		426	Enter harmonic mean or modified harmonic mean flow data
Avg. Water Temperature (C)			
pH (Avg)			
Fraction of stream allowed for mixing (F)		1	Enter 1, if stream morphology data is not available or for intermittent streams.

Fraction of Critical Low Flow 184

STEP 2: INPUT AMBIENT AND EFFLUENT DATA
CALCULATE IN-STREAM WASTE CONCENTRATIONS

DATA INPUT

Input pollutant geometric mean concentration as micro-gram per liter (ug/l or ppb)
unless other unit is specified for the parameter.

Effluent value reported as "< detection level" (DL) but the DL is greater than MQL, input "1/2 DL" for calculation.
Effluent value reported as "< detection level" (DL) and the DL is smaller than MQL, no data is inputted.
If a less than MQL vakue is reported, input either the reported value or "0" for calculation.

The following formular is used to calculate the Instream Waste Concentration (Cd)
(Please refer to State Implementation Guidance for details)
Cd = [(F*Qa*Ca) + (Qe*2.13*Ce)] / (F*Qa + Qe)
Where:
Cd = Instream Waste Concentration
F = Fraction of stream allowed for mixing (see NM Implementation Guidance)
Ce = Reported concentration in effluent
Ca = Ambient stream concentration upstream of discharge
Qe = Plant effluent flow
Qa = Critical low flow of stream at discharge point expressed as the 4Q3 or harmonic mean flow for human health criteria

The following formular convert metals reported in total form to dissolved form if criteria are in dissolvedl form
(Please refer to State Implementation Guidance for details)
Kp = Kpo * (TSS**a)
C/Ct = 1/ (1 + Kp*TSS* 10^-6)
Total Metal Criteria (Ct) = Cr / (C/Ct)

Kp = Linear partition coefficient; Kpo and a can be found in table below
TSS = Total suspended solids concentration found in receiving stream (or in effluent for intermittent stream)
C/Ct = Fraction of metal dissolved; and Cr = Dissolved criteria value

		Stream Linear Partition Coefficient					Lake Linear Partition Coefficient				
Total Metals	Total Value	Kpo	alpha (a)	Kp	C/Ct	Dissolved Value in Stream	Kpo	alpha (a)	Kp	C/Ct	Dissolved Value in Lake
Arsenic	0	480000	-0.73	60467.92907	0.491934191	0	480000	-0.73	60467.92907	0.491934191	0
Chromium	0	3360000	-0.93	239952.6561	0.196140298	0	2170000	-0.27	1008528.116	0.054867697	0
Copper	3.96	1040000	-0.74	127348.0555	0.314950235	1.24720293	2850000	-0.9	221618.3822	0.208975848	0.82754436
Lead	1.69	2800000	-0.8	289179.657	0.16837317	0.28455066	2040000	-0.53	453327.0125	0.114379501	0.19330136
Nickel	2.06	490000	-0.57	97202.62563	0.37590864	0.7743718	2210000	-0.76	255682.7892	0.186321677	0.38382265
Zinc	66.6	1250000	-0.7	171462.2453	0.254545213	16.9527112	3340000	-0.68	484902.8288	0.107733773	7.1750693

The following formular is used to calculate hardness dependent criteria			Dissolved	
(Please refer to State Water Quality Standards for details)			WQC (ug/l)	
Cadmium (D)	Acute	e(1.0166[ln(hardness)]-3.924)*CF1	4.656239414	CF1 = 1.136672 - 0.041838*ln(hardness)
	Chronic	e(0.7409[ln(hardness)]-4.719)*CF2	0.447692207	CF2 = 1.101672 - 0.041838*ln(hardness)
Chromium (D)	Acute	0.316 e(0.819[ln(hardness)]+3.7256	1155.083818	
	Chronic	0.860 e(0.819[ln(hardness)]+0.6848)	150.2526733	
Copper (D)	Acute	0.960 e(0.9422[ln(hardness)]-1.700)	30.30110773	
	Chronic	0.960 e(0.8545[ln(hardness)]-1.702)	18.72080357	
Lead (D)	Acute	e(1.273[ln(hardness)]-1.46)*CF3	162.9226061	CF3 = 1.46203 - 0.145712*ln(hardness)
	Chronic	e(1.273[ln(hardness)]-4.705)*CF4	6.348860061	CF4 = 1.46203 - 0.145712*ln(hardness)
Nickel (D)	Acute	0.998 e(0.846[ln(hardness)]+2.255)	971.631752	
	Chronic	0.997 e(0.846[ln(hardness)]+0.0584)	107.9182904	
Zinc (D)	Acute	0.978 e(0.8473[ln(hardness)]+0.884)	243.4329995	
	Chronic	0.986 e(0.8473[ln(hardness)]+0.884)	245.4242715	
Silver (D)	Acute	0.85 e(1.72[ln(hardness)]-6.59)	14.19009964	

