	А	В	С	D	E	F	G	H	I	J	K	L	М	N	0	Р
1							ONS OF ARKAN				FLUENT LIMIT	ATIONS				
	The spreadshee							For an Arka								
									ritical Flow	from June thi	ough Novembe	er				
	STEP 1:	INPUT IWO	J LETTER C	ODE FOR E	COREGION	(Use Code at	Right)	GC								
5																
-												f F		Discours		
8	FACILITY									0	Codes & TSS for Ecoregions and Large Rivers ta Mts. Eco (OM) = 2.0 mg/l Arkansas (Ft. Smith to Dardanelle D					
	Permittee							EDCC			s. Eco (OM) = inds Eco (OH) =	0	Arkansas (Fi Arkansas (Da			
	NPDES Permit							AR0000752		Boston Mts.	· · · ·	1.3 mg/l	· · ·		,	8.3 mg/l
-	Outfall No.(s)	NO.						003			Eco (BNI) = llev Eco (AV) =	U U	Arkansas (Te		,	9.0 mg/l
	Plant Effluent Fl							003		Gulf Coastal	, ,	5.5 mg/l	Arkansas (L&			9.0 mg/l 2.5 mg/l
	Plant Effluent Fl							0.017		Delta Ecored	()	8.0 mg/l	White (Below		/	2.5 mg/l 3.3 mg/l
14		ow (cis)						0.020			1011 (DL) -	0.0 mg/i	White (From		,	3.5 mg/l
	RECEIVING ST												St. Francis R			18.0 mg/l
16	RECEIVING 31										Ouachita (Above Caddo River)					2.0 mg/l
	Is this a Large River from the list at right? (enter "1" if yes, "0" if no; make entry as a numb							0			Ouachita (Above C Ouachita (Below C					
	Name of Receiving Stream:				n ycs, o		a y as a number)	unnamed tri	hutary			Red River				5.5 mg/l 33.0 mg/l
19		ing otream.						dimaned in	butary							55.0 mg/i
	Is this a lake or	reservoir? (e	enter '1' if ves	s'0' = no [.]	make entrv	as a number)		0			Total Hardnes	ss for				
	Is this a lake or reservoir? (enter '1' if yes, ' 0 ' = no; make entry as a number) Seasonal Limits May Apply						1			Arkansas Rive		1	Red River =	= 211 ma/l		
	(Reserved)		NOT INPUT	ΔΑΤΑ ΙΝΤΟ	CELL H22	H23 & H24	EAVE BLANK	, <mark>?</mark>		Ouachita River = 28 m						ng/l
	(Reserved)				<u> </u>			•			White River =					.9,.
24	· /	(Reserved)		(Reserved)				(Reserved)								
25		(/		(Reserved)				(Reserved)			Gulf Coastal =	31 mg/l		Ouachita M	ount = 31 mg	/1
26				(Reserved)				(Reserved)			Ozark Highlan	ds = 148 m	g/l	Ark River Valley = 25 mg		
27				(Reserved)				(Reserved)			Boston Mount			Delta = 81 ı		
<u> 20</u>																
	Ecoregion TSS			See List to R	ight)			5.50			Large Rivers					
	Ecoregion Hard			<u> </u>				31.00			Mississippi Riv					
	Enter 7Q10 (cfs			(Reserved)		limits may app		0.00			White (Below of			/		
	Seasonal LTA/H		an Flow		based on	site verification	1.	0.00	2.92	<==== I his is	Ouachita (Belo	ow confluence	ce with Little M	iss. River)		
	Using Diffusers	(Yes/No)						no			E · · · · ·		6 1111 11			0
		PH (Avg) Percent (%) of Critical Flow for Chronic Criteria						7.00			For industrial					flow
	Percent (%) of C Percent (%) of C							0.67			for the past 24	montns. F	or POIVVS, us	e the design	now.	
