

ADEQ

ARKANSAS
Department of Environmental Quality

November 15, 2008

CERTIFIED MAIL RETURN RECEIPT REQUESTED (7002 0860 0007 6834 5000)

Honorable Larry Mitchell
Mayor, City of Bryant
210 Southwest 3rd Street
Bryant, AR 72022

RE: Discharge Permit Number AR0034002 – AFIN 63-00065

Dear Mayor Mitchell:

Enclosed is the public notice, Fact Sheet, and a copy of the draft permit which the Arkansas Department of Environmental Quality (ADEQ) has prepared under the authority of the National Pollutant Discharge Elimination System and the Arkansas Water and Air Pollution Control Act. A copy of the final permit will be mailed to you when the Department has made a final permitting decision.


In accordance with Arkansas Pollution Control and Ecology Commission (APCEC) Regulation No. 8, Part 2.1.6, the enclosed public notice will be published by ADEQ in a newspaper of general circulation for one (1) day only. An invoice for the cost of publishing the public notice and proof of publication will be sent to you by the advertising newspaper. The permittee must send proof of publication and payment to the following address as soon as possible but no later than 30 days from the above date. Until this Department receives proof of publication of the public notice, no further action will be taken on the issuance of your discharge permit.

Arkansas Department of Environmental Quality
Individual Permits Section - Water Division
5301 Northshore Drive
North Little Rock, AR 72118-5317
501-682-0622 Fax: 501-682-0910

Comments must be received at ADEQ prior to the close of the public comment period as shown in the enclosed public notice. The public comment period will begin on the date of publication and will end no sooner than 30 days from that date. Once a final permit is issued by the Director and becomes effective, the permittee must comply with all terms and conditions of the permit, or be subject to enforcement actions for any instances of noncompliance during the duration of the permit, usually five (5) years. Consequently, it is imperative that you, as the applicant, thoroughly review the enclosed documentation for accuracy, applicability, and your ability to comply with all conditions therein.

Should you have any questions, please contact Chris Roberts at (501) 683-5406.

Sincerely,



Steven L. Drown
Chief, Water Division

SD:cr

Enclosure

PUBLIC NOTICE OF DRAFT DISCHARGE PERMIT
PERMIT NUMBER AR0034002, AFIN 63-00065

This is to give notice that the Permits Branch of the Water Division of the Arkansas Department of Environmental Quality (ADEQ), 5301 Northshore Drive, North Little Rock, Arkansas 72118-5317 at telephone number (501) 682-0622, proposes a draft renewal of the permit for which an application was received on 4/7/2008 for the following applicant under the National Pollutant Discharge Elimination System (NPDES) and the Arkansas Water and Air Pollution Control Act.

Applicant: City of Bryant, 1019 Southwest 2nd Street, Bryant, AR 72022. Location: from Hwy. 183, turn west onto Southwest 3rd Street then turn north on South Spruce Street, then west on Southwest 2nd Street.; Latitude: 34° 35' 33"; Longitude: 92° 30' 15" in Bryant, Saline County, Arkansas.

The discharge from this existing facility is made into an unnamed tributary of Hurricane Creek, thence to Hurricane Creek, thence to the Saline River, thence to the Ouachita River in Segment 2C of the Ouachita River Basin. The receiving stream in Reach # 006 in USGS Hydrologic Unit Code (H.U.C.) 8040203 is a Water of the State classified for secondary contact recreation; raw water source for domestic, industrial, and agricultural water supplies; propagation of desirable species of fish and other aquatic life; and other compatible uses. The outfall is located at the following coordinates: Latitude: 34° 35' 12.85" Longitude: 92° 30' 18.45". The receiving stream is not listed on the 303(d) list.

Under North American Industry Classification System (NAICS) code of 221320, the applicant operates a municipal sewage treatment plant. Sludge is stored on-site in a lagoon.

ADEQ's contact person for submitting written comments, requesting information regarding the draft permit, or obtaining a copy of the permit and the Fact Sheet is Chris Roberts at the above address and telephone number. For those with Internet access, a copy of the draft permit may be found on the ADEQ's website at: http://www.adeq.state.ar.us/water/branch_npdes/pn_permits/pnpermits.asp.

The last day of the comment period is 30 days after the publication date. The permit will become effective approximately two weeks after the close of the comment period unless comments are received and/or a public hearing is requested prior to the close of the comment period requiring a delay of the effective date. Comments and public hearing procedures may be found at 40 CFR Parts 124.10 through 124.12 and APCEC Regulation No. 8. All persons, including the permittee, who wish to comment on ADEQ's draft permitting decision must submit written comments to ADEQ, along with their name and mailing address. After the public comment period, and public hearing, if one is held, ADEQ will issue a final permitting decision. A Public Hearing will be held when ADEQ finds a significant degree of public interest. ADEQ will notify the applicant and each person who has submitted written comments or requested notice of the final permitting decision. Any interested person who has submitted comments may appeal a final decision by ADEQ in accordance with the APCEC Regulation No. 8 (Administrative Procedures).

DRAFT

Fact Sheet

For renewal of draft discharge Permit Number AR0034002 to discharge to Waters of the State

1. PERMITTING AUTHORITY.

The issuing office is:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

2. APPLICANT.

The applicant's mailing address is:

City of Bryant
210 Southwest 3rd Street
Bryant, AR 72022

The facility address is:

City of Bryant's Wastewater Treatment Facility
1019 Southwest 2nd Street
Bryant, AR 72022

The facility is located at:

Latitude: 34° 35' 33"; Longitude: 92° 30' 15"

3. PREPARED BY.

The permit was prepared by:

Chris Roberts, P.E.
Staff Engineer, Individual Permits Section
Permits Branch, Water Division
(501) 683-5406
E-mail: roberts@adeq.state.ar.us

4. DATE PREPARED.

The permit was prepared on 10/21/2008.

5. PREVIOUS PERMIT ACTIVITY.

Effective Date: 07/01/2003
Modification Date: 04/01/2007
Expiration Date: 06/30/2008

The permit renewal application was received on 04/07/2008, and it was determined to be administratively complete on 04/10/2008. In 2007, the permit was modified to increase the design flow rate from 2.0 to 3.0 MGD. It is proposed that the current discharge permit be reissued for a 5-year term in accordance with regulations promulgated at 40 CFR Part 122.46(a).

DMR Review:

The Discharge Monitoring Reports (DMR's) from March 2002 through March 2008 were reviewed during the permit renewal process. There were two violations for NH₃-N (Monthly Average Concentration and 7-Day Average Concentration in August 2007), one violation for Total Residual Chlorine (TRC) (August 2006), and two violations of Fecal Coliform Bacteria 7-Day Averages (September 2003 and April 2004) were noted during the review. Based on this review, it has been decided that no changes to the permit will be made at this time.

Legal Order Review:

Consent Administrative Order (CAO) LIS No. 06-062 was signed on April 18, 2006 to address overflows and maintenance issues in the collection system. This CAO is still in effect and will not be affected by this permit. Therefore, no permit changes are necessary at this time.

6. SIGNIFICANT CHANGES FROM THE PREVIOUSLY ISSUED PERMIT.

The permittee is responsible for carefully reading the permit in detail and becoming familiar with all of the changes therein:

- a. The facility coordinates and outfall location were updated based on ADEQ field data and Google Earth mapping software.
- b. One significant digit was added to the CBOD₅ and TSS concentration limits.
- c. The NH₃-N mass limit in April through October decreased due to a calculation error in the previous permit.
- d. Lead limits have been removed from the permit.
- e. The Fecal Coliform Bacteria limits have been relaxed because the receiving stream is too small to be classified for primary contact recreation.
- f. Total Phosphorus monitoring has been added.
- g. Total Nitrate plus Nitrite monitoring has been added.
- h. Cadmium, copper, and zinc limits have been added with a compliance schedule.
- i. The WET limits have been replaced with WET testing requirements.
- j. Parts II, III, and IV have been updated.

- k. The minimum operator classification in Part II has been reduced from Class IV to Class III because the sand filters/sludge drying beds will no longer be used.
- l. The sludge language in Part II has been updated.
- m. The pretreatment language in Part II has been updated.
- n. The WET language in Part II has been updated.
- o. The metals language in Part II has been updated.
- p. The TRC language in Part II has been updated.
- q. A stormwater storage requirement has been added to Part II.

7. RECEIVING STREAM SEGMENT AND DISCHARGE LOCATION.

The outfall is located at the following coordinates based on a Google Earth estimate by the permit writer using the application, the permit file, and the WGS84 datum set:

Latitude: 34° 35' 12.85" Longitude: 92° 30' 18.45"

The receiving waters are named:

an unnamed tributary of Hurricane Creek, thence to Hurricane Creek, thence to the Saline River, thence to the Ouachita River in Segment 2C of the Ouachita River Basin. The receiving stream in Reach # 006 of USGS Hydrologic Unit Code (H.U.C.) 8040203 is a Water of the State classified for secondary contact recreation, raw water source for domestic, industrial, and agricultural water supplies, propagation of desirable species of fish and other aquatic life, and other compatible uses.

The previous permit changed the contact recreation classification of the receiving stream from secondary to primary. This was a technical error because the receiving stream (i.e., an unnamed tributary of Hurricane Creek) is too small to be suitable for primary contact recreation.

8. 303(d) LIST AND ENDANGERED SPECIES CONSIDERATIONS.

a. 303(d) List:

The receiving stream is not on the approved 2004 303(d) List. The closest reach on the list is over twenty miles downstream.³ All the surface water in H.U.C. 8040203 flows into Reach # 006 of H.U.C. 8040204 (over fifty miles downstream). This reach is on the approved 2004 303(d) List for total dissolved solids (TDS) and sulfates (SO₄).

EPA has written a Total Maximum Daily Load (TMDL) report for mercury for the Ouachita River watershed.⁴ The permittee is at the headwaters of the watershed, the

³ Reach # 004 of H.U.C. 8040203 is listed for DO impairment. The closest downstream reach in the draft 2008 303(d) List (i.e., Reach # 006 of H.U.C. 8040204) is over fifty (50) miles away.

⁴ "TMDLs for Segments Listed for Mercury in Fish Tissue for the Ouachita River Basin, and Bayou Bartholomew, Arkansas and Louisiana to Columbia," by FTN Associates, Ltd. for the US Environmental Protection Agency Region 6's Watershed Management Section, May 30, 2002.

TMDL report states that less than one percent (1%) of the mercury in the watershed is from the point sources therein (i.e., 99% is from other sources), and mercury has not been detected in recent sampling events. Therefore, no mercury limit has been added to the draft permit.

EPA has also drafted a TMDL for chlorides, TDS, and SO₄ for Reach # 006 of H.U.C. 8040204. Because H.U.C. 8040203 flows into 8040204 (over fifty miles downstream), the permittee's facility has been included in the draft TMDL. If the TMDL assigns a Waste Load Allocation (WLA) to the permittee for chlorides, TDS, and/or SO₄, the permit may be reopened and modified.

b. Endangered Species:

No comments on the application were received from the U.S. Fish and Wildlife Service (USF&WS). The draft permit and Fact Sheet will be sent to the USF&WS for their review.

9. OUTFALL AND TREATMENT PROCESS DESCRIPTION.

The following is a description of the facility described in the application:

- a. Design Flow: 3.0 MGD⁵
- b. Type of Treatment: a bar screen, equalization basins, grit chamber, extended aeration/activated sludge system (i.e., aerobic digestion with secondary clarification), chlorine disinfection, and dechlorination
- c. Discharge Description: treated municipal wastewater

10. ACTIVITY.

Under the Standard Industrial Classification (SIC) code of 4952 and the North American Industry Classification System (NAICS) code of 221320, the applicant's activities are the operation of a municipal sewage treatment plant.

11. INDUSTRIAL WASTEWATER CONTRIBUTIONS.

Currently, it does not appear the permittee receives process wastewater from any significant industrial users as defined by 40 CFR Part 403.3(t). Standard boilerplate pretreatment prohibitions (40 CFR Part 403.5[b]) and reporting requirements are deemed appropriate at this time.

⁵ The highest reported flow rate from March 2002 through March 2008 was 1,784 MGD (Daily Maximum) in June 2006. This is believed to be a typographical error on the DMR because the next highest flow rate was 4.043 MGD (Daily Maximum) in January 2005. The highest reported Monthly Average flow rate was 2.366 MGD in March 2008.

12. SEWAGE SLUDGE PRACTICES.

According to the application, sludge is dried on sludge drying beds before being sent to the Saline County Landfill (Solid Waste Permit No. 261-S1-R2). The sludge drying beds are the sand filters that used to be part of the wastewater treatment system.

However, during a site visit on 06/06/2008, the permit writer was told that the drying beds are not being used and will no longer be used. Sludge is currently being deposited into an on-site sludge storage lagoon.

The permittee is considering installing a levee in the sludge lagoon to segregate the sludge storage area from an area that can be used as a third equalization basin. The permittee is also considering installing automatic sludge handling equipment to dry the sludge and prepare it for off-site disposal. If either (or both) of these projects are pursued, a construction permit application must be submitted and approved before construction may commence.

