

# **Request for a waiver of the source-oriented lead-monitoring requirement at the Lower Colorado River Authority's Fayette Power Plant, Fayette County**

This request for a waiver remained posted from December 14, 2012 to January 14, 2013 for public comment. The TCEQ received no comments on the request.

The TCEQ requests a waiver of the source-oriented lead monitoring requirement for the Lower Colorado River Authority's Fayette Power Plant because lead emissions from the site do not contribute to modeled lead concentrations in excess of 50 percent of the 2008 lead National Ambient Air Quality Standard.

The TCEQ used the most current, complete, and validated emissions inventory information available when identifying non-airport lead sources with emissions at or above 0.5 ton per year for potential monitoring under the December 14, 2010, EPA final rule on lead (75 *FR* 81134). The agency began this comparison with its 2010 TCEQ point source emissions inventory and 2010 Toxic Release Inventory databases. The LCRA Fayette Plant was one facility identified as having lead emissions above 0.5 tpy based on the 0.62 ton of lead emissions in the 2010 annual EI, and 0.125 tons of lead emissions listed in the 2010 TRI.

The TCEQ conducted air-dispersion modeling using the most current permitted modeling parameters and associated allowable emission rates. This modeling predicts, that the maximum rolling three-month average ground level concentration ( $GLC_{max}$ ) in ambient air resulting from the LCRA Fayette Power Plant's lead emissions sources is  $0.00145 \mu\text{g}/\text{m}^3$ . The December 2010 final rule on lead monitoring states: "The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State . . . can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means)" [75 *FR* 81130, 81138 (December 27, 2010)]. Because the predicted  $GLC_{max}$  of  $0.00145 \mu\text{g}/\text{m}^3$  resulting from maximum allowable lead emissions at the LCRA Fayette Power Plant is less than 1 percent of the 2008 lead NAAQS, a monitoring waiver is appropriate.

## **Supporting Documentation**

- [Modeling Analysis of Lead for the LCRA \(RN100226844\)](#)
- [Ambient Air Modeling Grid Map](#)

# TCEQ Interoffice Memorandum

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To: Jim Price, Ph.D.  
Air Modeling and Data Analysis Section  
Air Quality Division

Thru: Robert Opiela, P.E.  
*DM for* Rule and Permit Support Team  
Air Permits Division

From: *MK* Matthew Kovar and Heather Wylie  
Air Dispersion Modeling Team (ADMT)  
Air Permits Division

Date: July 25, 2012

Subject: **Modeling Analysis of Lead for the Lower Colorado River Authority (LCRA)  
(RN100226844)**

## 1. Project Identification Information

On November 12, 2008, the U.S. Environmental Protection Agency (EPA) finalized the new 0.15 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) NAAQS for lead based on a rolling three-month average. On December 27, 2010 (75 Federal Register 81134), the EPA lowered the emission threshold from annual lead emissions of one ton or more to a half a ton or more in actual emissions that state agencies must use to determine if an air quality monitor should be placed near an industrial facility that emits lead. The rule further requires that this monitoring be conducted at or near the maximum off-site ambient air lead concentration, as predicted by modeling. The LCRA Fayette Power Project was identified as having emissions at or above the threshold based on the reported 2010 TCEQ Emissions Inventory and/or 2010 Toxics Release Inventory.

The TCEQ conducted air dispersion modeling of lead emission sources at the site using the most current permitted modeling parameters and associated allowable emission rates. The TCEQ will use the dispersion modeling results to determine the optimal location of any required source-oriented monitors.

ArcReader Published Map: <\\Msgiswrk\APD\MODEL PROJECTS\3767\3767.pmf>

## 2. Report Summary

The predicted maximum ground level concentration (GLCmax) is  $0.00145 \mu\text{g}/\text{m}^3$  for a rolling three-month average. The location of the GLCmax is approximately 1370 meters

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from EPN 3-1B to the north-northwest. Table 1 lists the location of the predicted GLCmax. The location is in the UTM Zone 14 North, North American Datum of 1983 (NAD83) coordinate system.

**Table 1. Modeling Results for Lead**

Easting (meters)	Northing (meters)	Averaging Time	GLC ( $\mu\text{g}/\text{m}^3$ )	Standard ( $\mu\text{g}/\text{m}^3$ )
716900	3312900	rolling three-month	0.00145	0.15

### 3. Model Used and Modeling Techniques

AERMOD (Version 12060) was used in a refined screening mode. For refined screening, National Weather Service (NWS) meteorological raw input data are used with generalized surface characteristics of the application site. Since the current version of AERMOD is not capable of calculating rolling three-month average concentrations, the EPA post processor LeadPost was used. The input values to LeadPost are monthly average values at each receptor in the POSTFILE output format from AERMOD.