			IOI ACULE CI	lena					These are	1	#\/^!!!!!!!	No violation	or Not Applies	abla		
	Water Effect Ra		inligr (Dof: 55	ao 102 TOD	for MO Do	ad Taxiaa Car	atrol	1.00 1.55			#VALUE! => 99999999.00 =>					
30	Ave Monthly Lin Max Daily Limit		ipiler (Ref: pa	ige 103 ISD	ior wQ-Bas		100)	1.55	must be		2222329299999	> INO EPA/A		•		
					. 2000 000	Section 5.07)	-	unlocked							
40	Max Daily Limit		er for Human	neaith (Ref	2009 CPP	Section 5.27.	Z)	1.64	to change.							

	A	В	С	D	E	F	G	Н	I	J	K	L	М	N	0	Р
	-	INPUT AMB														
42		CALCULATE	E IN-STREA	M WASTE C	CONCENTRA	TIONS										
43																
44	DATA INPUT						metric mean cor									
45				For 20 or m	ore data poi	nts in set ente	r highest concen	tration as mi	cro-gram p	er liter (ug/l o	r ppb).					
46							-									
47				Effluent val	ue reported a	as "< detection	level" (DL) but	the DL is gre	ater than M	QL, the 1/2 E	DL is used.					
48							level" (DL) and									
49			If a firm value is reported, even less than MQL, the reported value is used.													
50																
51			The following formulae is used to calculate the Instream Waste Concentration (IWC)													
52					er to CPP for					,						
53				`		e*2.13 [*] Ce)] / (I	F*Qa + Qe)									
54				Where:												
54 55					eam Waste	Concentration										
56		F = Fraction of stream allowed for mixing														
57		Ce = Reported concentration in effluent														
58	Cb = Ambient stream concentration upstream of discharge															
59		Qe = Plant effluent flow														
60		Qb = Critical low flow of stream at discharge point expressed as the 7Q10 or harmonic mean flow for human health criteria														
61		Upstream Flow (Qb)= (% of 7Q10) X 7Q10 for Chronic and Acute														
62																
	The following fo	rmulae conve	ert metals re	ported in tot	al form to dis	solved form if	criteria are in di	ssolved form								
64	5															
	Kp = Kpo * (TSS	S**a)				Kp = Linear p	artition coefficie	nt: Kpo and a	a can be fo	und in table b	elow					
	C/Ct = 1/(1 + K)		5)				suspended solids					nt for interm	ittent stream)			
	Total Metal Crite						on of metal disso						,			
68		, ,	. ,													
69		*Stream Lin	ear Partitio	n Coefficier	nt (Insert "D	issolved" Co	nc in Column B	to convert t	o "Total")		Lake Linear Pa	artition Coe	fficient			
		Dissolved			•				, , , , , , , , , , , , , , , , , , ,							
		Value in														
70	Total Metals	Stream		Кро	alpha (a)	Kp	C/Ct	Total Value			Кро	alpha (a)	Kp	C/Ct	Total Value	
71					. 、/							/	•			
	Cadmium			4000000	-1.13	582706.889	0.237818469	0.00			3520000.00	-0.92	733514.98	0.1986361	0	
	Chromium(3)			3360000	-0.93	688338.365	0.208948818	0.00			2170000.00	-0.27	1369499.28		0	
	Copper			1040000	-0.74			0.00			2850000.00	-0.9	614495.12	0.2283249	0	
76	Lead			2800000	-0.8	715925.58	0.202527926	0.00			2040000.00	-0.53	826490.64	0.1803199	0	
77	Mercury			2900000	-1.14	415321.613	0.30448177	0.00			1970000.00	-1.17	268066.09	0.4041443	0	
78	Nickel			490000	-0.57	185433.992	0.495077211	0.00			2210000.00	-0.76	604946.03	0.2310962	0	
	Zinc			1250000	-0.7			0.00			3340000.00	-0.68	1047851.74		0	
	Silver			2400000	-1.03	414607.994	0.30484608	0.00			2400000.00	-1.03	414607.99	0.3048461	0	
81		*Note: Use this	section to conv	ert lab concenti	rations shown a	s "dissolved" to "to	otal"									
82											Dissolved	Total				
				1		1		1	1	1				1		

	A	В	С	D	E	F	G	Н		J	K	L	M	N	0	Р
83	The following f	ormulas ar	e used to ca		er quality c	riteria based	on Regulation No					WQC(ug/I)				