13. PERMIT CONDITIONS.

The Arkansas Department of Environmental Quality has made a determination to issue a draft permit for the discharge described in the application. Permit requirements are based on federal regulations (40 CFR Parts 122, 124, and Subchapter N), the National Pretreatment Regulation in 40 CFR Part 403 and regulations promulgated pursuant to the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Code Ann. 8-4-101 et. seq.).

a. **Interim Effluent Limitations**

Outfall 001 – treated municipal wastewater

i. **Conventional and/or Toxic Pollutants**

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow (in MGD)	N/A	Report	Report Daily Max.	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD5)	250.2	10.0	15.0	three/week	6-hr composite
Total Suspended Solids (TSS)	375.3	15.0	22.5	three/week	6-hr composite
Ammonia Nitrogen (NH3-N)					
(April – October)	60.0	2.4	6.1	three/week	6-hr composite
(November – March)	150.1	6.0	9.0	three/week	6-hr composite
Dissolved Oxygen (DO)					
(May – October)	N/A	5.0 (Monthly Avg. Min.)		three/week	grab
(November – April)	N/A	6.0 (Monthly Avg. Min.)		three/week	grab
Fecal Coliform Bacteria (FCB)	N/A	(colonies/100 ml)		three/week	grab
		1,000	2,000		
Total Residual Chlorine (TRC)	N/A	< 0.1 mg/l (Inst. Max.)		three/week	grab
Total Phosphorus (TP)	N/A	Report	Report	three/week	grab
Total Nitrate + Nitrite Nitrogen (as N)	N/A	Report	Report	three/week	grab
Total Recoverable Cadmium	Report	Report (µg/l)	Report (µg/l)	once/month	6-hr composite
Total Recoverable Copper	Report	Report (µg/l)	Report (µg/l)	once/month	6-hr composite
Total Recoverable Zinc	Report	Report (µg/l)	Report (µg/l)	once/month	6-hr composite
pH	N/A	<u>Minimum</u> 6.0 s.u.	<u>Maximum</u> 9.0 s.u.	three/week	grab
Chronic WET Testing	N/A	See Fact Sheet Section 15		once/quarter	24-hr composite

ii. **Solids, Foam, and Free Oil:** There shall be no discharge of distinctly visible solids, scum, or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits, or sludge banks. There shall be no visible sheen due to the presence of oil. (Sheen means an iridescent appearance on the surface of the water.)

b. **Final Effluent Limitations**

Outfall 001 – treated municipal wastewater

i. **Conventional and/or Toxic Pollutants**

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow (in MGD)	N/A	Report	Report Daily Max.	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD5)	250.2	10.0	15.0	three/week	6-hr composite
Total Suspended Solids (TSS)	375.3	15.0	22.5	three/week	6-hr composite
Ammonia Nitrogen (NH3-N)					
(April – October)	60.0	2.4	6.1	three/week	6-hr composite
(November – March)	150.1	6.0	9.0	three/week	6-hr composite
Dissolved Oxygen (DO)					
(May – October)	N/A	5.0 (Monthly Avg. Min.)		three/week	grab
(November – April)	N/A	6.0 (Monthly Avg. Min.)		three/week	grab
Fecal Coliform Bacteria (FCB)	N/A	(colonies/100 ml)		three/week	grab
		1,000	2,000		
Total Residual Chlorine (TRC)	N/A	< 0.1 mg/l (Inst. Max.)		three/week	grab
Total Phosphorus (TP)	N/A	Report	Report	three/week	grab
Total Nitrate + Nitrite Nitrogen (as N)	N/A	Report	Report	three/week	grab
Total Recoverable Cadmium	0.051	2.0 (µg/l)	Report (µg/l)	once/month	6-hr composite
Total Recoverable Copper	0.31	12.2 (µg/l)	24.5 (µg/l)	once/month	6-hr composite
Total Recoverable Zinc	2.9	116 (µg/l)	232 (µg/l)	once/month	6-hr composite
pH	N/A	<u>Minimum</u> 6.0 s.u.	<u>Maximum</u> 9.0 s.u.	three/week	grab
Chronic WET Testing	N/A	See Fact Sheet Section 15		once/quarter	24-hr composite

- ii. **Solids, Foam, and Free Oil:** There shall be no discharge of distinctly visible solids, scum, or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits, or sludge banks. There shall be no visible sheen due to the presence of oil. (Sheen means an iridescent appearance on the surface of the water.)

14. BASIS FOR PERMIT CONDITIONS.

The following is an explanation of the derivation of the conditions of the draft permit and the reasons for them or, in the case of notices of intent to deny or terminate, reasons suggesting the decisions as required under 40 CFR Part 124.7 (48 FR 1413, April 1, 1983).

Technology-Based Versus Water Quality-Based Effluent Limitations And Conditions

Following regulations promulgated at 40 CFR Part 122.44(1)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to 40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to 40 CFR Part 122.44(d), whichever are more stringent as follows:

Parameter	Water Quality-Based		Technology-Based/BPJ		Previous Permit		Permit Limit	
	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l	Monthly Avg. mg/l	7-day Avg. mg/l
CBOD5	10.0	15.0	25	40	10	15	10.0	15.0
TSS	15.0	22.5	30	45	15	22.5	15.0	22.5
NH3-N								
(April – October)	2.4	6.1	N/A	N/A	2.4	6.1	2.4	6.1
(November – March)	6.0	9.0	N/A	N/A	6.0	9.0	6.0	9.0
DO								
(May – October)	5.0 (Monthly Avg. Minimum)		N/A		5.0 (Monthly Avg. Minimum)		5.0 (Monthly Avg. Minimum)	
(November – April)	6.0 (Monthly Avg. Minimum)		N/A		6.0 (Monthly Avg. Minimum)		6.0 (Monthly Avg. Minimum)	
FCB (col/100 ml)								
(April – September)	1,000	2,000	N/A	N/A	200	400	1,000	2,000
(October – March)	1,000	2,000	N/A	N/A	1,000	2,000	1,000	2,000
TRC (Inst. Maximum)	N/A		< 0.1 mg/l (Inst. Max.)		< 0.1 mg/l (Inst. Max.)		< 0.1 mg/l (Inst. Max.)	
TP	N/A	N/A	Report	Report	N/A	N/A	Report	Report
Nitrate + Nitrite	N/A	N/A	Report	Report	N/A	N/A	Report	Report
Total Recoverable Lead	N/A	N/A	N/A	N/A	3.8 (µg/l)	7.6 (µg/l)	N/A	N/A
Total Recoverable Cadmium	2.0 (µg/l)	Report (µg/l)	N/A	N/A	N/A	N/A	2.0 (µg/l)	Report (µg/l)
Total Recoverable Copper	12.2 (µg/l)	24.5 (µg/l)	N/A	N/A	N/A	N/A	12.2 (µg/l)	24.5 (µg/l)
Total Recoverable Zinc	116 (µg/l)	232 (µg/l)	N/A	N/A	N/A	N/A	116 (µg/l)	232 (µg/l)
pH	6.0 – 9.0 s.u.		6.0 – 9.0 s.u.		6 – 9 s.u.		6.0 – 9.0 s.u.	

Parameter	Water Quality or Technology	Justification
CBOD5	Water Quality	MultiSMP Model dated 06/01/2005
TSS	Water Quality	MultiSMP Model dated 06/01/2005
NH3-N	Water Quality	Section 2.512 of APCEC Regulation No. 2 & MultiSMP Model dated 06/01/2005
DO	Water Quality	Section 2.505 of APCEC Regulation No. 2 & MultiSMP Model dated 06/01/2005
FCB	Water Quality	Section 2.507 of APCEC Regulation No. 2
TRC	Previous Permit	Section 2.508 of APCEC Regulation No. 2
TP	Best Engineering Judgment (BEJ)	Appendix D of the 2000 Continuous Planning Process (CPP)
Nitrate + Nitrite	BEJ	Appendix D of the 2000 CPP
Cadmium*	Water Quality	Section 2.508 of APCEC Regulation No. 2
Copper*	Water Quality	Section 2.508 of APCEC Regulation No. 2
Zinc*	Water Quality	Section 2.508 of APCEC Regulation No. 2
pH	Water Quality	Section 2.504 of APCEC Regulation No. 2

*The metal limits are for the total recoverable amounts.

a. **Anti-backsliding**

The draft permit is consistent with the requirements to meet Anti-backsliding provisions of the Clean Water Act (CWA), Section 402(o) [40 CFR Part 122.44(l)]. The final effluent limitations for reissued permits must be as stringent as those in the previous permit, unless the less stringent limitations can be justified using exceptions in 40 CFR Part 122.44(l)(2)(i).

The draft permit maintains the requirements of the previous permit with the exception of revised limitations identified for lead, FCB, and WET limits. These revisions are allowed in accordance with 40 CFR Part 122.44(l)(2)(i).

i. Lead:

Lead sampling under the previous permit has resulted in a maximum result of only 1 µg/l twice. Based on the sampling results and the infeasibility of treating for lead which may or may not be present in the treated effluent, the lead limit has been removed from the draft permit. This is not backsliding pursuant to 40 CFR Part 122.44(l)(2)(i)(C).

ii. FCB:

The previous permit made a technical error in classifying the receiving stream as suitable for primary contact recreation. The 7Q10 of the unnamed tributary to Hurricane Creek is 0 cfs, and the watershed is approximately three square miles.

Therefore, removing the primary contact FCB limits is appropriate. This is not backsliding pursuant to 40 CFR Part 122.44(l)(2)(i)(B)(2).

iii. WET:

A WET limit was added to the previous permit based on EPA Region 6's intention to object to the permit unless the NH₃-N limits were revised to "4/6 mg/l year round or lower" or unless a WET limit was included. EPA's letter cites 1999 modeling guidance from EPA Headquarters (*Federal Register*, Vol. 64, No. 245, 12/22/1999, pages 71973 – 71980) and 40 CFR 122.44(d)(1)(v).

40 CFR 122.44(d)(1)(v) states that a WET limit must be used when "a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative criterion within an applicable State water quality standard." Based on the historical data and current modeling, there is no reasonable potential to cause an in-stream excursion. Therefore, the WET limit has been changed to chronic biomonitoring. This change is not backsliding pursuant to 40 CFR Part 122.44(l)(2)(i)(B)(2) because the previous limit was a technical error.

b. **Limits Calculations**

i. Mass Limits:

The calculation of the loadings (lbs per day) uses a design flow of 3.0 MGD and the following equation: lbs/day = Concentration (mg/l) X Flow (MGD) X 8.34

ii. Daily Maximum Limits:

Daily Maximum Limits = Monthly Average Limits X 1.5

iii. NH₃-N:

The water quality effluent limitations for Ammonia are based either on DO-based effluent limits or on toxicity-based standards, whichever are more stringent. The toxicity-based effluent limitations are based on Chapter 5, Section 2.512 of APCEC Regulation No. 2 and an ADEQ internal memo dated March 28, 2005. The following formula has been used to calculate toxicity-based Ammonia limits:

$$C_d = (IWC(Q_d + Q_b) - C_b Q_b) / Q_d,$$

Where:

C_d = effluent limit concentration

IWC = Ammonia toxicity standard for the Gulf Coastal Plain Ecoregion

Q_d = design flow

- Qb = critical flow of the receiving stream. This flow is 67 percent of the 7-day, 10-year low-flow (7Q10) for the receiving stream.
- Cb = background concentration

iv. TRC:

The permit limit for total residual chlorine is continued from the previous permit. After dechlorination and prior to final discharge, the effluent shall contain “no measurable” TRC at any time. “No measurable” is defined as no detectable concentration of TRC (as determined by any approved method established in 40 CFR Part 136) less than 0.1 mg/l. Thus, the “no measurable TRC concentration” for chlorine becomes the permit limit. The effluent limitation for TRC is the instantaneous maximum and cannot be averaged for reporting purposes. TRC shall be measured with fifteen (15) minutes of sample collection.

v. TP:

Pursuant to Appendix D of the 2000 CPP (page D-9), TP monitoring has been added with the same frequency as the CBOD5 monitoring. This has been done to establish a data base of point source loadings of nutrients to waters of the state from major municipal facilities and other facilities listed in the CPP.

vi. Nitrate + Nitrite:

Pursuant to Appendix D of the 2000 CPP (page D-9), Nitrate plus Nitrite (as Nitrogen) monitoring has been added with the same frequency as the CBOD5 monitoring. This has been done to establish a data base of point source loadings of nutrients to waters of the state from major municipal facilities and other facilities listed in the CPP.

c. **Toxics Pollutants**

i. Post Third Round Policy and Strategy

Section 101 of the Clean Water Act (CWA) states that “... it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited...”. To insure that the CWA’s prohibitions on toxic discharges are met, EPA has issued a “Policy for the Development of Water Quality-Based Permit Limitations by Toxic Pollutants”(49 FR 9016-9019, 3/9/84). In support of the national policy, Region 6 adopted the “Policy for post Third Round Permitting” and the “Post Third Round Permit Implementation Strategy” on October 1, 1992. The Regional policy and strategy are designed to insure that no source will be allowed to discharge any wastewater which (1) results in in-stream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical State water quality standard resulting in non-conformance with the provisions of 40 CFR Part 122.44(d); (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation which threatens human health.

ii. Implementation

The State of Arkansas is currently implementing EPA's Post Third-Round Policy in conformance with the EPA Regional strategy. The 5-year discharge permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, or where there are no applicable technology-based limits, additional water quality-based effluent limitations and/or conditions are included in the discharge permits. State narrative and numerical water quality standards from APCEC Regulation No. 2 are used in conjunction with EPA criteria and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

iii. Priority Pollutant Scan (PPS)

In accordance with the regional policy ADEQ has reviewed and evaluated the effluent in evaluating the potential toxicity of each analyzed pollutant:

- (a) The results were evaluated and compared to EPA's Minimum Quantification Levels (MQLs) to determine the potential presence of a respective toxic pollutant. Those pollutants which are greater than or equal to the MQLs are determined to be reasonably present in the effluent and an evaluation of their potential toxicity is necessary.
- (b) Those pollutants with one datum shown as "non-detect" (ND), providing the level of detection is equal to or lower than MQL are determined to be not potentially present in the effluent and eliminated from further evaluation.
- (c) Those pollutants with a detectable value even if below the MQL are determined to be reasonably present in the effluent and an evaluation of their potential toxicity is necessary.
- (d) For those pollutants with multiple data values and all values are determined to be non-detect, therefore no further evaluation is necessary. However, where the data set includes some detectable concentrations and some values as ND, one-half of the detection level is used for those values below the level of detection to calculate the geometric mean of the data set.

