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February 6, 2013

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Texas Commission on Environmental Quality
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Austin, Texas 78711-3087

Via Courier

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
2013 FEB -6 PM 3:31
CHIEF CLERKS OFFICE

RE: Petition for Rulemaking

Dear Ms. Bohac:

Enclosed for filing please find the *Original Petition for Rulemaking* submitted on behalf of Tarrant Regional Water District. Please file-stamp the extra copy of the Petition and return it to our courier.

Thank you for your assistance in this matter. Please contact us at (512) 472-3263 with any comments or concerns, or if any further information or documentation is required.

Very Truly Yours,

Fred. B. Werkenthin, Jr.

FBW/mh
Enclosure
cc: *via email*
Jim Oliver, Tarrant Regional Water District
Woody Frossard, Tarrant Regional Water District
Darrel Andrews, Tarrant Regional Water District
Mark Ernst, Tarrant Regional Water District

PETITION FOR RULEMAKING BY TARRANT REGIONAL WATER DISTRICT MODIFYING SUBCHAPTER G OF 30 TAC, CHAPTER 311	§ § § § §	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

ORIGINAL PETITION FOR RULEMAKING

2013 FEB -8 PM 3:47
CHIEF CLERKS OFFICE
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

TO THE HONORABLE COMMISSIONERS:

NOW COMES Tarrant Regional Water District ("TRWD") and pursuant to 30 Texas Administrative Code ("TAC") Chapter 20 hereby presents this Petition for Adoption of a Rule ("Petition") to the Texas Commission on Environmental Quality ("TCEQ" or "Commission") seeking modification of 30 TAC Chapter 311, Subchapter G to correct the descriptions of Benbrook Lake Watershed and Benbrook Lake Water Quality Area and to impose an effluent limitation of 1 milligrams per liter ("mg/L") total phosphorus for new or amended permits authorizing discharges greater than or equal to 0.10 million gallons per day ("MGD") to the Benbrook Lake Water Quality Area and for new or amended permits authorizing discharges greater than or equal to 0.25 MGD to the Benbrook Lake Watershed, and respectfully requests that the Commission consider this Petition and the proposed modified rule as set out herein ("Amended Rule") and initiate proceedings necessary to adopt the Amended Rule. Pursuant to the provisions of 30 TAC § 20.15, TRWD would respectfully show the following:

I. PUBLIC POLICY BENEFITS

This Petition is submitted in the interest of protecting the water quality of Benbrook Lake. Benbrook Lake currently has periodic taste and odor problems caused by the proliferation of blue-green algae that are related to excessive nutrient enrichment, primarily phosphorus enrichment. As discussed further below, Benbrook Lake and its

watershed are currently listed within the Texas 305b Report for water quality concerns due to this excessive nutrient enrichment.

The proposed Amended Rule would require that certain permits authorizing new or amended municipal wastewater discharges to waters in the Benbrook Lake Watershed include a requirement to treat total phosphorus to a concentration of 1 mg/L. These phosphorus treatment requirements would only apply to new or amended permits authorizing discharges greater than or equal to 0.10 MGD to the Benbrook Lake Water Quality Area, and new or amended permits authorizing discharges greater than or equal to 0.25 MGD to the Benbrook Lake Watershed. The need for phosphorus control is further supported by the East Parker County Watershed Planning Group Study[1], water quality analyses performed by TRWD, and TCEQ's water quality management information. By this Petition, TRWD asks that the Commission amend Subchapter G of 30 TAC Chapter 311. In addition, TRWD proposes that the Commission amend the definitions of "Benbrook Lake Water Quality Area" and "Benbrook Lake Watershed" for the reservoirs addressed in Subchapter G.

II. PETITIONER'S NAME AND ADDRESS

Petitioner's name is Tarrant Regional Water District. Petitioner's address is 800 E. North Side Dr., Fort Worth, TX 76102.

III. BACKGROUND

TRWD is an agency of the State of Texas created and operating pursuant to Chapters 49, 50 and 51 of the Texas Water Code and Acts of 1957, 55th Legislature, Chapter 268 of the Texas General and Special Laws (codified as amended at Tex. Rev.