Each boiler stack was modeled at the plant-wide emission cap level. The boiler stack EPN 3-1B produced the highest predicted concentration.

#### A. Land Use

A land use/land cover analysis was performed using AERSURFACE consistent with guidance given in the AERMOD Implementation Guide (March 19, 2009). The recommended input data, the National Land Cover Data 1992 archives (NLCD92), were used for this analysis.

The AERSURFACE analysis conducted of the area surrounding the LCRA Fayette Power Project site resulted in a calculated albedo of 0.16, a calculated Bowen ratio of 0.57, and a calculated surface roughness length of 0.043 meters. These values were used to develop the meteorological data set for this analysis.

Terrain elevations within the modeling domain were determined using AERMAP (Version 11103). The input data used for this analysis were United States Geological Survey (USGS) seamless data that covers digital elevation models (DEMs) for Ammannsville, Ellinger, Fayetteville, La Grange East, Nechanitz, and Round Top data sets.

#### B. Meteorological Data

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Surface Station and ID: Austin, TX (Station #: 13904)  
Upper Air Station and ID: Fort Worth, TX (Station #: 03990)  
Meteorological Dataset: 2006-2010  
Profile Base Elevation: 189 meters

## C. Receptor Grid

The receptor grid used in the modeling analysis consisted of receptors with 100 meter spacing. All receptor locations were treated as ambient air, including on property locations. The purpose of the receptor grid was to determine a representative maximum ground-level concentration and the extent of ground-level concentrations at or above half of the lead NAAQS standard.

## D. Building Wake Effects (Downwash)

Input data to Building Profile Input Program Prime (Version 04274) were provided by LCRA. The building locations were validated by ADMT using aerial photography.

## 4. Modeling Emissions Inventory

The modeled source parameters were obtained from the permit file. The source locations were validated by ADMT using aerial photography. The emission rate modeled was the lead (Pb) emissions cap for all three boiler stacks from the most recent effective permit. The plant-wide emission rate cap was modeled from each stack. The results from the stack producing the highest predicted maximum ground-level concentration was used for this analysis. The emission rate represents the worst case 1-hour average emission rate. The emission source coordinates are in the UTM Zone 14 North, North American Datum of 1983 (NAD83) coordinate system.

**Table 2. On-Property Point Source Parameter Information**

EPN	Source ID	Easting (meters)	Northing (meters)	Stack Height (meters)	Stack Temperature (K)	Stack Exit Velocity (meters/sec)	Stack Diameter (meters)
3-1B	216587	717164.33	3311555.34	162	334	10.91	7.85
FPP-1N	216634	717225.65	3311652.99	160	331	16.91	8.69
FPP-2N	216635	717225.65	3311634.99	160	331	16.91	8.69

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**Table 3. On-Property Source Modeled Emission Rates**

EPN	Pollutant	Averaging Time	Emission Rate (lb/hr)
3-1B	Lead	Month	0.29
FPP-1N	Lead	Month	0.29
FPP-2N	Lead	Month	0.29

## 5. Modeling Files Listing

**Table 4. Modeling Files**

File Name	File Description
3767_FAYETTE_AUSFWD_2006_2010.SFC	AERMET surface output file
3767_FAYETTE_AUSFWD_2006_2010.PFL	AERMET profile output file
Fayette Power Project.DTA	AERMOD input file
Fayette Power Project.GRF	AERMOD plot file
Fayette Power Project.LST	AERMOD output file
Fayette Power Project.SUM	AERMOD summary file
lead_post_216634.txt	AERMOD post file (EPN FPP-1N)
lead_post_216635.txt	AERMOD post file (EPN FPP-2N)
lead_post_216587.txt	AERMOD post file (EPN 3-1B)
lead.out (3 files)	LeadPost output files (EPNs FPP-1N, FPP-2N, 3-1B)
SamSeymour.PIP	BPIP-PRIME input file
SamSeymour.SO	BPIP-PRIME output file
SamSeymour.SUM	BPIP-PRIME summary file

# Modeling Analysis of Lead for LCRA Fayette Power Plant Fayetteville, Texas

## Legend

### Rolling 3 Month Max micrograms per cubic meter

- 0.000000 - 0.000197
- 0.000198 - 0.000377
- 0.000378 - 0.000607
- 0.000608 - 0.000940
- 0.000941 - 0.001450
- EGU Stacks
- Plant Structures

This map was generated by the Office of Air, Air Quality Division of the Texas Commission on Environmental Quality and is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For information concerning this map, contact the Air Quality Division at (512) 239-1459.

