

**Arkansas Department of Environmental Quality
Water Quality Management Plan Update Summary Sheet**

Date: 09/09/2010

New Permit Renewal Permit Amended Permit

Type of Discharge: Domestic Wastewater

Facility Name: Arkansas Department of Corrections-North Central Unit, Izard County Facility

Permit No.: AR0044016

Design Flow Rate (MGD): 0.09

Receiving Stream: an unnamed tributary of Moccasin Creek, thence to Moccasin Creek, & thence to the White River

HUC + Reach Code:¹ 11010004+008 **7Q10:** 0 cfs

Planning Segment: 4F **County:** Izard

Proposed Effluent Limits in mg/L (CBOD5/TSS/NH3-N/DO):

April:² 10/15/3.9/5.0
 May – October:³ 10/15/3.0/5.0
 November – March: 10/15/5.0/5.0

Justification (Sag = Minimum Modeled Value ≠ Difference in Value):⁴

Reach No.	Length (miles)	DO _C (mg/L)	Sag _C (mg/L)	Distance to Sag _C (miles)	DO _P (mg/l)	Sag _P (mg/L)	Distance to Sag _P (miles)
1	0.08	2.0	N/A	N/A	6.0	N/A	N/A
2	1	5.0	N/A	N/A	6.0	N/A	N/A

Current Effluent Limits in mg/L (CBOD5/TSS/NH3-N/DO):

April: 10/15/Report/5.0
 May – October: 10/15/3/5.0
 November – March: 10/15/5/5.0

Outfall Location (Lat/Long): 36° 10' 11" N; 92° 09' 24" W

Remarks: This is for the reissuance of the discharge permit for this existing facility.

¹ Reach 008 (the White River) is the closest numbered reach in the ADEQ's 2008 305(b) Report.

² The proposed NH3-N limit in April is based on Reg. 2.512.

³ Per Reg. 2.106, the Critical Season is temperature dependent and tends to be from mid-May to mid-September.

⁴ No model was prepared because the limits are based on the previous permit (except for April's NH3-N limit) pursuant to 40 CFR Part 122.44(l). According to the permit file, these limits were set assuming that Moccasin Creek might be a losing stream (i.e., per Reg. 6.301).

Ammonia Calculations

Facility Name	ADC-North Central Unit, IZARD County Facility		
Major or Minor	Minor		
Permit Number	AR0044016		
Receiving Stream	Un. Trib., Moccasin Ck, White Riv.	Ecoregion or River name	Ozark Highlands
7Q10, cfs	0	Watershed area (mi ²)	1 < 10
0.25/0.67 multiplier	0.67	Regulation No. 2 Chronic Toxicity Criteria (Instream Concentration)	
Qb, cfs	0.00	AML, mg/l	3.9
Qe, MGD	0.09		3.9
Qe, cfs	0.14		10.3
Cb, mg/l	0		10.3

Allowable Effluent Conc., mg/l

$(Q_e * C_e) + (Q_b * C_b) = (Q_e + Q_b) * IWC$

Allowable Effluent Conc. (Ce), mg/l

Qe	Effluent Flow		
Ce	Allowable Effluent Concentration	$C_e = (IWC (Q_e + Q_b) - C_b \times Q_b) / Q_e$	Daily Max., mg/l
Qb	% of Low Flow of Receiving Stream	April	3.90
Cb	Background Concentration	May - October	3.90
IWC	Instream Waste Concentration Chronic Toxicity Criteria	November - March	10.30
		Monthly Avg., mg/l	

Chronic Toxicity Criteria vs. D.O. Model Limits

Month	Monthly Average, mg/l		Permit Limits	
	Monthly Toxicity limit	D.O. limit	Daily Maximum, mg/l	D.O. limit
April	3.9	5.0	3.9	7.5
May - October	no fishery	3.0	no fishery	4.5
November - March	10.3	5.0	10.3	7.5

Jastrzebski, Marysia

From: Roberts, Christopher
Sent: Thursday, September 09, 2010 5:02 PM
To: Jastrzebski, Marysia
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit



AR0044016_Modeli ADC North Central ADC North Central
ng Report_2010... Unit Ammonia... Unit Summary...

I actually think they should have a DO minimum of 6 from November through April (Don't see much dilution water at the outfall in the Google Earth sat photo dated January 2006.), but I've written it up w/ the year-round minimum of 5. If you want to change anything, please let me know.