						Instream Waste Concentration				Domestic	Irrigation	Livestock/	Acute Fish	Chronic Fish	Human Health
POLLUTANTS				Ambient Conc.	Effluent Conc.	Acute Fshery	Domestic Sup	Chronic Std	Human Health	Criteria	Criteria	Wildlife Criteria	Criteria	Criteria	Criteria
	CAS No.	STORET	MQL	Ca (ug/l)	Ce (ug/l)	2.13*Ce	Cd,dom (ug/l)	Cd (ug/l)	Cd,hh (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Radioactivity, Nutrients, and Chlorine															
Aluminum, dissolved	7429-90-5	01106	2.5			0	0	0	0	1E+100	5000	1E+100	750	87	1E+100
Barium, dissolved	7440-39-3	01005	100			0	0	0	0	2000	1E+100	1E+100	1E+100	1E+100	1E+100
Boron, dissolved	7440-42-8	01022	100			0	0	0	0	1E+100	750	5000	1E+100	1E+100	1E+100
Cobalt, dissolved	7440-48-4	01037	50			0	0	0	0	1E+100	50	1000	1E+100	1E+100	1E+100
Molybdenum, dissolved	7439-98-7	01062	10			0	0	0	0	1E+100	1000	1E+100	1E+100	1E+100	1E+100
Uranium, dissolved	7440-61-1	22706	0.1			0	0	0	0	5000	1E+100	1E+100	1E+100	1E+100	1E+100
Vanadium, dissolved	7440-62-2	01087	50			0	0	0	0	1E+100	100	100	1E+100	1E+100	1E+100
Ra-226 and Ra-228 (pCi/l)		11503				0	0	0	0	5	1E+100	30	1E+100	1E+100	1E+100
Strontium (pCi/l)		13501				0	0	0	0	8	1E+100	1E+100	1E+100	1E+100	1E+100
Tritium (pCi/l)		04124				0	0	0	0	20000	1E+100	20000	1E+100	1E+100	1E+100
Gross Alpha (pCi/l)		80029				0	0	0	0	15	1E+100	15	1E+100	1E+100	1E+100
Asbestos (fibers/l)						0	0	0	0	7000000	1E+100	1E+100	1E+100	1E+100	1E+100
Total Residual Chlorine	7782-50-5	50060	33		0	0	0	0	0	1E+100	1E+100	11	19	11	1E+100
Nitrate as N (mg/l)		00620				0	0	0	0	10	1E+100	1E+100	1E+100	1E+100	1E+100
Nitrite + Nitrate (mg/l)		00630			6.81	14.5053	0.12117065	0.12117065	0.052586165	1E+100	1E+100	132	1E+100	1E+100	1E+100