[1] This work was funded by the Texas Water Development Board documented in a report titled the "Eastern Parker County Regional Wastewater Facilities Planning Report" ("EPC Report"), which was published in 2007.

Civ. Stat. Ann. art. 8280-207). TRWD provides surface raw water to municipalities and other users for municipal, domestic, industrial, mining, and irrigation purposes.

The service area of TRWD includes all or portions of Denton, Ellis, Freestone, Henderson, Johnson, Jack, Kaufman, Navarro, Parker, Tarrant, and Wise Counties. The largest population area within TRWD's service area is Tarrant County. TRWD serves almost all of Tarrant County either directly, or through TRWD's primary customers: the Cities of Mansfield, Arlington and Fort Worth, and the Trinity River Authority. Additionally, TRWD has contracted to provide water to various municipal communities outside of Tarrant County such as the Cities of Bridgeport, Weatherford, Decatur, Azle, Springtown, and Corsicana, among others. TRWD's wholesale municipal customers serve approximately 1.8 million people.

Currently, TRWD's water supply system utilizes seven reservoirs. TRWD owns and operates Eagle Mountain Reservoir, Bridgeport Reservoir, Cedar Creek Reservoir, and Richland-Chambers Reservoir. TRWD also utilizes Lake Arlington, Benbrook Lake, and Lake Worth through various contractual arrangements and state permits. TRWD and its major customers actively protect the water quality of the reservoirs that comprise the TRWD raw water supply system ("TRWD System Reservoirs") and each related watershed. TRWD has committed resources necessary to undertake a water quality sampling program of the TRWD System Reservoirs and contributing watersheds, and an inspection program of the wastewater dischargers within its jurisdiction. TRWD has also undertaken studies of nonpoint source pollution contribution to the reservoirs that it uses, and will continue to do so. From time to time, TRWD intervenes in permit proceedings of the TCEQ in order to protect the water quality of the TRWD System Reservoirs.

TRWD is a local government having enforcement and inspection powers within Tarrant County. *See* Tex. Water Code Ann. §§12.171 – 26 (Vernon 2000). TRWD inspects watersheds above the TRWD System Reservoirs for water quality problems. Besides the inspection and monitoring program, TRWD also sought and obtained additional water quality protections on and above the TRWD System Reservoirs that it owns, operates, or utilizes. As such, Texas Administrative Code, Title 30, Sections 311.61 - 311.66 provide that wastewater treatment plant operators discharging within five miles of the conservation pool of a TRWD System Reservoir must meet certain treatment and monitoring criteria.

IV. EASTERN PARKER COUNTY REGIONAL WASTEWATER FACILITIES PLANNING REPORT ("EPC REPORT")

TRWD, City of Aledo, the Town of Annetta, the Town of Annetta North, the Town of Annetta South, the City of Fort Worth, the City of Hudson Oaks, the City of Weatherford, the City of Willow Park, and Parker County Utility District Number One engaged Alan Plummer Associates, Inc. ("APAI") to study the area's needs for wastewater treatment, in regard to both volume and quality, because Eastern Parker County is expected to experience rapid growth in the coming years. Today, much of the area depends on individual septic systems for wastewater treatment. The cities in Eastern Parker County have expressed interest in the feasibility of regional wastewater treatment facilities. APAI determined that the regionalization of wastewater treatment in Eastern Parker County could:

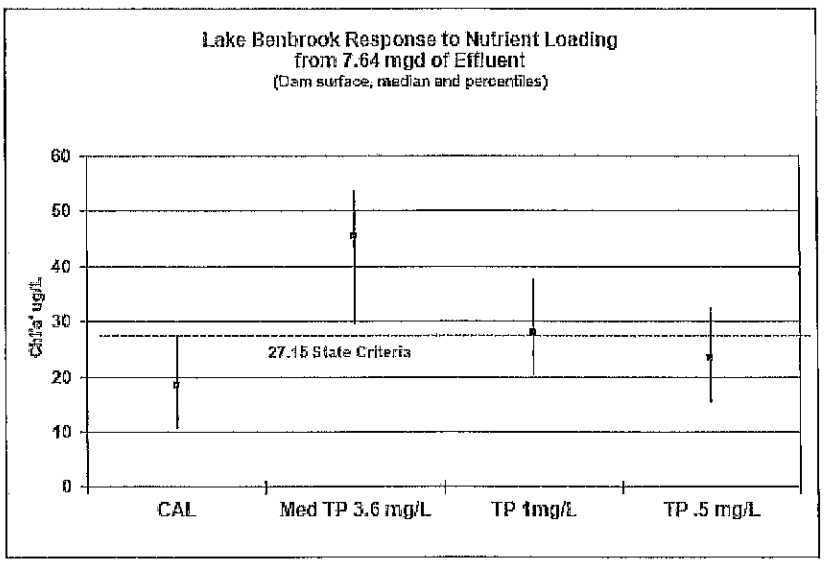
- Provide additional treatment capacity to meet projected growth;
- Reduce reliance on septic systems;