-----Original Message-----

From: Jastrzebski, Marysia
Sent: Thursday, September 02, 2010 9:31 AM
To: Roberts, Christopher
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Chris,

Let's just keep the limits the way they are.

Thanks,

m

Marysia Jastrzebski, P. E.
NPDES Permit Engineer, Water Division
Arkansas Department of Environmental Quality
Phone: 870-446-5939
Fax: 870-446-2181
E-mail: marysia@adeq.state.ar.us

-----Original Message-----

From: Roberts, Christopher
Sent: Tuesday, August 10, 2010 10:05 AM
To: Jastrzebski, Marysia
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Know you're super busy, so I read through Zylab. Based on what I've read, the field surveys found no direct link between groundwater and surface water, so it was determined to not be a losing stream. However, the area is karst with lots of caves and sinkholes. Apparently some of the residents also claim to use raw (untreated) surface water as drinking water. Thus, limits were set low with some drinking water standards (e.g., nitrates & fecal). Don't know how well the facility has complied with the limits.

As far as the WQMP update is concerned, I'll wait for you to let me know if you want to keep the old limits or if you want to try to relax them. Up to you.

No hurry on my end. Just trying to help.

-----Original Message-----

From: Jastrzebski, Marysia
Sent: Monday, July 19, 2010 11:50 AM
To: Roberts, Christopher
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Chris,

Let me do some research and think about it. Working on some other urgent projects. Could you please put it on hold for now until I get back with you?

Thanks,

m

Marysia Jastrzebski, P. E.
NPDES Permit Engineer, Water Division
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-----Original Message-----

From: Roberts, Christopher
Sent: Monday, July 19, 2010 11:23 AM
To: Jastrzebski, Marysia
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Hmm. So it's been assumed to be a losing stream, but it's never been surveyed to determine one way or the other? What do you want to do? Keep assuming it's losing, or roll the limits back to what they would be for a non-losing stream? Give them non-losing numbers and require a study? How do you want me to proceed?

-----Original Message-----

From: Roberts, Christopher
Sent: Monday, July 19, 2010 10:52 AM
To: Jastrzebski, Marysia
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Looks like public comments suggested it might be a losing stream so the proposed limits were lowered in 1989 when the first permit was issued. Haven't found anything in Zylab discussing whether or not Moccasin Creek (or the unnamed trib) really is a losing stream. I'll keep looking.

-----Original Message-----

From: Roberts, Christopher
Sent: Monday, July 12, 2010 9:51 AM
To: Jastrzebski, Marysia
Subject: RE: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Have you figured out why the limits are so low? Is this a losing stream? I can look in Zylab if you haven't.

-----Original Message-----

From: Jastrzebski, Marysia
Sent: Friday, July 09, 2010 3:50 PM
To: Roberts, Christopher
Subject: Request for limits - AR0044016-Ark. Dept. of Corrections- North Central Unit

Chris,

And one more:

ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY

MEMORANDUM

TO: Chris Roberts, P.E., Engineer

FROM: Marysia Jastrzebski, P.E., Engineer

DATE: July 9, 2010

SUBJECT: Update Effluent Limits

Name of facility: Arkansas Department of Corrections-North Central Unit, IZARD County Facility

NPDES Permit No. AR0044016

NPDES Permit Expiration Date: 10/31/2010

NPDES Permit Due Date: 8/31/2010

Are there any changes from previously permit? Yes _____ NO X_____

The following Effluent Limits and the receiving stream exist in WQMP, please confirm the accuracy:

Effluent Limits: (CBOD5/TSS/NH3-N/DO) (May-Oct.) = 10/15/3/5 mg/l

(CBOD5/TSS/NH3-N/DO) (Nov.-Apr.)= 10/15/5/5 mg/l

Q = 0.09 MGD

The receiving stream is: an unnamed tributary of Moccasin Creek, thence to Moccasin Creek, thence to the White River

Outfall Coordinates: Latitude: 36o 10' 11" Longitude: 92o 09'24"

County: IZARD

Planning Segment: 4F

Previous permit 7Q10: _____

From: Chris Roberts, PE
TO: Marysia Jastrzebski, P.E.

7Q10 = _____ cfs
less than 10 square miles _____
more than 10 square miles _____

May affect water of another State _____ Yes _____ No