The concentration of each pollutant after mixing with the receiving stream was compared to the applicable water quality standards (WQS) as established in the Arkansas Water Quality Standards (APCEC Regulation No. 2) and with the aquatic toxicity, human health, and drinking water criteria obtained from the "Quality Criteria for Water, 1986 (Gold Book)." The following expression was used to calculate the pollutant in-stream waste concentration (IWC):

$$IWC = ((C_e \times Q_e) + (C_b \times Q_b)) / (Q_e + Q_b)$$

where:

- IWC = pollutant concentration in the receiving stream after mixing ($\mu\text{g/l}$)
- C_e = pollutant concentration in the effluent ($\mu\text{g/l}$)
- Q_e = effluent flow from the facility (cfs)
- C_b = pollutant's background concentration in the receiving stream ($\mu\text{g/l}$)
- Q_b = background flow of the receiving stream (cfs)

The following values were used in the IWC calculations:

C_e = varies with pollutant. A single value from the Priority Pollutant Screen (PPS) submitted by the permittee as part of the discharge permit application or the geometric mean of a group of data points (less than 20 data points) is multiplied by a factor of 2.13. This factor is based on EPA's Region 6 procedure (See Attachment IV of the 2000 Continuing Planning Process [CPP].) to extrapolate limited data sets to better evaluate the potential toxicity for higher effluent concentrations to exceed water quality standards. This procedure employs a statistical approach which yields an estimate of a selected upper percentile value (the 95th percentile) of an effluent data set which would be expected to exceed 95% of effluent concentrations in a discharge. If 20 or more data points are available, do not multiply by 2.13, but instead use the maximum value reported over the last two years.

Q_e = 3.0 MGD = 4.6 cfs

C_b = 0 $\mu\text{g/l}$

Q_b = (See below):

I. Aquatic Toxicity

Chronic Toxicity: Flow = 0 cfs, for comparison with chronic aquatic toxicity.

This flow is 67 percent of the 7Q10 for the receiving stream. The 7Q10 of 0 cfs is based on the "Identification and Classification of Perennial Streams of Arkansas" (i.e., an Arkansas Geological Commission map).

Acute Toxicity: Flow = 0 cfs, for comparison with acute aquatic toxicity.

This flow is 33 percent of the 7Q10 for the receiving stream.

II. Bioaccumulation

Flow = 0 cfs, for comparison with bioaccumulation criteria.

This flow is the long term average (LTA) of the receiving stream which is based on the “Identification and Classification of Perennial Streams of Arkansas” (i.e., an Arkansas Geological Commission map).

III. Drinking Water

Flow = 0 cfs, for comparison with drinking water criteria.

This flow is the 7Q10 for the receiving stream.

The following values were used to determine limits for the pollutants:

Hardness = 31 mg/l, based on Attachment VI of the 2000 CPP.

TSS = 5.5 mg/l, based on Attachment V of the 2000 CPP

pH = 7.11 s.u., based on data from the “2004 Integrated Water Quality Monitoring and Assessment Report Prepared pursuant to Section 305(b) and 303(d) of the Federal Water Pollution Control Act” for Station OUA0031.

iv. Water Quality Standards for Metals and Cyanide

Standards for chromium (VI), mercury, selenium, and cyanide are expressed as a function of the pollutant's water-effect ratio (WER), while standards for cadmium, chromium (III), copper, lead, nickel, silver, and zinc are expressed as a function of the pollutant's water-effect ratio, and as a function of hardness. The WER is assigned a value of 1.0 unless a scientifically defensible study clearly demonstrates that a value less than 1.0 is necessary or a value greater than 1.0 is sufficient to fully protect the designated uses of the receiving stream from the toxic effects of the pollutant.

The WER approach compares bioavailability and toxicity of a specific pollutant in receiving water and in laboratory test water. It involves running toxicity tests for at least two species, measuring LC50 for the pollutant using the local receiving water collected from the site where the criterion is being implemented, and laboratory toxicity testing water made comparable to the site water in terms of chemical hardness. The ratio between site water and lab water LC50 is used to adjust the national acute and chronic criteria to site specific values.

v. Conversion of Dissolved Metals Criteria for Aquatic Life to Total Recoverable Metal

Metals criteria established in Section 2.508 of APCEC Regulation No. 2 for aquatic life protection are based on dissolved metals concentrations and hardness values. However, Federal Regulations cited at 40 CFR Part 122.45(c) require that effluent limitations for metals in discharge permits be expressed as total recoverable based on

Attachment V of the CPP. Therefore a dissolved to the total recoverable metal conversion must be implemented. This involves determining a linear partition coefficient for the metal of concern and using this coefficient to determine the fraction of metal dissolved, so that the dissolved metal ambient criteria may be translated to a total effluent limit. The formula for converting dissolved metals to total recoverable metals for streams and lakes are provided in Attachment V of the CPP and Region 6 Implementation Guidance for Arkansas Water Quality Standards promulgated at 40 CFR Part 131.36.

vi. Comparison of the Submitted Information with the Water Quality Standards and Criteria

The following pollutants were determined to be present in the effluent as reported by the permittee. These results were from a sample collected from March 24 – 25, 2008 for a PPS (except for lead). The lead value is the geometric mean of the twelve samples collected in the past five years (i.e., fourth quarter 2003 through the second quarter of 2008 plus the PPS result).⁶

Pollutant	Concentration Reported, µg/l	MQL, µg/l
Total Recoverable Cadmium	0.88	0.5
Total Recoverable Copper	19.0	0.5
Total Recoverable Lead	0.44	0.5
Total Recoverable Nickel	14.1	0.5
Total Recoverable Zinc	111.0	20

(a) Aquatic Toxicity

(i) Pollutants with numerical water quality standards

ADEQ has determined from the information submitted by the permittee that there is a reasonable potential for the discharge to cause an in-stream excursion above the acute and/or chronic numeric standards as specified in the Arkansas Water Quality Standards (See Attachment 1). ADEQ has identified the following toxicants in the discharge in amounts which could potentially have a toxic impact on the receiving stream (IWCs have been calculated in the manner described on Section 14.c.iii. of the Fact Sheet.):

⁶ There were nine “non-detect” samples with a MQL of 1.0 µg/L, two detections at 1.0 µg/L, and one “non-detect” with a MQL of 0.051 µg/L. This results in a geometric mean of $(0.5^9 * 1.0^2 * 0.0255)^{1/12} = 0.44$ µg/L.

Chronic Aquatic Toxicity Results				
Pollutant	C _e , µg/l	C _e X 2.13	IWC, µg/l	WQS, µg/l
Total Recoverable Cadmium	0.88	1.87	1.87	1.82
Total Recoverable Copper	19.0	40.5	40.5	10.9
Total Recoverable Lead	0.44	0.94	0.94	3.40
Total Recoverable Nickel	14.1	30.0	30.0	118
Total Recoverable Zinc	111.0	236	236	120

Acute Aquatic Toxicity Results				
Pollutant	C _e , µg/l	C _e X 2.13	IWC, µg/l	WQS, µg/l
Total Recoverable Cadmium	0.88	1.87	1.87	4.37
Total Recoverable Copper	19.0	40.5	40.5	14.8
Total Recoverable Lead	0.44	0.94	0.94	87.3
Total Recoverable Nickel	14.1	30.0	30.0	1,061
Total Recoverable Zinc	111.0	236	236	131

Permit Action

Under Federal Regulation 40 CFR Part 122.44(d), as adopted by APCEC Regulation No. 6, if a discharge poses the reasonable potential to cause or contribute to an exceedance above a water quality standard, the permit must contain an effluent limitation for that pollutant. Effluent limitations for the toxicants listed above have been derived in a manner consistent with the Technical Support Document (TSD) for Water Quality-based Toxics Control (EPA, March 1991), the State's implementations procedures, and 40 CFR Part 122.45(c).

Based on the available data, lead and nickel results are below the reasonable potential thresholds. Therefore, no permit limits for lead and/or nickel are necessary. The data indicate that permit limits for cadmium (chronic only), copper, and zinc be needed. A condition has been added to the draft Part II to allow the permittee to request the removal of the specific metal limits (i.e., cadmium, copper, and/or zinc) if at least four representative samples are collected and analyzed during the comment period if the results indicate that there is no reasonable potential for the treated effluent to exceed Water Quality Standards.

Permit Limit Determination

The in-stream waste load allocation (WLA), which is the level of effluent concentration that would comply with the water quality standard (WQS) of the receiving stream, is calculated for both chronic and acute WLA using the following equations:

$$WLA_c = (WQS \times (Q_d + Q_b) - Q_b \times C_b) / Q_d$$

where:

WLA_c = chronic waste load allocation ($\mu\text{g/l}$)

Q_d = discharge flow (cfs)

Q_b = 0 X 7Q10 (cfs)

C_b = background concentration ($\mu\text{g/l}$)

WQS = chronic aquatic toxicity standards ($\mu\text{g/l}$)

and

$$WLA_a = (WQS \times (Q_d + Q_b) - Q_b \times C_b) / Q_d$$

where:

WLA_a = acute waste load allocation ($\mu\text{g/l}$)

Q_d = discharge flow (cfs)

Q_b = 0 X 7Q10 (cfs)

C_b = background concentration ($\mu\text{g/l}$)

WQS = acute aquatic toxicity standards ($\mu\text{g/l}$)

The long term average (LTA) effluent concentration is then calculated based on the chronic and acute WLA as follows:

$$LTA_c = 0.72 \times WLA_c$$

$$LTA_a = 0.57 \times WLA_a$$

The lowest of these two (2) values is selected as being the limiting LTA. The limiting LTA is then used to calculate the monthly average limit (AML) and the 7-day average limit (DML). AML and DML are calculated as follows:

$$AML = 1.55 \times \text{Limiting LTA}$$

$$DML = 3.11 \times \text{Limiting LTA}$$

Limits included in the permit are as follows:

Arkansas Numerical Aquatic Toxicity Limits		
Parameter	AML*, µg/l	DML*, µg/l
Total Recoverable Cadmium	2.0	Report
Total Recoverable Copper	12.2	24.5
Total Recoverable Zinc	116	232
*See Attachment 1 for calculations.		

(ii) Pollutants without applicable water quality standards

No pollutant without a water quality standard was found in the treated effluent.

(b) Human Health (Bioaccumulation) Limits

ADEQ has determined from the information submitted by the permittee that there is not a reasonable potential for the discharge to cause an in-stream excursion above the state numeric bioaccumulation standards as specified in Reg. 2.508 of APCEC Regulation No. 2 or in the “Gold Book” (Quality Criteria for Water 1986) (See Attachment 1).

(c) Drinking Water Supply Protection

ADEQ has determined from the information submitted by the permittee that there is no reasonable potential for the discharge to cause an in-stream excursion above the drinking water criteria as specified in the “Gold Book.”

15. WHOLE EFFLUENT TOXICITY (WET).

Section 101(a)(3) of the Clean Water Act states that “... it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited.” In addition, the ADEQ is required under 40 CFR Part 122.44(d)(1), adopted by reference in APCEC Regulation No. 6, to include conditions as necessary to achieve water quality standards as established under Section 303 of the Clean Water Act. Arkansas has established a narrative criteria which states “toxic materials shall not be present in receiving waters in such quantities as to be toxic to human, animal, plant or aquatic life or to interfere with the normal propagation, growth and survival of aquatic biota.”

WET testing is the most direct measure of potential toxicity which incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. It is the national policy of EPA to use bioassays as a measure of toxicity to allow evaluation of the effects of a discharge upon a receiving water (49 Federal Register 9016-9019, March 9,

1984). EPA Region 6 and the State of Arkansas are now implementing the Post Third Round Policy and Strategy established on September 9, 1992, and EPA Region 6 Post-Third Round WET Testing Frequencies, revised March 13, 2000. WET testing of the effluent is thereby required as a permit condition to assess potential toxicity. The WET testing procedures stipulated as a condition of this permit are as follows:

TOXICITY TESTS

FREQUENCY

Chronic WET Testing

Once/quarter

Requirements for measurement frequency are based on Appendix D of the CPP. Since the 7Q10 is less than 100 cfs (ft³/sec) and the dilution ratio is less than 100:1, chronic biomonitoring requirements have been included in the permit. The calculations for dilution used for chronic biomonitoring are as follows:

$$\text{Critical dilution (CD)} = (Q_d / (Q_d + Q_b)) \times 100$$

$$Q_d = \text{Design Flow} = 3.0 \text{ MGD} = 4.6 \text{ cfs}$$

$$7Q_{10} = 0 \text{ cfs}$$

$$Q_b = \text{Background flow} = 0.67 \times 7Q_{10} = 0 \text{ cfs}$$

$$CD = (4.6 / (4.6 + 0)) \times 100 = 100\%$$

Toxicity tests shall be performed in accordance with protocols described in "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," EPA/600/4-91/002, July 1994. A minimum of five effluent dilutions in addition to an appropriate control (0%) are to be used in the toxicity tests. These additional effluent concentrations are **32%, 42%, 56%, 75%, and 100%** (See **Attachment I** of the CPP). The low-flow effluent concentration (critical dilution) is defined as **100%** effluent. The requirement for chronic WET tests is based on the magnitude of the facility's discharge with respect to receiving stream flow. The stipulated test species, the water flea (*Ceriodaphnia dubia*) and the Fathead minnow (*Pimephales promelas*), are indigenous to the geographic area of the facility, and the use of these is consistent with the requirements of the State water quality standards. The WET testing frequency has been established to provide data representative of the toxic potential of the facility's discharge, in accordance with the regulations promulgated at 40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen conductivity, and alkalinity shall be reported according to EPA/600/4-91/002, July 1994 and shall be submitted as an attachment to the DMR. This permit may be reopened to require further WET studies, Toxicity Reduction Evaluation (TRE) and/or effluent limits if WET data submitted to the Department shows toxicity in the permittee's discharge. Modification or revocation of this permit is subject to the provisions of 40 CFR Part 122.62, as adopted by reference in APCEC Regulation No. 6. Increased or intensified toxicity testing may also be required in accordance with Section 308 of the Clean Water Act and Section 8-4-201 of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended).