84	Cadmium			Acute			WER X CF1 X e		/1	,	1.04				338*In(hardnes	/1
85				Chronic			WER X CF2 X e	(0.7852[ln(h	ardness)]-	3.490)	0.43		CF2 = 1.1016	572 - [0.0418	338*In(hardnes	ss)]
86																
87	Chromium Tri			Acute			WER X 0.316 X				210.28					
88				Chronic			WER X 0.86 X e	e(0.819[ln(ha	ardness)]+	1.561	68.21					
89																
90	Chromium Hex			Acute			WER X 0.982 X				15.71					
91				Chronic			WER X 11 X 0.9	62			10.58					
92																
93	Copper			Acute			WER X 0.96 X e	· • ·	/-	,	5.64					
94				Chronic			WER X 0.96 X e	e(0.8545[ln(h	ardness)]-	1.465)	4.17					
95																
96	Lead			Acute			WER X e(1.273				17.68		CF3 = 1.4620	3 - [0.14571	2*In(hardness	5)]
97				Chronic			WER X e(1.273	In(hardness)]-4.705)*0	CF3	0.69					
98																
99	Mercury			Acute			WER X 0.85 X 2	2.4			2.04					
100				Chronic			WER X 0.012				0.01					
101																
	Nickel			Acute			WER X 0.998 X				525.50					
103				Chronic			WER X 0.997 X	e(0.8460[ln	(hardness)]+1.1645)	58.36					
104																
105	Zinc			Acute			WER X 0.978 X				42.43					
106				Chronic			WER X 0.986 X	e(0.8473[In	(hardness)]+0.7614)	38.74					
107																
108	Silver			Acute			WER X 0.85 X e	e(1.72[ln(har	dness)]-6.	52)	0.46					
109																
110	Cyanide			Acute			WER X 22.36				22.36					
111				Chronic			WER X 5.2				5.20					
118																
119	Selenium			Acute			WER X 20				20.00					
120 121				Chronic			WER X 5				5.00					
122	The following for	mulas are					culating the Dilution									
123			DF = ((2.8	* D * 3.1416	^0.5) / X)	where DF is	% of effluent at d	istance X, D	is the diar	neter of the	e outfall pipe					
124				and X is ac	quatic life crit	teria25 feet fe	or ZID; 100 feet fo	or mixing zor	ne; human	health crite	eria 200 feet for mix	ing zone.				
125			DF =	#VALUE!	Acute	#VALUE!	Chronic	#VALUE!	Bioacc.							
126																

	Α	В	С	D	E	F	G	Н	I	J	K	L	М	N	0	Р
127		rmulas are	used to calcul	ate the inst	ream waste o	concentration (IWC) for each p	ollutant:								
128																
129			- `	WC = [(Frac X Critical Flow X Cb) + (2.13 X Ce X Qd)] / [Frac X Critical Flow + Qd] where the critical flow is the 7Q10 except for lakes with the Jet Stream Model.												
130			Use EPA Statistical Factor of 2.13 for less than 20 Ce data points with the Geometric Mean of the Ce's; use 1 for more than 20 data points with the maximum Ce.													
131			IWC = (DF >	WC = (DF X Ce) + Cb for lakes with Jet Stream Model.												
132	POLLUTANTS		Number of Data points	MQL	EPA Statistical	Background Conc.	Effluent Conc.	Domestic Supply	Acute Aquatic	Chronic Aquatic	Bioacc.	[Reserved]	Arkansas Acute Aquatic	Arkansas Chronic Aquatic	Arkansas Bioacc.	EPA Bioacc.
133				ug/l	Factor	Cb ug/l	Ce ug/l	IWC ug/l	IWC ug/l	IWC ug/l	IWC ug/l		ug/l	ug/l	ug/l	ug/l
137	METALS AND	CYANIDE														
	8. Copper Total		12	0.5	2.13	0	12.67	26.99	26.99	26.99	26.99	9999999	14.79	10.93	9999999	13,000
139														*Primary D	rinking Wat	er MCL
140															•	
141																
142																

	A	В	С	D	E	F	G	Н	I	J	K	L	М	Ν	0	Р
143	STEP 3:	APPLICABLE WATER QUALITY-BASED LIMITS														
144																
145																
146								ADEQ H	UMAN	HEALTH	CRITERIA					
			Permit	Permit	Permit	Permit		Permit	Permit	Permit	Permit					
			Daily	Monthly	Daily	Monthly		Daily	Monthly	Daily	Monthly					
147	POLLUTANTS		Maximum	Average	Maximum	Average		Maximum	Average	Maximum	Average					
148			ug/l	ug/l	lb/day	lb/day		ug/l	ug/l	lb/day	lb/day					
149	Copper Total		24.4794	12.2003	0.0034707	0.00172976										