- Protect the quality of groundwater and surface water (both of which are drinking water sources) in the Clear Fork Trinity River Watershed;
- Reduce wastewater treatment costs through economies of scale;
- Provide updated wastewater treatment technology;
- Provide greater access to capital funding; and,
- Prevent proliferation of numerous, small utilities.

APAI also projected that the volume of wastewater for the study area would reach 6.8 MGD by 2020 and 9.4 MGD by 2030. *See* EPC Report, Table 3 - 4.

The EPC Report evaluated the quality requirements of effluent that would be needed in order to protect water quality. This was done using a Water Quality Assessment Simulation Program ("WASP") model of Benbrook Lake. The Benbrook Lake WASP model was calibrated based on 24 months of data for the period from January 1, 1992 to December 31, 1993. During the calibration period, approximately 1.9 MGD of effluent was being discharged into the Benbrook Lake Watershed. By 2030, the amount of effluent discharged into the Benbrook Lake Watershed is approximated to be 9.4 MGD, an increase of 7.5 MGD. The expected impact of the additional effluent was assessed by first projecting the increase in the amount of nitrogen and phosphorus that would be discharged. This was done based on measuring the nutrient concentrations being discharged by existing area wastewater treatment plants. The effect of this increase in nutrient loading caused by the projected increase in the volume of effluent expected to be discharged was assessed by the WASP model. The WASP model predicted that if the projected discharge of 9.4 MGD of wastewater contains the same concentration as existing wastewater flows, the Chlorophyll *a* concentration in Benbrook Lake would

more than double, going from 18.5 micrograms per liter ("ug/L") to about 45.4 ug/L. If total phosphorus is treated to a concentration of 1 mg/L, the median Chlorophyll *a* concentrations projected by the model would increase by about 50% to 28.2 ug/L, which approximates the Chlorophyll *a* criterion for the reservoir. In addition, the model predicted that if phosphorus levels were limited to 0.5 mg/L, projected Chlorophyll *a* concentrations would be 23.5 ug/L. *See* **Figure 1**.



WASP modeling results from the addition of 7.64 MGD of wastewater at three different Total phosphorus concentrations.

FIGURE 1

V. TRWD MODELING

In addition to its participation in the EPC effort, TRWD has collected water quality information regarding the reservoirs used in its water supply system, including Benbrook Lake. In 2010, TRWD sponsored a study, conducted by the University of Texas at Arlington, of trends in the water quality dataset for each of its reservoirs.[2] Among other findings, this report determined that over the last 20 years there are

[2] "Tarrant Regional Water District Water Quality Trend Analysis 1989-2009," July 2011.

significant increasing trends in the concentration of Chlorophyll *a*, total phosphorus, and total nitrogen in Benbrook Lake. During the study, the median Chlorophyll *a* concentration of the main pool of Benbrook Lake was 18.2 ug/l. TCEQ has established a 27.15 ug/L Chlorophyll *a* criterion for Benbrook Lake. The results of the trend study indicate that Benbrook Lake will exceed TCEQ's Chlorophyll *a* criterion for Benbrook Lake in just over 13 years. Any substantial increase in phosphorus loading will likely accelerate the increasing trend in Chlorophyll *a* and cause an exceedance of the TCEQ Chlorophyll *a* criterion sooner. The proposed effluent limits for total phosphorus on wastewater discharges to the Benbrook Lake Watershed should lessen the predicted increase of the upward trend in Chlorophyll *a*.