Administrative Records

The following information summarizes toxicity test submitted by the permittee during the term of the permit at Outfall 001.

WHOLE EFFLUENT TOXICITY TESTING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: **AR0034002**

Facility Name: **City of Bryant**

Previous Critical Dilution: **100%**

Proposed Critical Dilution: **100%**

Date of Review: **05/27/2008**

Name of Reviewer: **Barnett**

Number of tests performed during previous 5 years by species:

***Pimephales promelas* (Fathead minnow): 29**

***Ceriodaphnia dubia* (water flea): 29**

Failed test dates during previous 5 years by species:

***Pimephales promelas* (Fathead minnow):**

Lethal
none

Sub-lethal
none

***Ceriodaphnia dubia* (water flea):**

Lethal
none

Sub-lethal
none

Previous TRE activities: None

Frequency recommendation by species:

***Pimephales promelas* (Fathead minnow): four/year**

***Ceriodaphnia dubia* (water flea): four/year**

Additional requirements (including WET Limits) rationale/comments concerning permitting:

Rationale: According to the EPA Region 6 Post-Third Round Whole Effluent Toxicity Testing Frequencies: "All major dischargers, and those minor dischargers specifically identified by EPA or the State permitting authority (based on available information on a case-by case basis) as posing a significant unaddressed toxic risk, will be required to perform Whole Effluent Toxicity testing at a frequency of once per quarter for the vertebrate and invertebrate tests species for the first year of a new or reissued permit."

Reasonable Potential Calculation

Count	29	29	29	29
Mean	100	100	100	100
Std. Dev.	0.000	0.000	0.000	0.000
CV	0	0	0	0

Based on the WET testing history, the lack of reasonable potential, and the presence of NH3-N limits, it is no longer necessary for the permittee to have a WET limit. In this case, quarterly WET testing is appropriate. If new information becomes available which indicates toxicity, additional testing and/or WET limits may be required. The frequency and duration of any additional testing will be determined at that time.

16. SAMPLE TYPE AND FREQUENCY.

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [40 CFR Part 122.48(b)] and to ensure compliance with permit limitations [40 CFR Part 122.44(i)(1)]. Requirements for sample type and sampling frequency have been based on the current discharge permit except for total recoverable cadmium, copper, and zinc.

Metal sampling frequencies have been based on the minimum number of samples needed to show compliance with permit limits (i.e., at least one sample per month). The sample type is the same as for CBOD5, TSS, and NH3-N.

Parameter	Previous Permit		Draft Permit	
	Frequency of Sample	Sample Type	Frequency of Sample	Sample Type
Flow	once/day	totalizing meter	once/day	totalizing meter
CBOD5	three/week	6-hr composite	three/week	6-hr composite
TSS	three/week	6-hr composite	three/week	6-hr composite
NH3-N	three/week	6-hr composite	three/week	6-hr composite
DO	three/week	grab	three/week	grab
FCB	three/week	grab	three/week	grab
TRC	three/week	grab	three/week	grab
TP	N/A	N/A	three/week	grab
Nitrate + Nitrite	N/A	N/A	three/week	grab
Lead*	once/6 months	6-hr composite	NA	NA
Cadmium*	NA	NA	once/month	6-hr composite
Copper*	NA	NA	once/month	6-hr composite
Zinc*	NA	NA	once/month	6-hr composite
pH	three/week	grab	three/week	grab

*The metal limits are for the total recoverable amounts.

17. STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS.

The permittee has an active “No exposure certification for exclusion from NPDES Stormwater” (i.e., NPDES Permit No. ARR00C408). Therefore, stormwater pollution prevention plan requirements have been removed from the permit. However, a condition to maintain at least two feet of freeboard in each of the equalization basins has been added to Part II.

18. PERMIT COMPLIANCE.

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

- a. Compliance with all permit limits is required on the effective date of the permit except for the total recoverable cadmium, copper, and zinc limits at Outfall 001. These limits are subject to the following schedule:

Interim Limits at Outfall 001:

The permittee shall submit progress reports to the NPDES Enforcement Section addressing the progress towards attaining the final effluent limits at Outfall 001 according to the following schedule.

<u>ACTIVITY</u>	<u>DUE DATE</u>
Progress Report	one (1) year from the effective date of the permit
Progress Report	two (2) years from the effective date of the permit

Final Limits at Outfall 001:

The permittee shall achieve final permit limits three (3) years from the effective date of the permit.

- b. An updated Discharge Monitoring Report for June 2006, if necessary, shall be submitted within sixty (60) days of the permit’s effective date to correct the erroneous flow rate reported for that period.

19. MONITORING AND REPORTING.

The applicant is at all times required to monitor the discharge on a regular basis and report the results monthly. The monitoring results will be available to the public.

20. SOURCES.

The following sources were used to draft the permit:

- a. Application No. AR0034002 received 04/07/2008.
- b. Arkansas Water Quality Management Plan (WQMP).
- c. APCEC Regulation No. 2.
- d. APCEC Regulation No. 3.
- e. APCEC Regulation No. 6.
- f. 40 CFR Parts 122, 125, and 133.
- g. Discharge permit file No. AR0034002.
- h. Discharge Monitoring Reports (DMRs).
- i. "Arkansas Water Quality Inventory Report 2004 (305B)," ADEQ.
- j. Memo from Mo Shafii to Engineers dated March 28, 2005.
- k. "Identification and Classification of Perennial Streams of Arkansas," Arkansas Geological Commission.
- l. Continuing Planning Process (CPP) (January 2000).
- m. Technical Support Document For Water Quality-based Toxic Control.
- n. Region 6 Implementation Guidance for Arkansas Water Quality Standards promulgated at 40 CFR Part 131.36.
- o. Inspection Report dated 07/17/2006.
- p. Site visit on 06/06/2008.
- q. Google Earth Version 4.3.7204.0836 (beta).
- r. "TMDLs for Segments Listed for Mercury in Fish Tissue for the Ouachita River Basin, and Bayou Bartholomew, Arkansas and Louisiana to Columbia," by FTN Associates, Ltd. for the US Environmental Protection Agency Region 6's Watershed Management Section, May 30, 2002.
- s. CAO LIS No. 06-062.

21. PUBLIC NOTICE.

The public notice describes the procedures for the formulation of final determinations and shall provide for a public comment period of 30 days. During this period, any interested persons may submit written comments on the permit and may request a public hearing to clarify issues involved in the permitting decision. A request for a public hearing shall be in writing and shall state the nature of the issue(s) proposed to be raised in the hearing.

A copy of the permit and public notice will be made available to the District Engineer, Corps of Engineers, and to the Regional Director of the U.S. Fish and Wildlife Service on a case-by-case basis, and the EPA and Arkansas Department of Health prior to the publication of that notice.

22. POINT OF CONTACT.

For additional information, contact:

Chris Roberts, P.E.
Permits Branch, Water Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317
Telephone: (501) 683-5406

**AUTHORIZATION TO DISCHARGE WASTEWATER UNDER
THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM AND
THE ARKANSAS WATER AND AIR POLLUTION CONTROL ACT**

In accordance with the provisions of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Code Ann. 8-4-101 et seq.), and the Clean Water Act (33 U.S.C. § 1251 et seq.),

The applicant's mailing address is:

City of Bryant
210 Southwest 3rd Street
Bryant, AR 72022

The facility address is:

City of Bryant
1019 Southwest 2nd Street
Bryant, AR 72022

is authorized to discharge from a facility located as follows: from Hwy. 183, turn west onto Southwest 3rd Street then turn north on South Spruce Street, then west on Southwest 2nd Street in Bryant, Saline County, Arkansas.

Latitude: 34° 35' 33"; Longitude: 92° 30' 15"

to receiving waters named:

an unnamed tributary of Hurricane Creek, thence to Hurricane Creek, thence to the Saline River, thence to the Ouachita River in Segment 2C of the Ouachita River Basin.

The outfall is located at the following coordinates:

Outfall 001: Latitude: 34° 35' 12.85" Longitude: 92° 30' 18.45"

Discharge shall be in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, and IV hereof.

Issue Date:

Effective Date:

Expiration Date:

Steven L. Drown
Chief, Water Division
Arkansas Department of Environmental Quality

PART I PERMIT REQUIREMENTS

SECTION A. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: OUTFALL 001 - treated municipal wastewater.

During the period beginning on the effective date and lasting until three (3) years after the effective date, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below from a treatment system consisting of a bar screen, equalization basins, grit chamber, extended aeration/activated sludge system (i.e., aerobic digestion with secondary clarification), chlorine disinfection, and dechlorination with a design flow of 3.0 MGD.

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow (in MGD) ¹	N/A	Report	Report Daily Max.	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	250.2	10.0	15.0	three/week	6-hr composite
Total Suspended Solids (TSS)	375.3	15.0	22.5	three/week	6-hr composite
Ammonia Nitrogen (NH ₃ -N)					
(April – October)	60.0	2.4	6.1	three/week	6-hr composite
(November – March)	150.1	6.0	9.0	three/week	6-hr composite
Dissolved Oxygen (DO) ²					
(May – October)	N/A	5.0 (Monthly Avg. Min.)		three/week	grab
(November – April)	N/A	6.0 (Monthly Avg. Min.)		three/week	grab
Fecal Coliform Bacteria (FCB)	N/A	(colonies/100 ml)		three/week	grab
		1,000	2,000		
Total Residual Chlorine (TRC) ³	N/A	< 0.1 mg/l (Inst. Max.)		three/week	grab
Total Phosphorus (TP)	N/A	Report	Report	three/week	grab
Total Nitrate + Nitrite Nitrogen (as N)	N/A	Report	Report	three/week	grab
Total Recoverable Cadmium ⁴	Report	Report (µg/l)	Report (µg/l)	once/month	6-hr composite
Total Recoverable Copper ⁴	Report	Report (µg/l)	Report (µg/l)	once/month	6-hr composite
Total Recoverable Zinc ⁴	Report	Report (µg/l)	Report (µg/l)	once/month	6-hr composite
pH	N/A	<u>Minimum</u> 6.0 s.u.	<u>Maximum</u> 9.0 s.u.	three/week	grab

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Chronic WET Testing ^{3,5}	N/A	Report	Report	once/quarter	24-hr composite
<u>Pimephales promelas (Chronic)⁵</u> Pass/Fail Lethality (7-day NOEC) TLP6C Pass/Fail Growth (7-day NOEC) TGP6C Survival (7-day NOEC) TOP6C Coefficient of Variation TQP6C Growth (7-day NOEC) TPP6C <u>Ceriodaphnia dubia (Chronic)⁵</u> Pass/Fail Lethality (7-day NOEC) TLP3B Pass/Fail Reproduction (7-day NOEC) TGP3B Survival (7-day NOEC) TOP3B Coefficient of Variation TQP3B Reproduction (7-day NOEC) TPP3B		<u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report % <u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report %		once/quarter once/quarter once/quarter once/quarter once/quarter once/quarter once/quarter once/quarter once/quarter once/quarter	24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite

- 1 Report the Monthly Average and Daily Maximum flow rates in MGD. Do not report the 7-Day Average flow rate.
- 2 See Item #27(a) of Part IV (Dissolved Oxygen).
- 3 See Condition No. 9 of Part II (TRC Condition).
- 4 See Condition No. 10 of Part II (Metals Condition).
- 5 See Condition No. 8 of Part II (WET Testing Condition).

There shall be no discharge of distinctly visible solids, scum, or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits, or sludge banks. There shall be no visible sheen due to the presence of oil. (Sheen means an iridescent appearance on the surface of the water.)

Samples taken in compliance with the monitoring requirements specified above shall be taken downstream from the final treatment unit and at the following monitoring coordinates: Latitude: 34° 35' 12.85" Longitude: 92° 30' 18.45". All samples must be taken at the first discharge during each monitoring period.

PART I PERMIT REQUIREMENTS

SECTION A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: OUTFALL 001 - treated municipal wastewater.

During the period beginning three (3) years after the effective date and lasting until the date of expiration, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below from a treatment system consisting of a bar screen, equalization basins, grit chamber, extended aeration/activated sludge system (i.e., aerobic digestion with secondary clarification), chlorine disinfection, and dechlorination with a design flow of 3.0 MGD.