POLLUTANTS	CAS No.	STORET	MQL	Ambient Conc. Ca (ug/l)	Effluent Conc. Ce (ug/l)	Instream Waste Concentration Acute Fshery 2.13*Ce	Domestic Sup Cd,dom (ug/l)	Chronic Std Cd (ug/l)	Human Health Cd,hh (ug/l)	Domestic Criteria ug/l	Irrigation Criteria ug/l	Livestock/ Wildlife Criteria ug/l	Acute Fish Criteria ug/l	Chronic Fish Criteria ug/l	Human Health Criteria ug/l
METALS AND CYANIDE															
Antimony, dissolved (P)	7440-36-0	01097	60		0	0	0	0	0	5.6	1E+100	1E+100	1E+100	1E+100	640
Arsenic, dissolved (P)	7440-38-2	01000	0.5		0	0	0	0	0	2.3	100	200	340	150	9
Beryllium, dissolved	7440-41-7	01012	0.5		0	0	0	0	0	4	1E+100	1E+100	1E+100	1E+100	1E+100
Cadmium, dissolved	7440-43-9	01025	1		0.186	0.39618	0.00330951	0.00330951	0.001436274	5	10	50	4.65623941	0.44769221	1E+100
Chromium, dissolved	18540-29-9	01034	10		0	0	0	0	0	100	100	1000	1155.08382	150.252673	1E+100
Copper, dissolved	7440-50-8	01042	0.5		1.247202931	2.65654224	0.02219154	0.02219154	0.009630781	1300	200	500	30.3011077	18.7208036	1E+100
Lead, dissolved	7439-92-1	01049	0.5		0.284550657	0.6060929	0.00506302	0.00506302	0.002197273	50	5000	100	162.922606	6.34886006	1E+100
Mercury, dissolved	7439-97-6	71890	0.005		0	0	0	0	0	1E+100	1E+100	1E+100	1.4	0.77	1E+100
Mercury, total	7439-97-6	71900	0.005		0	0	0	0	0	2	1E+100	0.77	1E+100	1E+100	1E+100
Nickel, dissolved (P)	7440-02-0	01065	0.5		0.774371798	1.64941193	0.01377843	0.01377843	0.005979625	100	1E+100	1E+100	971.631752	107.91829	4600
Selenium, dissolved (P)	7782-49-2	01145	5		0	0	0	0	0	50	130	50	1E+100	1E+100	4200
Selenium, dis (SO4 >500 mg/l)		01145	5		0	0	0	0	0	50	250	50	1E+100	1E+100	4200
Selenium, total recoverable	7782-49-2	01147	5		0	0	0	0	0	1E+100	1E+100	5	20	5	1E+100
Silver, dissolved	7440-22-4	01077	0.5		0	0	0	0	0	1E+100	1E+100	1E+100	14.1900996	1E+100	1E+100
Thalllium, dissolved (P)	7440-28-0	01059	0.5		0	0	0	0	0	1.7	1E+100	1E+100	1E+100	1E+100	6.3
Zinc, Dis.	7440-66-6	01080	20		16.95271121	36.1092749	0.3016404	0.3016404	0.130907206	7400	2000	25000	243.433	245.424271	26000