TRWD has modeled the watershed of two of its reservoirs, Eagle Mountain and Cedar Creek, with the Soil and Water Analysis Tool ("SWAT"). These models both demonstrated that phosphorus is not attenuated indefinitely in the watershed, but rather greater than 80 percent of the phosphorus generated by point and nonpoint sources in the watershed is delivered to the reservoir. SWAT also was linked to WASP and elucidated that the reservoir responds to the cumulative load from the watershed, rather than individual loadings.

VI. TCEQ WATER QUALITY MANGEMENT INFORMATION

TCEQ's water quality management information also indicates that the Clear Fork of the Trinity River and Benbrook Lake Reservoir have existing, nutrient-related water quality issues. Even though Benbrook Lake (Segment 0830) fully supports all designated uses, TCEQ's 2008 305b Report lists a water quality concern for nutrient enrichment in the lower portion of Benbrook Lake, and for algae growth throughout the reservoir. The

Draft 2010 305b Report also indicates water quality problems related to elevated nutrients. For evaluation purposes, the TCEQ has divided Benbrook Lake into four zones: the Rock/Mustang Creek Arm, the Upper Portion, the Middle Portion, and the Lower Portion. All four zones are listed as having concerns for elevated levels of Chlorophyll *a*. Further, the Clear Fork Trinity River below Lake Weatherford, the major tributary to Benbrook Lake, is listed as having total phosphorus and ortho-phosphorus concerns (lower 12.75 miles downstream from South Fork Trinity River confluence) and depressed dissolved oxygen levels (2 miles upstream of South Fork Trinity River confluence to Squaw Creek, and from the Squaw Creek confluence to Lake Weatherford Dam).

One reach of the Clear Fork of the Trinity River has been determined to not support the aquatic life use because of depressed dissolved oxygen levels. The 305b Report lists water quality concerns regarding Benbrook Lake based on elevated nutrient concentrations. One is a screening level concern for Chlorophyll *a* in lower, middle and upper portion of Benbrook Lake Reservoir, Rock/Mustang Creek arm. (DRAFT 2010 Texas Water Quality Inventory: Assessment Results for Basin - Basin 8 - Trinity River (February 5, 2010)). The source is categorized as "Point Source Unknown" - DRAFT 2010 Texas Water Quality Inventory - Sources of Impairments and Concerns.

VII. PROCEDURES THAT WILL BE USED FOR DETERMINING WHETHER TO IMPOSE EFFLUENT LIMITATIONS TO CONTROL NUTRIENTS ABSENT A WATERSHED RULE

If a watershed rule is not adopted for Benbrook Lake, the determination of whether future wastewater permits and amendments will include effluent limits to address nutrient related issues will be determined according to TCEQ's general

procedures. These are found in a guidance document entitled "Procedures to Implement the Texas Surface Water Quality Standards" ("Implementation Procedures"). The most recent version of the Implementation Procedures is dated June 30, 2010. Under the Implementation Procedures, each permit is evaluated on a case-by-case basis. TRWD is concerned that the cumulative effects will not be adequately addressed using the TCEQ Implementation Procedures.

The basis of the proposed TRWD Watershed Rule is the modeling that was performed with the use of future wastewater projections and trend analysis studies that were based on 20 years of data. However, the screening process in the TCEQ Implementation Procedures involves the application of a formula to determine the percent increase in the concentration of total phosphorus in the main pool of the reservoir expected to be caused by the additional phosphorus from a single new permit or amended permit. If the total phosphorus is not calculated to increase by 10% as a result of the proposed permit or amendment, then phosphorus limits are deemed to not be needed. If the proposed permit or amendment is calculated to cause an increase of more than 10%, then the change in Chlorophyll *a* is estimated. This analysis does not appear to adequately address cumulative impacts from a number of unrelated permit applications, nor does it adequately represent the type of phosphorus in wastewater treatment plant discharges. TRWD's sampling has shown that the majority of phosphorus in wastewater discharges is dissolved and not particulate. The TCEQ formulae assume the phosphorus is particulate and settles at a specific rate. The formulae do not allow for modeling of dissolved and particulate phosphorus. Even the prediction of impacts from phosphorus from a single discharge is subject to much uncertainty. TRWD believes that in protecting

the water quality of Benbrook Lake, the proper approach is to adopt a watershed rule requiring that new or amended permits authorizing the discharge of 0.1 MGD, or greater, of municipal wastewater to waters in the Benbrook Lake Water Quality Area (and those authorizing discharges of 0.25 MGD, or greater, to the Benbrook Lake Watershed outside of the Benbrook Lake Water Quality Area) treat phosphorus to a concentration of not more than 1 mg/L.