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Flow (in MGD) ¹	N/A	Report	Report Daily Max.	once/day	totalizing meter
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	250.2	10.0	15.0	three/week	6-hr composite
Total Suspended Solids (TSS)	375.3	15.0	22.5	three/week	6-hr composite
Ammonia Nitrogen (NH ₃ -N)					
(April – October)	60.0	2.4	6.1	three/week	6-hr composite
(November – March)	150.1	6.0	9.0	three/week	6-hr composite
Dissolved Oxygen (DO) ²					
(May – October)	N/A	5.0 (Monthly Avg. Min.)		three/week	grab
(November – April)	N/A	6.0 (Monthly Avg. Min.)		three/week	grab
Fecal Coliform Bacteria (FCB)	N/A	(colonies/100 ml)		three/week	grab
		1,000	2,000		
Total Residual Chlorine (TRC) ³	N/A	< 0.1 mg/l (Inst. Max.)		three/week	grab
Total Phosphorus (TP)	N/A	Report	Report	three/week	grab
Total Nitrate + Nitrite Nitrogen (as N)	N/A	Report	Report	three/week	grab
Total Recoverable Cadmium ⁴	0.051	2.0 (µg/l)	Report (µg/l)	once/month	6-hr composite
Total Recoverable Copper ⁴	0.31	12.2 (µg/l)	24.5 (µg/l)	once/month	6-hr composite
Total Recoverable Zinc ⁴	2.9	116 (µg/l)	232 (µg/l)	once/month	6-hr composite
pH	N/A	<u>Minimum</u> 6.0 s.u.	<u>Maximum</u> 9.0 s.u.	three/week	grab

<u>Effluent Characteristics</u>	<u>Discharge Limitations</u>			<u>Monitoring Requirements</u>	
	Mass (lbs/day, unless otherwise specified)	Concentration (mg/l, unless otherwise specified)		Frequency	Sample Type
		Monthly Avg.	Monthly Avg.		
Chronic WET Testing ^{3,5}	N/A	Report	Report	once/quarter	24-hr composite
<u>Pimephales promelas (Chronic)</u> ⁵ Pass/Fail Lethality (7-day NOEC) TLP6C Pass/Fail Growth (7-day NOEC) TGP6C Survival (7-day NOEC) TOP6C Coefficient of Variation TQP6C Growth (7-day NOEC) TPP6C		<u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report %		once/quarter once/quarter once/quarter once/quarter once/quarter	24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite
<u>Ceriodaphnia dubia (Chronic)</u> ⁵ Pass/Fail Lethality (7-day NOEC) TLP3B Pass/Fail Reproduction (7-day NOEC) TGP3B Survival (7-day NOEC) TOP3B Coefficient of Variation TQP3B Reproduction (7-day NOEC) TPP3B		<u>7-Day Average</u> Report (Pass=0/Fail=1) Report (Pass=0/Fail=1) Report % Report % Report %		once/quarter once/quarter once/quarter once/quarter once/quarter	24-hr composite 24-hr composite 24-hr composite 24-hr composite 24-hr composite

- 1 Report the Monthly Average and Daily Maximum flow rates in MGD. Do not report the 7-Day Average flow rate.
- 2 See Item #27(a) of Part IV (Dissolved Oxygen).
- 3 See Condition No. 9 of Part II (TRC Condition).
- 4 See Condition No. 10 of Part II (Metals Condition).
- 5 See Condition No. 8 of Part II (WET Testing Condition).

There shall be no discharge of distinctly visible solids, scum, or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits, or sludge banks. There shall be no visible sheen due to the presence of oil. (Sheen means an iridescent appearance on the surface of the water.)

Samples taken in compliance with the monitoring requirements specified above shall be taken downstream from the final treatment unit and at the following monitoring coordinates: Latitude: 34° 35' 12.85" Longitude: 92° 30' 18.45". All samples must be taken at the first discharge during each monitoring period.

SECTION B. PERMIT COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

1. Compliance with all permit limits is required on the effective date of the permit except for the total recoverable cadmium, copper, and zinc limits at Outfall 001. These limits are subject to the following schedule:

Interim Limits at Outfall 001:

The permittee shall submit progress reports to the NPDES Enforcement Section addressing the progress towards attaining the final effluent limits at Outfall 001 according to the following schedule.

<u>ACTIVITY</u>	<u>DUE DATE</u>
Progress Report	one (1) year from the effective date of the permit
Progress Report	two (2) years from the effective date of the permit

Final Limits at Outfall 001:

The permittee shall achieve final permit limits three (3) years from the effective date of the permit.

2. An updated Discharge Monitoring Report for June 2006, if necessary, shall be submitted within sixty (60) days of the permit's effective date to correct the erroneous flow rate reported for that period.

PART II OTHER CONDITIONS

1. The operator of this wastewater treatment facility shall be licensed as a Class III Wastewater Operator by the State of Arkansas in accordance with Act 211 of 1971, Act 1103 of 1991, Act 556 of 1993, and APCEC Regulation No. 3, as amended.
2. For publicly owned treatment works, the 30-day average percent removal for Carbonaceous Biochemical Oxygen Demand (CBOD5) and Total Suspended Solids (TSS) shall not be less than 85 percent unless otherwise authorized by the permitting authority in accordance with 40 CFR Part 133.102, as adopted by reference in APCEC Regulation No. 6.
3. Sludge is being stored in an on-site sludge storage lagoon. The permittee shall give at least 120 days prior notice to the Director of any change planned in the permittee's sludge disposal practice.
4. The permittee shall report all overflows with the Discharge Monitoring Report (DMR) submittal. These reports shall be summarized and reported in tabular format. The summaries shall include: the date, time, duration, location, estimated volume, and cause of overflow; observed environmental impacts from the overflow; action taken to address the overflow; and ultimate discharge location if not contained (e.g., storm sewer system, ditch, tributary). All overflows which endanger health or the environment shall be orally reported to this department (Enforcement Section of the Water Division), within 24 hours from the time the permittee becomes aware of the circumstance. A written report of overflows which endanger health or the environment, shall be provided within 5 days of the time the permittee becomes aware of the circumstance.
5. In accordance with 40 CFR Parts 122.62(a)(2) and 124.5, this permit may be reopened for modification or revocation and/or reissuance to require additional monitoring and/or effluent limitations when new information is received that actual or potential exceedance of State water quality criteria and/or narrative criteria are determined to be the result of the permittee's discharge(s) to a relevant water body or a Total Maximum Daily Load (TMDL) is established or revised for the water body that was not available at the time of the permit issuance that would have justified the application of different permit conditions at the time of permit issuance.
6. Other Specified Monitoring Requirements

The permittee may use alternative appropriate monitoring methods and analytical instruments other than as specified in Part I Section A of the permit without a major permit modification under the following conditions:

- The monitoring and analytical instruments are consistent with accepted scientific practices;
- The requests shall be submitted in writing to the Permits Section of the Water Division of the ADEQ for use of the alternate method or instrument;

- The method and/or instrument is in compliance with 40 CFR Part 136 or acceptable to the Director; and
- All associated devices are installed, calibrated, and maintained to insure the accuracy of the measurements and are consistent with the accepted capability of that type of device. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Assurance/Quality Control program.

Upon written approval of the alternative monitoring method and/or analytical instruments, these methods or instruments must be consistently utilized throughout the monitoring period. ADEQ must be notified in writing and the permittee must receive written approval from ADEQ if the permittee decides to return to the original permit monitoring requirements.

7. Contributing Industries and Pretreatment Requirements

a. The following pollutants may not be introduced into the treatment facility:

- (1) pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, waste streams with a closed cup flashpoint of less than 140° Fahrenheit (60° Centigrade) using the test methods specified in 40 CFR Part 261.21;
- (2) pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, unless the works are specifically designed to accommodate such discharges;
- (3) solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, resulting in Interference¹ or Pass Through;²
- (4) any pollutant, including oxygen demanding pollutants (e.g., BOD), released in a discharge at a flow rate and/or pollutant concentration which will cause Pass Through or Interference with the POTW;
- (5) heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104° Fahrenheit (40° Centigrade) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits;
- (6) petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause Interference or Pass Through;
- (7) pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

¹ See Part IV Item 38 for a definition of Interference.

² See Part IV Item 37 for a definition of Pass Through.

- (8) any trucked or hauled pollutants, except at discharge points designated by the POTW.
- b. The permittee shall require any indirect discharger to the treatment works to comply with the reporting requirements of Sections 204(b), 307, and 308 of the Act, including any requirements established under 40 CFR Part 403.
- c. The permittee shall provide adequate notice to the Department of the following:
 - (1) any new introduction of pollutants into the treatment works from an indirect discharger which would be subject to Sections 301 or 306 of the Act if it were directly discharging those pollutants; and/or
 - (2) any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of the permit.

Any notice shall include information on (i) the quality and quantity of effluent to be introduced into the treatment works, and (ii) any anticipated impact of the change on the quality or quantity of effluent to be discharged from the POTW.

8. Whole Effluent Toxicity (WET) Testing (7-Day Chronic NOEC Freshwater)

a. Scope And Methodology

- (1) The permittee shall test the effluent for toxicity in accordance with the provisions in this section.

APPLICABLE TO FINAL OUTFALL: 001

CRITICAL DILUTION (%): 100%

EFFLUENT DILUTION SERIES (%): 32%, 42%, 56%, 75%, & 100%

COMPOSITE SAMPLE TYPE: Defined at Part I

TEST SPECIES/METHODS: 40 CFR Part 136

Ceriodaphnia dubia (water flea) – chronic static renewal survival and reproduction test, Method 1002.0, EPA/600/4-91/002 or the most recent update thereof. This test should be terminated when 60% of the surviving females in the control produce three broods or at the end of eight days, whichever comes first.

Pimephales promelas (Fathead minnow) – chronic static renewal 7-day larval survival and growth test, Method 1000.0, EPA/600/4-91/002, or the most recent update thereof. A minimum of five (5) replicates with eight (8) organisms per replicate must be used in the control and in each effluent dilution of this test.

- (2) The No Observed Effect Concentration (NOEC) is defined as the greatest effluent dilution at and below which lethality that is statistically different from the control (0% effluent) at the 95% confidence level does not occur. Chronic lethal test failure is defined as a demonstration of a statistically significant lethal effect at test completion to a test species at or below the critical dilution.
- (3) This permit may be reopened to require whole effluent toxicity limits, chemical specific effluent limits, additional testing, and/or other appropriate actions to address toxicity.
- (4) Test failure is defined as a demonstration of statistically significant sub-lethal or lethal effects to a test species at or below the effluent critical dilution.

b. Persistent Lethality

The requirements of this subsection apply only when a toxicity test demonstrates significant lethal effects at or below the critical dilution. Significant lethal effects are herein defined as a statistically significant difference at the 95% confidence level between the survival of the appropriate test organism in a specified effluent dilution and the control (0% effluent).

(1) Part I Testing Frequency Other Than Monthly

- (a) The permittee shall conduct a total of two (2) additional tests for any species that demonstrates significant lethal effects at or below the critical dilution. The two additional tests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute either of the two additional tests in lieu of routine toxicity testing. The full report shall be prepared for each test required by this section in accordance with procedures outlined in Item e of this section and submitted with the DMR to the permitting authority for review.
- (b) If one or both of the two additional tests demonstrates significant lethal effects at or below the critical dilution, the permittee shall initiate Toxicity Reduction Evaluation (TRE) requirements as specified in Item g of this section. The permittee shall notify ADEQ in writing within 5 days of the failure of any retest, and the TRE initiation date will be the test completion date of the first failed retest. A TRE may be also be required due to a demonstration of persistent significant sub-lethal effects or intermittent lethal effects at or below the critical dilution, or for failure to perform the required retests. Monthly retesting is not required if the permittee is performing a TRE.
- (c) If one or both of the two additional tests demonstrates significant lethal effects at or below the critical dilution, the permittee shall henceforth increase the frequency of testing for this species to once per quarter for the life of the permit.

(d) The provisions of Item b(1)(a) of this condition are suspended upon submittal of the TRE Action Plan.

(2) Part I Testing Frequency of Monthly

The permittee shall initiate the TRE requirements as specified in Item g of this section when any two of three consecutive monthly toxicity tests exhibit significant lethal effects at or below the critical dilution. A TRE may also be required due to a demonstration of persistent significant sub-lethal effects or intermittent lethal effects at or below the critical dilution, or for failure to perform the required retests.

c. Sub-Lethal Failures

If a statistically significant sub-lethal effect is demonstrated at or below the critical dilution during any quarterly test, the permittee shall conduct two additional tests. The additional tests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute either of the two additional in lieu of routine toxicity testing.

If during the first four quarters, statistically significant sub-lethal effects are exhibited, quarterly testing will be required for that species until the effluent passes both the lethal and sub-lethal tests endpoints for the affected species, for four consecutive quarters. After passing four consecutive quarters for the affected species the permittee may request a reduction in testing frequency. Monthly retesting is not required if the permittee is performing a TRE.

d. Required Toxicity Testing Conditions

(1) Test Acceptance

The permittee shall repeat a test, including the control and all effluent dilutions, if the procedures and quality assurance requirements defined in the test methods or in this permit are not satisfied, including the following additional criteria:

- (a) The toxicity test control (0% effluent) must have survival equal to or greater than 80%.
- (b) The mean number of *Ceriodaphnia dubia* neonates produced per surviving female in the control (0% effluent) must be 15 or more.
- (c) 60% of the surviving control females must produce three broods.
- (d) The mean dry weight of surviving Fathead minnow larvae at the end of the 7 days in the control (0% effluent) must be 0.25 mg per larva or greater.