Cyanide, dissolved	57-12-5	00720	10		2.61	5.5593	0.04643985	0.04643985	0.020154169	200	1E+100	1E+100	1E+100	1E+100	1E+100
Cyanide, weak acid dissociat	57-12-5	00718	10		0	0	0	0	0	700	1E+100	5.2	22	5.2	220000
DIOXIN						0	0	0	0						
2,3,7,8-TCDD	1764-01-6	34675	0.00001		0	0	0	0	0	0.00000005	1E+100	1E+100	1E+100	1E+100	0.000000051
VOLATILE COMPOUNDS															
Acrolein	107-02-8	34210	50		0	0	0	0	0	190	1E+100	1E+100	1E+100	1E+100	290
Acrylonitrile	107-13-0	34215	20		0	0	0	0	0	0.51	1E+100	1E+100	1E+100	1E+100	2.5
Benzene	71-43-2	34030	10		0	0	0	0	0	22	1E+100	1E+100	1E+100	1E+100	510
Bromoform	75-25-2	32104	10		0	0	0	0	0	43	1E+100	1E+100	1E+100	1E+100	1400
Carbon Tetrachloride	56-23-5	32102	2		0	0	0	0	0	2.3	1E+100	1E+100	1E+100	1E+100	16
Chlorobenzene	108-90-7	34301	10		0	0	0	0	0	680	1E+100	1E+100	1E+100	1E+100	21000
Clorodibromomethane	124-48-1	32105	10		0	0	0	0	0	4	1E+100	1E+100	1E+100	1E+100	130
Chloroform	67-66-3	32106	50		0.35	0.7455	0.00622757	0.00622757	0.002702666	57	1E+100	1E+100	1E+100	1E+100	4700
Dichlorobromomethane	75-27-4	32101	10		0	0	0	0	0	5.5	1E+100	1E+100	1E+100	1E+100	170
1,2-Dichloroethane	107-06-2	34531	10		0	0	0	0	0	3.8	1E+100	1E+100	1E+100	1E+100	370
1,1-Dichloroethylene	75-35-4	34501	10		0	0	0	0	0	0.57	1E+100	1E+100	1E+100	1E+100	32
1,2-Dichloropropane	78-87-5	34541	10		0	0	0	0	0	5	1E+100	1E+100	1E+100	1E+100	150
1,3-Dichloropropylene	542-75-6	34561	10		0	0	0	0	0	10	1E+100	1E+100	1E+100	1E+100	1700
Ethylbenzene	100-41-4	34371	10		0	0	0	0	0	3100	1E+100	1E+100	1E+100	1E+100	29000
Methyl Bromide	74-83-9	34413	50		0	0	0	0	0	47	1E+100	1E+100	1E+100	1E+100	1500
Methylene Chloride	75-09-2	34423	20		0	0	0	0	0	46	1E+100	1E+100	1E+100	1E+100	5900
1,1,2,2-Tetrachloroethane	79-34-5	34516	10		0	0	0	0	0	1.7	1E+100	1E+100	1E+100	1E+100	40
Tetrachloroethylene	127-18-4	34475	10		0	0	0	0	0	6.9	1E+100	1E+100	1E+100	1E+100	33
Tolune	108-88-3	34010	10		0	0	0	0	0	6800	1E+100	1E+100	1E+100	1E+100	200000
1,2--trans-Dichloroethylene	156-60-5	34546	10		0	0	0	0	0	700	1E+100	1E+100	1E+100	1E+100	140000
1,1,2-Trichloroethane	79-00-5	34511	10		0	0	0	0	0	5.9	1E+100	1E+100	1E+100	1E+100	160