VIII. RECOMENDATION

TRWD recommends that a rule be adopted such that new or amended permits authorizing discharges greater than, or equal to, 0.10 MGD to the Benbrook Lake Water Quality Area and for new or amended permits authorizing discharges greater than, or equal to, 0.25 MGD to the Benbrook Lake Watershed include a requirement to treat total phosphorus to a concentration of 1 mg/L. In the future, it is possible that a phosphorus effluent limitation of 0.5 mg/L will be needed to protect water quality.

TRWD believes that not including a total phosphorus limitation for wastewater treatment plant permits as specified above will result in the further deterioration of water quality in the Clear Fork of the Trinity River and Benbrook Lake.

IX. PROPOSED CHANGES TO 30 TAC, CHAPTER 311, SUBCHAPTER G

A. CHANGES TO 30 TAC §311.61

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 311	WATERSHED PROTECTION
SUBCHAPTER G	LAKES WORTH, EAGLE MOUNTAIN, BRIDGEPORT, CEDAR CREEK, BENBROOK, AND RICHLAND-CHAMBERS
RULE §311.61	**Definitions**

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

(9) ~~Lake~~ Benbrook Lake ~~w~~Water ~~q~~Quality ~~a~~Area--Those portions of ~~Lake~~ Benbrook Lake ~~w~~Watershed ~~within~~ from the Benbrook Lake Reservoir Dam up to five stream miles upstream of the pool level of ~~Lake~~ Benbrook Lake Segment 0830 (694.0 feet, mean sea level).

(10) ~~Lake~~ Benbrook Lake ~~w~~Watershed-- ~~Lake~~ Benbrook Lake and its tributaries ~~located between Benbrook Dam and a point 200 meters downstream from U.S. 337 in Tarrant County.~~ excluding that above Lake Weatherford Dam.

B. CHANGES TO 30 TAC §311.62

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 311	WATERSHED PROTECTION
SUBCHAPTER G	LAKES WORTH, EAGLE MOUNTAIN, BRIDGEPORT, CEDAR CREEK, BENBROOK, AND RICHLAND-CHAMBERS
RULE §311.62	**Scope**

Except for §311.67, ~~T~~these sections apply to discharges into water quality areas of Lakes Worth, Eagle Mountain, Bridgeport, Cedar Creek, Arlington, Benbrook, and Richland-Chambers ~~and discharges directly into these lakes~~. Section 311.67 applies to discharges to the Benbrook Lake Watershed and the Benbrook Lake Water Quality Area.

C. PROPOSED NEW SECTION 30 TAC §311.67

Texas Administrative Code

TITLE 30	ENVIRONMENTAL QUALITY
PART 1	TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
CHAPTER 311	WATERSHED PROTECTION
SUBCHAPTER G	LAKES WORTH, EAGLE MOUNTAIN, BRIDGEPORT, CEDAR CREEK, BENBROOK, AND RICHLAND-CHAMBERS
RULE §311.67	**Nutrient Control**

For discharges based on new or amended permits issued after ____ with discharge points located in Benbrook Lake Watershed outside of the Benbrook Lake Water Quality Area having a monthly average discharge volume of greater than or equal to 0.25 MGD, the effluent limit for total phosphorus shall be not to exceed 1.0 mg/L. For discharges based on new or amended permits issued after ____ with discharge points located in the Benbrook Lake Water Quality Area with a monthly average discharge volume of greater

than or equal to 0.1 MGD, the effluent limit for total phosphorus shall be not to exceed 1.0 mg/L.

X. PRAYER

WHEREFORE, Petitioner respectfully prays that the Commission adopt the proposed modification of 30 TAC Chapter 311, Subchapter G to correct the descriptions of Benbrook Lake Watershed and Benbrook Lake Water Quality Area and to impose the effluent limitation as set forth above.

Respectfully Submitted,

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