- (e) The percent coefficient of variation between replicates shall be 40% or less in the control (0% effluent) for: the young of surviving females in the *Ceriodaphnia dubia* reproduction test; the growth and survival endpoints of the Fathead minnow test.
- (f) The percent coefficient of variation between replicates shall be 40% or less in the critical dilution, unless significant lethal or nonlethal effects are exhibited for: the young of surviving females in the *Ceriodaphnia dubia* reproduction test; the growth and survival endpoints of the Fathead minnow test.
- (g) Test failure may not be construed or reported as invalid due to a coefficient of variation value of greater than 40%. A repeat test shall be conducted within the required reporting period of any test determined to be invalid.
- (h) A percent minimum significant difference (PMSD) range of 13 – 47 for *Ceriodaphnia dubia* reproduction.
- (i) A PMSD range of 12 – 30 for Fathead minnow growth.

(2) Statistical Interpretation

- (a) For the *Ceriodaphnia dubia* survival test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be Fisher's Exact Test as described in EPA/600/4-91/002 or the most recent update thereof.
- (b) For the *Ceriodaphnia dubia* reproduction test and the Fathead minnow larval survival and growth test, the statistical analyses used to determine if there is a significant difference between the control and the critical dilution shall be in accordance with the methods for determining the NOEC as described in EPA/600/4-91/002 or the most recent update thereof.
- (c) If the conditions of Test Acceptability are met in Item d(1) above and the percent survival of the test organism is equal to or greater than 80% in the critical dilution concentration and all lower dilution concentrations, the test shall be considered to be a passing test, and the permittee shall report an NOEC of not less than the critical dilution for the DMR reporting requirements found in Item e below.

(3) Dilution Water

- (a) Dilution water used in the toxicity tests will be receiving water collected as close to the point of discharge as possible but unaffected by the discharge. The permittee shall substitute synthetic dilution water of similar pH, hardness, and alkalinity to the closest downstream perennial water for:

- i. Toxicity tests conducted on effluent discharges to receiving water classified as intermittent streams; and
 - ii. Toxicity tests conducted on effluent discharges where no receiving water is available due to zero flow conditions.
- (b) If the receiving water is unsatisfactory as a result of in-stream toxicity (fails to fulfill the test acceptance criteria of Item d(1)), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
- i. A synthetic dilution water control which fulfills the test acceptance requirements of Item d(1) was run concurrently with the receiving water control;
 - ii. The test indicating receiving water toxicity has been carried out to completion (i.e., 7 days);
 - iii. The permittee includes all test results indicating receiving water toxicity with the full report and information required by Item e below; and
 - iv. The synthetic dilution water shall have a pH, hardness, and alkalinity similar to that of the receiving water or closest downstream perennial water not adversely affected by the discharge, provided the magnitude of these parameters will not cause toxicity in the synthetic dilution water.

(4) Samples and Composites

- (a) The permittee shall collect a minimum of three flow-weighted composite samples from the outfall(s) listed at Item a(1) above.
- (b) The permittee shall collect second and third composite samples for use during 24-hour renewals of each dilution concentration for each test. The permittee must collect the composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis.
- (c) The permittee must collect the composite samples so that the maximum holding time for any effluent sample shall not exceed 72 hours. The permittee must have initiated the toxicity test within 36 hours after the collection of the last portion of the first composite sample. Samples shall be chilled to 6° Centigrade during collection, shipping, and/or storage.
- (d) If the flow from the outfall(s) being tested ceases during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions and the sample holding time are waived

during that sampling period. However, the permittee must collect an effluent composite sample volume during the period of discharge that is sufficient to complete the required toxicity tests with daily renewal of effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The effluent composite sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report required in Item e of this section.

- (e) Multiple Outfalls: If the provisions of this section are applicable to multiple outfalls, the permittee shall combine the composite effluent samples in proportion to the average flow from the outfalls listed in Item a(1) above for the day the sample was collected. The permittee shall perform the toxicity test on the flow-weighted composite of the outfall samples.
- (f) The permittee shall not allow the sample to be dechlorinated at the laboratory. At the time of sample collection the permittee shall measure the TRC of the effluent. The measured concentration of TRC for each sample shall be included in the lab report submitted by the permittee.

e. Reporting

- (1) The permittee shall prepare a full report of the results of all tests conducted pursuant to this section in accordance with the Report Preparation Section of EPA/600/4-91/002, or the most current publication, for every valid or invalid toxicity test initiated whether carried to completion or not. The permittee shall retain each full report pursuant to the provisions of Part III.C.7. of this permit. The permittee shall submit full reports to the Department. For any test which fails, is considered invalid or which is terminated early for any reason, the full report must be submitted for review.
- (2) A valid test for each species must be reported on the DMR during each reporting period specified in Part I of this permit unless the permittee is performing a TRE which may increase the frequency of testing and reporting. Only ONE set of biomonitoring data for each species is to be recorded on the DMR for each reporting period. The data submitted should reflect the LOWEST survival results for each species during the reporting period. All invalid tests, repeat tests (for invalid tests), and retests (for tests previously failed) performed during the reporting period must be attached to the DMR for ADEQ review.
- (3) The permittee shall submit the results of each valid toxicity test on DMR for that reporting period in accordance with Part III.D.4. of this permit, as follows below. Submit retest information clearly marked as such with the following DMR. Only results of valid tests are to be reported on the DMR.

(a) *Pimephales promelas* (Fathead minnow)

- i. If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TLP6C.
- ii. If the NOEC for growth is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TGP6C.
- iii. Report the NOEC value for survival, Parameter No. TOP6C.
- iv. Report the NOEC value for growth, Parameter No. TPP6C.
- v. Report the highest (critical dilution or control) Coefficient of Variation, Parameter No. TQP6C.

(b) *Ceriodaphnia dubia* (water flea)

- i. If the NOEC for survival is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TLP3B.
- ii. If the NOEC for reproduction is less than the critical dilution, enter a "1"; otherwise, enter a "0" for Parameter No. TGP3B.
- iii. Report the NOEC value for survival, Parameter No. TOP3B.
- iv. Report the NOEC value for reproduction, Parameter No. TPP3B.
- v. Report the higher (critical dilution or control) Coefficient of Variation, Parameter No. TQP3B.

f. Monitoring Frequency Reduction

- (1) The permittee may apply for a testing frequency reduction upon the successful completion of the first four consecutive quarters of testing for one or both test species, with no lethal or sub-lethal effects demonstrated at or below the critical dilution without a major modification. If granted, the monitoring frequency for that test species may be reduced to not less than once per year for the less sensitive species (usually the Fathead minnow) and not less than twice per year for the more sensitive test species (usually the *Ceriodaphnia dubia*).
- (2) Certification: The permittee must certify in writing that no test failures have occurred and that all tests meet all test acceptability criteria in Item d(1) above. In addition the permittee must provide a list with each test performed including test initiation date, species, NOECs for lethal and sub-lethal effects and the maximum coefficient of variation for the controls. Upon review and acceptance of this information the Department will issue a letter of confirmation of the monitoring frequency reduction.

A copy of the letter will be forwarded to the Permit Compliance System section to update the permit reporting requirements.

- (3) This monitoring frequency reduction applies only until the expiration date of this permit, at which time the monitoring frequency for both test species reverts to once per quarter until the permit is re-issued.

g. Toxicity Reduction Evaluation (TRE)

- (1) Within ninety (90) days of confirming lethality in the retests, the permittee shall submit a TRE Action Plan and Schedule for conducting a TRE. The TRE Action Plan shall specify the approach and methodology to be used in performing the TRE. A Toxicity Reduction Evaluation is an investigation intended to determine those actions necessary to achieve compliance with water quality-based effluent limits by reducing an effluent's toxicity to an acceptable level. A TRE is defined as a step-wise process which combines toxicity testing and analyses of the physical and chemical characteristics of a toxic effluent to identify the constituents causing effluent toxicity and/or treatment methods which will reduce the effluent toxicity. The TRE Action Plan shall lead to the successful elimination of effluent toxicity at the critical dilution and include the following:

(a) Specific Activities

The plan shall detail the specific approach the permittee intends to utilize in conducting the TRE. The approach may include toxicity characterizations, identifications and confirmation activities, source evaluation, treatability studies, or alternative approaches. When the permittee conducts Toxicity Characterization Procedures the permittee shall perform multiple characterizations and follow the procedures specified in the documents "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA-600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA-600/6-91/005F), or alternate procedures. When the permittee conducts Toxicity Identification Evaluations and Confirmations, the permittee shall perform multiple identifications and follow the methods specified in the documents "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081), as appropriate.

The documents referenced above may be obtained through the National Technical Information Service (NTIS) by phone at (800) 553-6847, or by writing:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

- (b) Sampling Plan (e.g., locations, methods, holding times, chain of custody, preservation, etc.)

The effluent sample volume collected for all tests shall be adequate to perform the toxicity test, toxicity characterization, identification and confirmation procedures, and conduct chemical specific analyses when a probable toxicant has been identified;

Where the permittee has identified or suspects specific pollutant(s) and/or source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical specific analyses for the identified and/or suspected pollutant(s) and/or source(s) of effluent toxicity. Where lethality was demonstrated within 48 hours of test initiation, each composite sample shall be analyzed independently. Otherwise the permittee may substitute a composite sample, comprised of equal portions of the individual composite samples, for the chemical specific analysis;

- (c) Quality Assurance Plan (e.g., QA/QC implementation, corrective actions, etc.); and

- (d) Project Organization (e.g., project staff, project manager, consulting services, etc.).

- (2) The permittee shall initiate the TRE Action Plan within thirty (30) days of plan and schedule submittal. The permittee shall assume all risks for failure to achieve the required toxicity reduction.

- (3) The permittee shall submit a quarterly TRE Activities Report, with the Discharge Monitoring Report in the months of January, April, July and October, containing information on toxicity reduction evaluation activities including:

- (a) Any data and/or substantiating documentation which identifies the pollutant(s) and/or source(s) of effluent toxicity;

- (b) Any studies/evaluations and results on the treatability of the facility's effluent toxicity; and

- (c) Any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution.
- (4) The permittee shall submit a Final Report on TRE Activities no later than twenty-eight (28) months from confirming lethality in the retests, which provides information pertaining to the specific control mechanism selected that will, when implemented, result in reduction of effluent toxicity to no significant lethality at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism.

Quarterly testing during the TRE is a minimum monitoring requirement. EPA recommends that permittees required to perform a TRE not rely on quarterly testing alone to ensure success in the TRE, and that additional screening tests be performed to capture toxic samples for identification of toxicants. Failure to identify the specific chemical compound causing toxicity test failure will normally result in a permit limit for whole effluent toxicity per federal regulations at 40 CFR 122.44(d)(1)(v).

- 9. If total residual chlorine (TRC) test results are less than Detection Level Achieved (DL), a value of zero (0) may be used for the DMR calculations and reporting requirements. TRC in the effluent composite sample shall be measured and reported both at the time of sample termination (i.e., when the sample is collected for shipment to a lab) and at the time of toxicity test initiation. The permittee shall ensure that the effluent composite used in toxicity testing is representative of the normal residual chlorine concentration in the facility's discharge.
- 10. If the analytical test result for a monitoring period is less than the minimum quantification level (MQL) listed below, a value of zero (0) may be used for that period on the Discharge Monitoring Report (DMR).

Pollutant	MQL ($\mu\text{g/l}$)
Total Recoverable Cadmium	0.5
Total Recoverable Copper	0.5
Total Recoverable Zinc	20

The permittee may develop a matrix specific method detection limit (MDL) in accordance with Appendix B of 40 CFR Part 136. For any pollutant for which the permittee determines a site specific MDL, the permittee shall send to ADEQ, NPDES Permits Branch, a report containing QA/QC documentation, analytical results, and calculations necessary to demonstrate that a site specific MDL was correctly calculated. A site specific minimum quantification level (MQL) shall be determined in accordance with the following calculation:

$$\text{MQL} = 3.3 \times \text{MDL}$$

Upon written approval by the NPDES Permits Branch, the site specific MQL may be utilized by the permittee for all future Discharge Monitoring Report (DMR) calculations and reporting requirements.

11. If at least four representative samples of the treated effluent are collected and analyzed for metals (i.e., cadmium, copper, and/or zinc) during the public comment period, the permittee may request the removal of the individual metal limits (i.e., cadmium, copper, and/or zinc) from the permit if the results indicate that there is no potential to exceed Water Quality Standards. This request must be made in writing and must be approved by the Department.
12. The permittee is required to maintain adequate stormwater storage capacity for a storm event up to a 10 year, 24-hour storm event. This capacity must exclude 2.0 feet of freeboard which must exist above the total volume required for normal operation plus the required storm surge capacity. (The term "10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable recurrence interval of once in ten years as defined by the National Weather Service and Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, or equivalent regional or rainfall probability information developed therefrom.)

PART III STANDARD CONDITIONS

SECTION A – GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the federal Clean Water Act and the Arkansas Water and Air Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; and/or for denial of a permit renewal application. **Any values reported in the required Discharge Monitoring Report (DMR) which are in excess of an effluent limitation specified in Part I shall constitute evidence of violation of such effluent limitation and of this permit.**

2. Penalties for Violations of Permit Conditions

The Arkansas Water and Air Pollution Control Act provides that any person who violates any provisions of a permit issued under the Act shall be guilty of a misdemeanor and upon conviction thereof shall be subject to imprisonment for not more than one (1) year, or a fine of not more than twenty-five thousand dollars (\$25,000) or by both such fine and imprisonment for each day of such violation. Any person who violates any provision of a permit issued under the Act may also be subject to civil penalty in such amount as the court shall find appropriate, not to exceed ten thousand dollars (\$10,000) for each day of such violation. The fact that any such violation may constitute a misdemeanor shall not be a bar to the maintenance of such civil action.

3. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to the following:

- a. Violation of any terms or conditions of this permit; or
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- c. A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- d. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.
- e. Failure of the permittee to comply with the provisions of APCEC Regulation No. 9 (Permit fees) as required by Part III.A.10. herein.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

4. Toxic Pollutants

Notwithstanding Part III.A.3., if any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under APCEC Regulation No. 2, as amended, or Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitations on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standards or prohibition and the permittee so notified.

The permittee shall comply with effluent standards, narrative criteria, or prohibitions established under APCEC Regulation No. 2, as amended, or Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Civil and Criminal Liability

Except as provided in permit conditions on “Bypassing” (Part III.B.4.a.), and “Upsets” (Part III.B.5.b.), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of this permit or applicable state and federal statutes or regulations which defeats the regulatory purposes of the permit may subject the permittee to criminal enforcement pursuant to the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended).

6. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under Section 311 of the Clean Water Act.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

9. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Permit Fees

The permittee shall comply with all applicable permit fee requirements for wastewater discharge permits as described in APCEC Regulation No. 9. Failure to promptly remit all required fees shall be grounds for the Director to initiate action to terminate this permit under the provisions of 40 CFR Parts 122.64 and 124.5(d), as adopted in APCEC Regulation No. 6 and the provisions of APCEC Regulation No. 8.

SECTION B – OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

- a. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- b. The permittee shall provide an adequate operating staff which is duly qualified to carryout operation, maintenance, and testing functions required to insure compliance with the conditions of this permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power for the treatment facility is reduced, is lost, or alternate power supply fails.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment or the water receiving the discharge.

4. Bypass of Treatment Facilities

a. Bypass not exceeding limitation

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.B.4.b. and 4.c.

b. Notice

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part III.D.6. (24-hour notice).

c. Prohibition of bypass

- (1) Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:
 - (a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal or preventive maintenance; and
 - (c) The permittee submitted notices as required by Part III.B.4.b.
- (2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in Part III.B.4.c.(1).

5. Upset Conditions

- a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part III.B.5.b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- b. Conditions necessary for demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the specific cause(s) of the upset;

- (2) The permitted facility was at the time being properly operated.
 - (3) The permittee submitted notice of the upset as required by Part III.D.6.; and
 - (4) The permittee complied with any remedial measures required by Part III.B.3.
- c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering the waters of the State. Written approval must be obtained from the ADEQ for land application only.

7. Power Failure

The permittee is responsible for maintaining adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failure either by means of alternate power sources, standby generators, or retention of inadequately treated effluent.

SECTION C – MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge during the entire monitoring period. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director. Intermittent discharges shall be monitored.

2. Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than +/- 10% from true discharge rates throughout the range of expected discharge volumes and shall be installed at the monitoring point of the discharge.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals frequent enough to insure accuracy of measurements and shall

insure that both calibration and maintenance activities will be conducted. An adequate analytical quality control program, including the analysis of sufficient standards, spikes, and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory. At a minimum, spikes and duplicate samples are to be analyzed on 10% of the samples.

4. Penalties for Tampering

The Arkansas Water and Air Pollution Control Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under the Act shall be guilty of a misdemeanor and upon conviction thereof shall be subject to imprisonment for not more than one (1) year or a fine of not more than ten thousand dollars (\$10,000) or by both such fine and imprisonment.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1). Permittees are required to use preprinted DMR forms provided by ADEQ, unless specific written authorization to use other reporting forms is obtained from ADEQ. Monitoring results obtained during the previous calendar month shall be summarized and reported on a DMR form postmarked no later than the 25th day of the month following the completed reporting period to begin on the effective date of the permit. Duplicate copies of DMR forms signed and certified as required by Part III.D.11. and all other reports required by Part III.D., shall be submitted to the Director at the following address:

Permits Enforcement Branch
Water Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

If permittee uses outside laboratory facilities for sampling and/or analysis, the name and address of the contract laboratory shall be included on the DMR.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated on the DMR.

7. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to

complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

8. Record Contents

Records and monitoring information shall include:

- a. The date, exact place, time and methods of sampling or measurements, and preservatives used, if any;
- b. The individuals(s) who performed the sampling or measurements;
- c. The date(s) and time analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The measurements and results of such analyses.

9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
- d. Sample, inspect, or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D – REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice and provide plans and specification to the Director for review and approval prior to any planned physical alterations or additions to the permitted facility. Notice is required only when:

Any change in the facility discharge (including the introduction of any new source or significant discharge or significant changes in the quantity or quality of existing discharges of pollutants) must be reported to the permitting authority. In no case are any new connections, increased flows, or significant changes in influent quality permitted that cause violation of the effluent limitations specified herein.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

The permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified in Part III.C.5. **Discharge Monitoring Reports must be submitted even when no discharge occurs during the reporting period.**

5. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-four Hour Report

- a. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain the following information:
 - (1) a description of the noncompliance and its cause;
 - (2) the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - (3) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- b. The following shall be included as information which must be reported within 24 hours:
 - (1) Any unanticipated bypass which exceeds any effluent limitation in the permit;
 - (2) Any upset which exceeds any effluent limitation in the permit; and/or
 - (3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part I of the permit to be reported within 24 hours to the Enforcement Section of the Water Division of the ADEQ.

- c. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours to the Enforcement Section of the Water Division of the ADEQ.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Parts III.D.4., 5., and 6., at the time monitoring reports are submitted. The reports shall contain the information listed at Part III.D.6.

8. Changes in Discharge of Toxic Substances for Industrial Dischargers

The permittee shall notify the Director as soon as he/she knows or has reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the “notification levels” described in 40 CFR Part 122.42(a)(1); or
- b. That any activity has occurred or will occur which would result in any discharge on a non-routine or infrequent basis of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the “notification levels” described in 40 CFR Part 122.42(a)(2).

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit. Information shall be submitted in the form, manner and time frame requested by the Director.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The complete application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Continuation of expiring permits shall be governed by regulations promulgated in APCEC Regulation No. 6.

11. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified as follows:

- a. All **permit applications** shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) The manager of one or more manufacturing, production, or operation facilities, provided: the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - (2) For a partnership or sole proprietorship: by a general partner or proprietor, respectively; or
 - (3) For a municipality, State, Federal, or other public agency, by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) The chief executive officer of the agency, or
 - (ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
- b. All **reports** required by the permit and **other information** requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- (1) The authorization is made in writing by a person described above;
 - (2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
 - (3) The written authorization is submitted to the Director.
- c. Certification. Any person signing a document under this section shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2 and APCEC Regulation No. 6, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the ADEQ. As required by the Regulations, the name and address of any permit applicant or permittee, permit applications, permits, and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Arkansas Air and Water Pollution Control Act provides that any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this permit shall be subject to civil penalties specified in Part III.A.2. and/or criminal penalties under the authority of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended).

PART IV DEFINITIONS

All definitions contained in Section 502 of the Clean Water Act shall apply to this permit and are incorporated herein by reference. Additional definitions of words or phrases used in this permit are as follows:

1. **“Act”** means the Clean Water Act, Public Law 95-217 (33 U.S.C. 1251 et seq.) as amended.
2. **“Administrator”** means the Administrator of the U.S. Environmental Protection Agency.
3. **“Applicable effluent standards and limitations”** means all State and Federal effluent standards and limitations to which a discharge is subject under the Act, including, but not limited to, effluent limitations, standards of performance, toxic effluent standards and prohibitions, and pretreatment standards.
4. **“Applicable water quality standards”** means all water quality standards to which a discharge is subject under the federal Clean Water Act and which has been (a) approved or permitted to remain in effect by the Administrator following submission to the Administrator pursuant to Section 303(a) of the Act, or (b) promulgated by the Director pursuant to Section 303(b) or 303(c) of the Act, and standards promulgated under (APCEC) Regulation No. 2, as amended.
5. **“Bypass”** means the intentional diversion of waste streams from any portion of a treatment facility.
6. **“Daily Discharge”** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling.
Mass Calculations: For pollutants with limitations expressed in terms of mass, the “daily discharge” is calculated as the total mass of pollutant discharged over the sampling day.
Concentration Calculations: For pollutants with limitations expressed in other units of measurement, determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the “daily discharge” determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during that sampling day by using the following formula: where C= daily concentration, F=daily flow and n=number of daily samples

$$\frac{C_1F_1 + C_2F_2 + \dots + C_nF_n}{F_1 + F_2 + \dots + F_n}$$

7. **“Monthly Average”** means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month. For Fecal Coliform Bacteria (FCB) report the monthly average (see 30-day average below).
8. **“Daily Maximum”** discharge limitation means the highest allowable “daily discharge” during the calendar month. The 7-day average for FCB is the geometric mean of the values of all effluent samples collected during the calendar week in colonies per 100 ml.
9. **“Department”** means the Arkansas Department of Environmental Quality (**ADEQ**).
10. **“Director”** means the Administrator of the U.S. Environmental Protection Agency and/or the Director of the ADEQ.

11. **“Grab sample”** means an individual sample collected in less than 15 minutes in conjunction with an instantaneous flow measurement.
12. **“Industrial User”** means a nondomestic discharger, as identified in 40 CFR Part 403, introducing pollutants to a POTW.
13. **“National Pollutant Discharge Elimination System”** means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements under Sections 307, 402, 318, and 405 of the Clean Water Act.
14. **“POTW”** means a Publicly Owned Treatment Works.
15. **“Severe property damage”** means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in products.
16. **“APCEC”** means the Arkansas Pollution Control and Ecology Commission.
17. **“Sewage sludge”** means the solids, residues, and precipitate separated from or created in sewage by the unit processes at a POTW. Sewage as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and stormwater runoff that are discharged to or otherwise enter a POTW.
18. **“7-day average”** discharge limitation, other than for FCB, is the highest allowable arithmetic mean of the values for all effluent samples collected during the calendar week. The 7-day average for FCB is the geometric mean of the values of all effluent samples collected during the calendar week in colonies/100 ml. The Discharge Monitoring Report (DMR) should report the highest 7-day average obtained during the calendar month. For reporting purposes, the 7-day average values should be reported as occurring in the month in which the Saturday of the calendar week falls in.
19. **“30-day average”**, other than for FCB, is the arithmetic mean of the daily values for all effluent samples collected during a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. The 30-day average for FCB is the geometric mean of the values for all effluent samples collected during a calendar month. For FCB, report the monthly average as a 30-day geometric mean in colonies per 100 ml.
20. **“24-hour composite sample”** consists of a minimum of 12 effluent portions collected at equal time intervals over the 24-hour period and combined proportional to flow or a sample collected at frequent intervals proportional to flow over the 24-hour period.
21. **“12-hour composite sample”** consists of 12 effluent portions, collected no closer together than one hour and composited according to flow. The daily sampling intervals shall include the highest flow periods.
22. **“6-hour composite sample”** consists of six effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.
23. **“3-hour composite sample”** consists of three effluent portions collected no closer together than one hour (with the first portion collected no earlier than 10:00 a.m.) and composited according to flow.
24. **“Treatment works”** means any devices and systems used in storage, treatment, recycling, and reclamation of municipal sewage and industrial wastes, of a liquid nature to implement section 201 of the Act, or necessary to recycle reuse water at the most economic cost over the

- estimated life of the works, including intercepting sewers, sewage collection systems, pumping, power and other equipment, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities, and any works, including site acquisition of the land that will be an integral part of the treatment process or is used for ultimate disposal of residues resulting from such treatment.
25. **“Upset”** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. Any upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventive maintenance, or careless of improper operations.
 26. **“For Fecal Coliform Bacteria (FCB)”**, a sample consists of one effluent grab portion collected during a 24-hour period at peak loads. For FCB report the monthly average as a 30-day geometric mean in colonies per 100 ml.
 27. **“Dissolved oxygen limit”**, shall be defined as follows:
 - a. When limited in the permit as a minimum monthly average, shall mean the lowest acceptable monthly average value, determined by averaging all samples taken during the calendar month;
 - b. When limited in the permit as an instantaneous minimum value, shall mean that no value measured during the reporting period may fall below the stated value.
 28. **The term “MGD”** shall mean million gallons per day.
 29. **The term “mg/l”** shall mean milligrams per liter or parts per million (ppm).
 30. **The term “µg/l”** shall mean micrograms per liter or parts per billion (ppb).
 31. **The term “cfs”** shall mean cubic feet per second.
 32. **The term “ppm”** shall mean parts per million.
 33. **The term “s.u.”** shall mean standard units.
 34. **The term “Instantaneous Maximum”** when limited in the permit as an instantaneous maximum value, shall mean that no value measured during the reporting period may fall above the stated value.
 35. **Monitoring and Reporting:**

When a permit becomes effective, monitoring requirements are of the immediate period of the permit effective date. Where the monitoring requirement for an effluent characteristic is monthly or more frequently, the DMR shall be submitted by the 25th of the month following the sampling. Where the monitoring requirement for an effluent characteristic is Quarterly, Semi-Annual, Annual, or Yearly, the DMR shall be submitted by the 25th of the month following the monitoring period end date.

MONTHLY:

is defined as a calendar month or any portion of a calendar month for monitoring requirement frequency of once/month or more frequently.

QUARTERLY:

- a. is defined as a fixed calendar quarter or any part of the fixed calendar quarter for a non-seasonal effluent characteristic with a measurement frequency of once/quarter. Fixed calendar quarters are: January through March, April through June, July through September, and October through December; or
- b. is defined as a fixed three month period (or any part of the fixed three month period) of or dependent upon the seasons specified in the permit for a seasonal effluent characteristic with a monitoring requirement frequency of once/quarter that does not coincide with the fixed calendar quarter. Seasonal calendar quarters are: May through July, August through October, November through January, and February through April.