Trichloroethylene	79-01-6	39180	10		0	0	0	0	0	25	1E+100	1E+100	1E+100	1E+100	300
						Instream Waste Concentration				Domestic	Irrigation	Livestock/	Acute Fish	Chronic Fish	Human Health
POLLUTANTS				Ambient Conc.	Effluent Conc.	Acute Fshery	Domestic Sup	Chronic Std	Human Health	Criteria	Criteria	Wildlife Criteria	Criteria	Criteria	Criteria
	CAS No.	STORET	MQL	Ca (ug/l)	Ce (ug/l)	2.13*Ce	Cd,dom (ug/l)	Cd (ug/l)	Cd,hh (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Vinyl Chloride	75-01-4	39175	10		0	0	0	0	0	20	1E+100	1E+100	1E+100	1E+100	5300
ACID COMPOUNDS															
2-Chlorophenol	95-57-8	34586	10		0	0	0	0	0	81	1E+100	1E+100	1E+100	1E+100	150
2,4-Dichlorophenol	120-83-2	34601	10		0	0	0	0	0	77	1E+100	1E+100	1E+100	1E+100	290
2,4-Dimethylphenol	105-67-9	34606	10		0	0	0	0	0	380	1E+100	1E+100	1E+100	1E+100	850
4,6-Dinitro-o-Cresol	534-52-1	34657	50		0	0	0	0	0	13	1E+100	1E+100	1E+100	1E+100	280
2,4-Dinitrophenol	51-28-5	34616	50		0	0	0	0	0	69	1E+100	1E+100	1E+100	1E+100	5300
Pentachlorophenol	87-86-5	39032	50		0	0	0	0	0	2.7	1E+100	1E+100	19	15	30
Phenol	108-95-2	34694	10		0	0	0	0	0	21000	1E+100	1E+100	1E+100	1E+100	1700000
2,4,6-Trichlorophenol	88-06-2	34621	10		0	0	0	0	0	14	1E+100	1E+100	1E+100	1E+100	24
BASE/NEUTRAL							0	0	0						
Acenaphthene	83-32-9	34205	10		0	0	0	0	0	670	1E+100	1E+100	1E+100	1E+100	990
Anthracene	120-12-7	34220	10		0	0	0	0	0	8300	1E+100	1E+100	1E+100	1E+100	40000
Benzidine	92-87-5	39120	50		0	0	0	0	0	0.00086	1E+100	1E+100	1E+100	1E+100	0.002
Benzo(a)anthracene	56-55-3	34526	5		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
Benzo(a)pyrene	50-32-8	34247	5		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
3,4-Benzofluoranthene	205-99-2	34230	10		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
Benzo(k)fluoranthene	207-08-9	34242	5		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
Bis(2-chloroethyl)Ether	111-44-4	34273	10		0	0	0	0	0	0.3	1E+100	1E+100	1E+100	1E+100	5.3
Bis(2-chloroisopropyl)Ether	108-60-1	34283	10		0	0	0	0	0	1400	1E+100	1E+100	1E+100	1E+100	65000
Bis(2-ethylhexyl)Phthalate	117-81-7	39100	10		4.49	9.5637	0.07989078	0.07989078	0.034671348	12	1E+100	1E+100	1E+100	1E+100	22
Butyl Benzyl Phthalate	85-68-7	34292	10		0	0	0	0	0	1500	1E+100	1E+100	1E+100	1E+100	1900
2-Chloronapthalene	91-58-7	34581	10		0	0	0	0	0	1000	1E+100	1E+100	1E+100	1E+100	1600
Chrysene	218-01-9	34320	5		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
Dibenzo(a,h)anthracene	53-70-3	34556	5		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
1,2-Dichlorobenzene	95-50-1	34536	10		0	0	0	0	0	2700	1E+100	1E+100	1E+100	1E+100	17000
1,3-Dichlorobenzene	541-73-1	34566	10		0	0	0	0	0	320	1E+100	1E+100	1E+100	1E+100	960
1,4-Dichlorobenzene	106-46-7	34571	10		0	0	0	0	0	400	1E+100	1E+100	1E+100	1E+100	2600
3,3'-Dichlorobenzidine	91-94-1	34631	5		0	0	0	0	0	0.21	1E+100	1E+100	1E+100	1E+100	0.28
Diethyl Phthalate	84-66-2	34336	10		0	0	0	0	0	17000	1E+100	1E+100	1E+100	1E+100	44000
Dimethyl Phthalate	131-11-3	34341	10		0	0	0	0	0	270000	1E+100	1E+100	1E+100	1E+100	1100000
Di-n-Butyl Phthalate	84-74-2	39110	10		0	0	0	0	0	2000	1E+100	1E+100	1E+100	1E+100	4500
2,4-Dinitrotoluene	121-14-2	34611	10		0	0	0	0	0	1.1	1E+100	1E+100	1E+100	1E+100	34
1,2-Diphenylhydrazine	122-66-7	34346	20		0	0	0	0	0	0.36	1E+100	1E+100	1E+100	1E+100	2
Fluoranthene	206-44-0	34376	10		0	0	0	0	0	130	1E+100	1E+100	1E+100	1E+100	140
Fluorene	86-73-7	34381	10		0	0	0	0	0	1100	1E+100	1E+100	1E+100	1E+100	5300
Hexachlorobenzene	118-74-1	39700	5		0	0	0	0	0	0.0028	1E+100	1E+100	1E+100	1E+100	0.0029
Hexachlorobutadiene	87-68-3	34391	10		0	0	0	0	0	4.4	1E+100	1E+100	1E+100	1E+100	180
Hexachlorocyclopentadiene	77-47-4	34386	10		0	0	0	0	0	240	1E+100	1E+100	1E+100	1E+100	17000
Hexachloroethane	67-72-1	34396	20		0	0	0	0	0	14	1E+100	1E+100	1E+100	1E+100	33
Indeno(1,2,3-cd)Pyrene	193-39-5	34403	5		0	0	0	0	0	0.038	1E+100	1E+100	1E+100	1E+100	0.18
Isophorone	78-59-1	34408	10		0	0	0	0	0	350	1E+100	1E+100	1E+100	1E+100	9600

Nitrobenzene	98-95-3	34447	10		0	0	0	0	0	17	1E+100	1E+100	1E+100	1E+100	690
n-Nitrosodimethylamine	62-75-9	34438	50		0	0	0	0	0	0.0069	1E+100	1E+100	1E+100	1E+100	30
						Instream Waste Concentration				Domestic	Irrigation	Livestock/	Acute Fish	Chronic Fish	Human Health
POLLUTANTS				Ambient Conc.	Effluent Conc.	Acute Fshery	Domestic Sup	Chronic Std	Human Health	Criteria	Criteria	Wildlife Criteria	Criteria	Criteria	Criteria
	CAS No.	STORET	MQL	Ca (ug/l)	Ce (ug/l)	2.13*Ce	Cd,dom (ug/l)	Cd (ug/l)	Cd,hh (ug/l)	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
n-Nitrosodi-n-Propylamine	621-64-7	34428	20		0	0	0	0	0	0.05	1E+100	1E+100	1E+100	1E+100	5.1
n-Nitrosodiphenylamine	86-30-6	34433	20		0	0	0	0	0	33	1E+100	1E+100	1E+100	1E+100	60
Pyrene	129-00-0	34469	10		0	0	0	0	0	830	1E+100	1E+100	1E+100	1E+100	4000
1,2,4-Trichlorobenzene	120-82-1	34551	10		0	0	0	0	0	260	1E+100	1E+100	1E+100	1E+100	940
PESTICIDES AND PCBS							0	0	0						
Aldrin	309-00-2	39330	0.01		0	0	0	0	0	0.00049	1E+100	1E+100	3	1E+100	0.0005
Alpha-BHC	319-84-6	39337	0.05		0	0	0	0	0	0.026	1E+100	1E+100	1E+100	1E+100	0.049
Beta-BHC	319-85-7	39338	0.05		0	0	0	0	0	0.091	1E+100	1E+100	1E+100	1E+100	0.17
Gamma-BHC	58-89-9	39340	0.05		0	0	0	0	0	0.19	1E+100	1E+100	0.95	1E+100	0.63
Chlordane	57-74-9	39350	0.2		0	0	0	0	0	0.008	1E+100	1E+100	2.4	0.0043	0.0081
4,4'-DDT and derivatives	50-29-3	39300	0.02		0	0	0	0	0	0.0022	1E+100	0.001	1.1	0.001	0.0022
Dieldrin	60-57-1	39380	0.02		0	0	0	0	0	0.00052	1E+100	1E+100	0.24	0.056	0.00054
Alpha-Endosulfan	959-98-8	34361	0.01		0	0	0	0	0	62	1E+100	1E+100	0.22	0.056	89
Beta-Endosulfan	33213-65-9	34356	0.02		0	0	0	0	0	62	1E+100	1E+100	0.22	0.056	89
Endosulfan sulfate	1031-7-8	34351	0.1		0	0	0	0	0	62	1E+100	1E+100	1E+100	1E+100	89
Endrin	72-20-8	39390	0.02		0	0	0	0	0	0.76	1E+100	1E+100	0.086	0.036	0.81
Endrin Aldehyde	7421-93-4	34366	0.1		0	0	0	0	0	0.29	1E+100	1E+100	1E+100	1E+100	0.3
Heptachlor	76-44-8	39410	0.01		0	0	0	0	0	0.00079	1E+100	1E+100	0.52	0.0038	0.00079
Heptachlor Epoixde	1024-57-3	39420	0.01		0	0	0	0	0	0.00039	1E+100	1E+100	0.52	0.0038	0.00039
PCBs	1336-36-3	39516	0.2		0	0	0	0	0	0.00064	1E+100	0.014	1E+100	0.014	0.00064
Toxaphene	8001-35-2	39400	0.3		0	0	0	0	0	0.0028	1E+100	1E+100	0.73	0.0002	0.0028