SEMI-ANNUAL:

is defined as the fixed time periods January through June, and July through December (or any portion thereof) for an effluent characteristic with a measurement frequency of once/6 months or twice/year.

ANNUAL or YEARLY:

is defined as a fixed calendar year or any portion of the fixed calendar year for an effluent characteristic or parameter with a measurement frequency of once/year. A calendar year is January through December, or any portion thereof.

36. **The term “Weekday”** means Monday – Friday.
37. **Pass Through**, according to 40 CFR 403.3(p), means a Discharge which exits a POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).
38. **Interference**, according to 40 CFR Part 403.3(k), means a Discharge which, alone or in conjunction with a discharge or discharges from other sources, both:
 - a. Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
 - b. Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued under (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research, and Sanctuaries Act.

CALCULATIONS OF ARKANSAS WATER QUALITY-BASED EFFLUENT LIMITATIONS

For an Arkansas River/Stream
(Reserved)

STEP 1: INPUT TWO LETTER CODE FOR ECOREGION (Use Code at Right)
Basin Name

FACILITY

Permittee
NPDES Permit No.
Outfall No.(s)
Plant Effluent Flow (MGD)
Plant Effluent Flow (cfs)

GC
Ouachita River

Codes & TSS for Ecoregions and Large Rivers

<p>City of Bryant AR0034002 1.00 3.00 4.64</p>	<p>Ouachita Mts. Eco (OM) = 2.0 mg/l Ozark Highlands Eco (OH) = 2.5 mg/l Boston Mts. Eco (BM) = 1.3 mg/l Ark River Valley Eco (AV) = 3.0 mg/l Gulf Coastal Eco (GC) = 5.5 mg/l Delta Ecoregion (DL) = 8.0 mg/l</p>	<p>Arkansas (Ft. Smith to Dardanelle Dam) 12.0 mg/l Arkansas (Dardanelle Dam to Terry L&D) 10.5 mg/l Arkansas (Terry L&D to L&D No. 5) 8.3 mg/l Arkansas (L&D No. 5 to Mouth) 9.0 mg/l White (Above Beaver Lake) 2.5 mg/l White (Below Bull Shoals to Black Riv) 3.3 mg/l White (From Black River to Mouth) 18.5 mg/l St. Francis River 18.0 mg/l Ouachita (Above Caddo River) 2.0 mg/l Ouachita (Below Caddo River) 5.5 mg/l Red River 33.0 mg/l</p>
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RECEIVING STREAM

Is this a large river? (see list at right)(enter "1" if yes, "0" if no; make entry as a number)
Name of Receiving Stream:
Waterbody Segment Code No.
Is this a lake or reservoir? (enter '1' if yes, '0' if no; make entry as a number)
Second Enter Enter 7Q10 in Cell H31
(Reserved) DO NOT INPUT DATA INTO CELL H22, H23 & H24.....LEAVE BLANK= (Reserved)
(Reserved)

Unnamed Trib. of Hurricane Creek
2C

Total Hardness for:
Arkansas River = 125 mg/l
Ouachita River = 28 mg/l
White River = 116 mg/l

Red River = 211 mg/l
St. Francis River = 103 mg/l

(Reserved)
(Reserved)
(Reserved)
(Reserved)

Gulf Coastal = 31 mg/l
Ozark Highlands = 148 mg/l
Boston Mount = 25 mg/l

Ecoregion TSS (mg/l) (For Large River, See List to Right)

Ecoregion Hardness (mg/l)
Enter 7Q10 (cfs) as the Critical Flow (Reserved) (Reserved)

Long Term Ave / Harmonic Mean Flow (cfs)
Using Diffusers (Yes/No)

pH (Avg) No
Percent (%) of Critical Flow for Chronic Criteria 7.11
Percent (%) of Critical Flow for Acute Criteria 0.67
Water Effect Ratio (WER) 0.33
Ave Monthly Limit LTA Multiplier (Ref: page 103 TSD for WQ-Based Toxics Control) 1.00
Max Daily Limit LTA Multiplier (Ref: " " " " " " " ") 1.55

Large Rivers

Mississippi River, Arkansas River, Red River
White (Below confluence with Black River)
Ouachita (Below confluence with Little Miss. River)

For industrial and federal facility, use the highest monthly average flow for the past 24 months. For POTWs, use the design flow.

#VALUE! => No violation or Not Applicable
99999999.00 => No EPA/ADEQ Guideline

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

DATA INPUT

For less than 20 data points enter geometric mean concentration as micro-gram per liter (ug/l or ppb).
For 20 or more data points in set enter highest concentration as micro-gram per liter (ug/l or ppb).

Effluent value reported as "< detection level" (DL) but the DL is greater than MQL, the 1/2 DL is used.
Effluent value reported as "< detection level" (DL) and the DL is smaller than MQL, "0" is used.
If a firm value is reported, even less than MQL, the reported value is used.

The following formulae is used to calculate the Instream Waste Concentration (IWC)

$$IWC = [(F*Qa*Cb) + (Qe*2.13*Ce)] / (F*Qa + Qe)$$

Where:

IWC = instream Waste Concentration
F = Fraction of stream allowed for mixing
Ce = Reported concentration in effluent

Cb = Ambient stream concentration upstream of discharge
 Qe = Plant effluent flow
 Qb = Critical flow of stream at discharge point expressed as the 7Q10 or harmonic mean flow for human health criteria
 Upstream Flow (QB) = (% of 7Q10) X 7Q10 for Chronic and Acute

The following formulae convert metals reported in total form to dissolved form if criteria are in dissolved form

$$Kp = Kpo \cdot (TSS^{**a})$$

$$C/Ct = 1/(1 + Kp \cdot TSS^{*10^{-6}})$$

$$Total\ Metal\ Criteria\ (Ct) = Cr / (C/Ct)$$

***Stream Linear Partition Coefficient (insert "Dissolved" Conc in Column B to convert to Lake Linear Partition Coefficient**

Total Metals	Dissolved Value in Stream	Kpo	alpha (a)	Kp	C/Ct	Total Value	Kpo	alpha (a)	Kp	C/Ct	Total Value
Arsenic		480000	-0.73	138285.446	0.56799788	0.00	480000.00	-0.73	138285.45	0.5679979	0
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	0.1172024	0
Copper		1040000	-0.74	294554.016	0.381672829	0.00	2850000.00	-0.9	614495.12	0.2283249	0
Lead		2800000	-0.8	715925.58	0.202527926	0.00	2040000.00	-0.53	826490.64	0.1803199	0
Mercury		2900000	-1.14	415321.613	0.30448177	0.00	1970000.00	-1.17	268066.09	0.4041443	0
Nickel		490000	-0.57	185433.992	0.495077211	0.00	2210000.00	-0.76	604946.03	0.2310962	0
Zinc		1250000	-0.7	379014.766	0.324193117	0.00	3340000.00	-0.68	1047851.74	0.1478593	0
Silver		2400000	-1.03	414607.994	0.30484608	0.00	2400000.00	-1.03	414607.99	0.3048461	0

**Note: Use this section to convert lab concentrations shown as "dissolved" to "total"*

The following formulas are used to calculate water quality criteria based on Regulation No. 2 (Act 472 of Ark 1949)

Cadmium
 Acute: $WER \times CF1 \times e(1.128[\ln(\text{hardness})]-3.828)$ Dissolved WQC (ug/l) 1.04
 Chronic: $WER \times CF2 \times e(0.7852[\ln(\text{hardness})]-3.490)$ Total WQC(ug/l) 0.43
 $CF1 = 1.136672 - [0.041838 \cdot \ln(\text{hardness})]$
 $CF2 = 1.101672 - [0.041838 \cdot \ln(\text{hardness})]$

Chromium Tri
 Acute: $WER \times 0.316 \times e(0.819[\ln(\text{hardness})]+3.688)$ 210.28
 Chronic: $WER \times 0.86 \times e(0.819[\ln(\text{hardness})]+1.561)$ 68.21

Chromium Hex
 Acute: $WER \times 0.982 \times 16$ 15.71
 Chronic: $WER \times 11 \times 0.962$ 10.58

Copper
 Acute: $WER \times 0.96 \times e(0.9422[\ln(\text{hardness})]-1.464)$ 5.64
 Chronic: $WER \times 0.96 \times e(0.8545[\ln(\text{hardness})]-1.465)$ 4.17

Lead
 Acute: $WER \times e(1.273[\ln(\text{hardness})]-1.460) \cdot CF3$ 17.68
 Chronic: $WER \times e(1.273[\ln(\text{hardness})]-4.705) \cdot CF3$ 0.69
 $CF3 = 1.46203 - [0.145712 \cdot \ln(\text{hardness})]$

Mercury
 Acute: $WER \times 0.85 \times 2.4$ 2.04
 Chronic: $WER \times 0.012$ 0.01

Nickel
 Acute: $WER \times 0.998 \times e(0.8460[\ln(\text{hardness})]+3.3612)$ 525.50
 Chronic: $WER \times 0.997 \times e(0.8460[\ln(\text{hardness})]+1.1645)$ 58.36

Zinc
 Acute: $WER \times 0.978 \times e(0.8473[\ln(\text{hardness})]+0.8604)$ 42.43
 Chronic: $WER \times 0.986 \times e(0.8473[\ln(\text{hardness})]+0.7614)$ 38.74

Silver
 Acute: $WER \times 0.85 \times e(1.72[\ln(\text{hardness})]-6.52)$ 0.46

Cyanide
 Acute: $WER \times 22.36$ 22.36
 Chronic: $WER \times 5.2$ 5.20

Arsenic	Acute Chronic	WER X 360 WER X 190	360.00 190.00
Beryllium	Acute Chronic	WER X 130 WER X 5.3	130.00 5.30
Selenium	Acute Chronic	WER X 20 WER X 5	20.00 5.00

The following formulas are applicable to the Jet Stream Model for lakes for calculating the Dilution Factor (DF):

$$DF = \frac{(2.8 * D * 3.1416^{0.5}) / X}{\text{and X is aquatic life criteria--25 feet for ZID; 100 feet for mixing zone; human health criteria 200 feet for mixing zone.}}$$

DF = #VALUE! Acute #VALUE! Chronic

The following formulas are used to calculate the instream waste concentration (IWC) for each pollutant:

$$IWC = \frac{[(Frac X Critical Flow X Cb) + (2.13 X Ce X Qd)] / [Frac X Critical Flow + Qd]}{\text{Use EPA Statistical Factor of 2.13 for less than 20 Ce data points with the Geometric Mean of the Ce's; use 1 for more than 20 data points with the maximum Ce.}}$$

$$IWC = (DF X Ce) + Cb \text{ for lakes with Jet Stream Model.}$$

POLLUTANTS

Number of Data points	MQL ug/l	EPA Statistical Factor	Background Conc. Cb ug/l	Effluent Conc. Ce ug/l	Domestic Supply IWC ug/l		Acute Aquatic IWC ug/l		Chronic Aquatic IWC ug/l		Domestic Criteria ug/l		Arkansas Acute Aquatic Criteria ug/l		Arkansas Chronic Aquatic Criteria ug/l	
					ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1	1	2.13	0	0.88	1.87	1.87	1.87	1.87	1.87	1.87	10	4.37	4.37	1.82	9999999.00	
1	0.5	2.13	0	19	40.47	40.47	40.47	40.47	40.47	40.47	9999999.00	14.79	14.79	10.93	9999999.00	
12	0.5	2.13	0	0.44	0.94	0.94	0.94	0.94	0.94	0.94	50	87.29	87.29	3.40	9999999.00	
1	0.5	2.13	0	14.1	30.03	30.03	30.03	30.03	30.03	30.03	9999999.00	1061.45	1061.45	117.88	4600	
1	20	2.13	0	111	236.43	236.43	236.43	236.43	236.43	236.43	9999999.00	130.87	130.87	119.50	9999999.00	

METALS AND CYANIDE

4. Cadmium Total	Permit Daily Maximum ug/l	4.0789	Permit Daily Maximum lb/day	0.10205398	Permit Monthly Average lb/day	0.05086292	EPA Bioac Status	N/A
8. Copper Total	Permit Daily Maximum ug/l	24.4794	Permit Daily Maximum lb/day	0.61247402	Permit Monthly Average lb/day	0.30525233	EPA Bioac Status	N/A
9. Lead Total	Permit Daily Maximum ug/l	NO	Permit Daily Maximum lb/day	NO	Permit Monthly Average lb/day	NO	EPA Bioac Status	N/A
12. Nickel Total	Permit Daily Maximum ug/l	NO	Permit Daily Maximum lb/day	NO	Permit Monthly Average lb/day	NO	EPA Bioac Status	N/A
16. Zinc Total	Permit Daily Maximum ug/l	231.9893	Permit Daily Maximum lb/day	5.80437349	Permit Monthly Average lb/day	2.89285495	EPA Bioac Status	N/A

STEP 3: APPLICABLE WATER QUALITY-BASED LIMITS

POLLUTANTS	Permit Daily Maximum ug/l	Permit Monthly Average ug/l	Permit Daily Maximum lb/day	Permit Monthly Average lb/day	EPA Bioac Status
Cadmium Total	4.0789	2.0329	0.10205398	0.05086292	N/A
Copper Total	24.4794	12.2003	0.61247402	0.30525233	N/A
Lead Total	NO	NO	NO	NO	N/A
Nickel Total	NO	NO	NO	NO	N/A
Zinc Total	231.9893	115.6217	5.80437349	2.89285495	N/A