Note: SCORET CODE for reference only. Codes for total form are used except for parameters which have criteria in both total and dissolved forms.

STEP 3: SCAN POTENTIAL INSTREAM WASTE CONCENTRATIONS AGAINST WATER QUALITY CRITERIA
AND ESTABLISH EFFLUENT LIMITATIONS FOR ALL APPLICABLE PARAMETERS

No limits are established if the receiving stream is not designated for the particular uses.

No limits are established if the potential instream waste concentrations are less than the chronic water quality criteria.

The most applicable stringent criteria are used to establish effluent limitations for a given parameter.

Water quality criteria apply at the end-of-pipe for acute aquatic life criteria and discharges to public lakes.

If background concentration exceeds the water quality criteria, water quality criteria apply. And "Need TMDL" shown to the next column of Avg. Mass

Monthly avg concentration = daily max. / 1.5.

APPLICABLE WATER QUALITY-BASED LIMITS

The following formular is used to calculate the allowable daily maximum effluent cincentration (Please refer to State Implementation Guidance for details)

Daily Max. Conc. = Cs + (Cs - Ca)(F*Qa/Qe) Monthly Avg. Conc. = Daily Max. Conc. / 1.5

Where: Cs = Applicable water quality standard

Ca = Ambient stream concentration

F = Fraction of stream allowed for mixing (1.0 is assigned to domestic water supply and human health uses)

Qe = Plant effluent flow

Qa = Criteria Low flow (4Q3) or Harmonic Mean flow for Human Health Criteria

POLLUTANTS	CAS No.	STORET	Domestic Limits	Irrigation Limits	Livestock or Wildlife Limits	Acute Fish Limits	Chronic Fish Limits	Human Health Limits	Daily Max. Cor ug/l	Monthly Ave. ug/l	Daily Maxi. lb/day	Monthly Avg. ib/day	Need TMDL	Note
Radioactivity, Nutrients, and Chlorine														
Aluminum, dissolved	7429-90-5	01106	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Barium, dissolved	7440-39-3	01005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Boron, dissolved	7440-42-8	01022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cobalt, dissolved	7440-48-4	01037	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Molybdenum, dissolved	7439-98-7	01062	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Uranium, dissolved	7440-61-1	22706	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Vanadium, dissolved	7440-62-2	01087	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ra-226 and Ra-228 (pCi/l)		11503	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Strontium (pCi/l)		13501	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Tritium (pCi/l)		04124	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Gross Alpha (pCi/l)		80029	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Asbestos (fibers/l)			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Total Residual Chlorine	7782-50-5	50060	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Nitrate as N (mg/l)		00620	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Nitrite + Nitrate (mg/l)		00630	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
METALS AND CYANIDE														
Antimony, dissolved (P)	7440-36-0	01097	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Arsenic, dissolved (P)	7440-38-2	01000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total Value
Beryllium, dissolved	7440-41-7	01012	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cadmium, dissolved	7440-43-9	01025	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Chromium, dissolved	18540-29-9	01034	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total Value
Copper, dissolved	7440-50-8	01042	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total Value
Lead, dissolved	7439-92-1	01049	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total Value
Mercury, dissolved	7439-97-6	71890	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Mercury, total	7439-97-6	71900	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Nickel, dissolved (P)	7440-02-0	01065	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total Value
Selenium, dissolved (P)	7782-49-2	01145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Selenium, dis (SO4 >500 mg/l)		01145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Selenium, total recoverable	7782-49-2	01147	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Silver, dissolved	7440-22-4	01077	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Thalllium, dissolved (P)	7440-28-0	01059	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Zinc, Dis.	7440-66-6	01080	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total Value
Cyanide, dissolved	57-12-5	00720	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cyanide, weak acid dissociat	57-12-5	00718	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
DIOXIN														
2,3,7,8-TCDD	1764-01-6	34675	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
VOLATILE COMPOUNDS														
Acrolein	107-02-8	34210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Acrylonitrile	107-13-0	34215	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Benzene	71-43-2	34030	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Bromoform	75-25-2	32104	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	56-23-5	32102	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	108-90-7	34301	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Clorodibromomethane	124-48-1	32105	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
POLLUTANTS			Domestic	Irrigation	Livestock or	Acute Fish	Chronic Fish	Human Health	Daily Max. Cor	Monthly Ave.	Daily Maxi.	Monthly Avg.	Need TMDL Note
	CAS No.	STORET	Limits	Limits	Wildlife Limits	Limits	Limits	Limits	ug/l	ug/l	lb/day	lb/day	
Chloroform	67-66-3	32106	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dichlorobromomethane	75-27-4	32101	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethane	107-06-2	34531	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1-Dichloroethylene	75-35-4	34501	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloropropane	78-87-5	34541	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichloropropylene	542-75-6	34561	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	100-41-4	34371	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Bromide	74-83-9	34413	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	75-09-2	34423	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	79-34-5	34516	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethylene	127-18-4	34475	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tolune	108-88-3	34010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2--trans-Dichloroethylene	156-60-5	34546	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,2-Trichloroethane	79-00-5	34511	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichloroethylene	79-01-6	39180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	75-01-4	39175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ACID COMPOUNDS													
2-Chlorophenol	95-57-8	34586	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	120-83-2	34601	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	105-67-9	34606	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,6-Dinitro-o-Cresol	534-52-1	34657	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrophenol	51-28-5	34616	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	87-86-5	39032	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Phenol	108-95-2	34694	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trichlorophenol	88-06-2	34621	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BASE/NEUTRAL												0	
Acenaphthene	83-32-9	34205	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	120-12-7	34220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzidine	92-87-5	39120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)anthracene	56-55-3	34526	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)pyrene	50-32-8	34247	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3,4-Benzofluoranthene	205-99-2	34230	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	207-08-9	34242	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2-chloroethyl)Ether	111-44-4	34273	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2-chloroisopropyl)Ether	108-60-1	34283	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2-ethylhexyl)Phthalate	117-81-7	39100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Butyl Benzyl Phthalate	85-68-7	34292	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

2-Chloronapthalene	91-58-7	34581	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	218-01-9	34320	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dibenzo(a,h)anthracene	53-70-3	34556	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	95-50-1	34536	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	541-73-1	34566	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
POLLUTANTS			Domestic	Irrigation	Livestock or	Acute Fish	Chronic Fish	Human Health	Daily Max. Cor	Monthly Ave.	Daily Maxi.	Monthly Avg.	Need TMDL Note
	CAS No.	STORET	Limits	Limits	Wildlife Limits	Limits	Limits	Limits	ug/l	ug/l	lb/day	lb/day	
1,4-Dichlorobenzene	106-46-7	34571	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	91-94-1	34631	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Diethyl Phthalate	84-66-2	34336	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dimethyl Phthalate	131-11-3	34341	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Di-n-Butyl Phthalate	84-74-2	39110	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	121-14-2	34611	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Diphenylhydrazine	122-66-7	34346	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	206-44-0	34376	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluorene	86-73-7	34381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobenzene	118-74-1	39700	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobutadiene	87-68-3	34391	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorocyclopentadiene	77-47-4	34386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	67-72-1	34396	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)Pyrene	193-39-5	34403	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Isophorone	78-59-1	34408	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	98-95-3	34447	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n-Nitrosodimethylamine	62-75-9	34438	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n-Nitrosodi-n-Propylamine	621-64-7	34428	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
n-Nitrosodiphenylamine	86-30-6	34433	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pyrene	129-00-0	34469	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	120-82-1	34551	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PESTICIDES AND PCBS													
Aldrin	309-00-2	39330	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alpha-BHC	319-84-6	39337	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beta-BHC	319-85-7	39338	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gamma-BHC	58-89-9	39340	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlordane	57-74-9	39350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDT and derivatives	50-29-3	39300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	60-57-1	39380	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alpha-Endosulfan	959-98-8	34361	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beta-Endosulfan	33213-65-9	34356	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan sulfate	1031-7-8	34351	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endrin	72-20-8	39390	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endrin Aldehyde	7421-93-4	34366	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	76-44-8	39410	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor Epoixde	1024-57-3	39420	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs	1336-36-3	39516	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	8001-35-2	39400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A