

ILLINOIS POLLUTION CONTROL BOARD
April 21, 2005

CITGO PETROLEUM CORPORATION and)
PDV MIDWEST REFINING, L.L.C.,)
)
Petitioners,)
)
v.) PCB 05-85
) (Variance – Water)
ILLINOIS ENVIRONMENTAL)
PROTECTION AGENCY,)
)
Respondent.)

JEFFREY C. FORT AND LETISSA CARVER REID OF SONNENSCHNEIN, NATH & ROSENTHAL, L.L.P., APPEARED ON BEHALF OF PETITIONERS; and

JAMES A. DAY, DARIN E. LECRONE, AND SCOTT A. TWAIT APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by A.S. Moore):

For their oil refinery in Lemont, Will County, CITGO Petroleum Corporation (CITGO) and PDV Midwest Refining, L.L.C. (PDVMR) (collectively, petitioners) seek a variance from two of the Board’s water quality standards (35 Ill. Adm. Code 302.208(g), 302.407) for Total Dissolved Solids (TDS). The refinery, called the “Lemont Refinery,” is operated by CITGO and owned by PDVMR.

The requested variance would last for approximately five years and allow petitioners greater amounts of TDS in their wastewater discharge to the Chicago Sanitary and Ship Canal (S & S Canal), which leads to the Des Plaines River. The higher levels of TDS in petitioners’ effluent will come from air pollution control equipment that petitioners must install and use under a Consent Decree with the United States Environmental Protection Agency (USEPA), the State of Illinois, and several other states. The Illinois Environmental Protection Agency (Agency) recommends that the Board grant the requested variance, subject to conditions.

For the reasons set forth in this opinion, the Board finds that petitioners have proven that compliance with the TDS water quality standards at issue would impose an arbitrary or unreasonable hardship on petitioners. In addition, the Board finds that the requested variance is not inconsistent with federal law and may be issued without any significant impact on public health or the environment. The Board therefore grants petitioners the requested variance, subject to the conditions set forth in the order following this opinion. The variance relief begins today and lasts through December 15, 2009.

In this opinion, the Board first describes the legal framework for variances, followed by the procedural history of this case. The Board then provides background on petitioners' facility, the Consent Decree, the S & S Canal and the Des Plaines River, and the air pollution control equipment to be installed and the expected impacts from the resulting wastewater discharge. Next, the Board sets forth the TDS water quality standards from which petitioners seek relief: the general use water quality standard and the secondary contact water quality standard. The Board then discusses the requested variance, including petitioners' proposed compliance plan and the Agency's recommendation. Lastly, the Board makes its findings on hardship, environmental impact, consistency with federal law, and conditions for the variance.

LEGAL FRAMEWORK

A "variance is a temporary exemption from any specified rule, regulation, requirement or order of the Board." *See* 35 Ill. Adm. Code 104.200(a)(1). Under Title IX of the Environmental Protection Act (Act), 415 ILCS 5/35-38 (2002), the Board is responsible for granting variances when a petitioner demonstrates that immediate compliance with the Board regulation would impose an "arbitrary or unreasonable hardship" on petitioner. *See* 415 ILCS 5/35(a) (2002).

The Board may grant a variance, however, only to the extent consistent with applicable federal law. *See* 415 ILCS 5/35(a) (2002). Further, the Board may issue a variance with or without conditions, and for only up to five years. *See* 415 ILCS 5/36(a) (2002). The Board may extend a variance from year to year if petitioner shows that it has made satisfactory progress toward compliance with the regulations from which it received the variance relief. *See* 415 ILCS 5/36(b) (2002).

Specifically, as it relates to petitioners' request for a TDS water quality variance, the Act provides:

To the extent consistent with applicable provisions of the Federal Water Pollution Control Act . . . and regulations pursuant thereto . . . :

The Board may grant individual variances beyond the limitations prescribed in this Act, whenever it is found, upon presentation of adequate proof, that compliance with any rule or regulation, requirement or order of the Board would impose an arbitrary or unreasonable hardship. 415 ILCS 5/35(a) (2002); *see also* 35 Ill. Adm. Code 104.200, 104.208, 104.238.

In granting a variance the Board may impose such conditions as the policies of this Act may require.

[A]ny variance granted pursuant to the provisions of this Section shall be granted for such period of time, not exceeding five years, as shall be specified by the Board at the time of the grant of such variance, and upon the condition that the person who receives such variance shall make such periodic progress reports as the Board shall specify. 415 ILCS 5/36(a), (b) (2002); *see also* 35 Ill. Adm. Code 104.200, 104.210, 104.242, 104.244.

The Act requires the Agency to provide public notice of a variance petition, including notice by publication in a newspaper of general circulation in the county where petitioner's facility is located. *See* 415 ILCS 5/37(a) (2002); 35 Ill. Adm. Code 104.214. The Board will hold a hearing on the variance petition if petitioner requests a hearing, if the Agency or any other person files a written objection to the variance being granted within 21 days after the newspaper notice, or if the Board, in its discretion, concludes that a hearing would be advisable. *See* 415 ILCS 5/37(a) (2002); 35 Ill. Adm. Code 104.224, 104.234.

The Act requires the Agency to appear at hearings on variance petitions (415 ILCS 5/4(f) (2002)) and to investigate each variance petition and "make a recommendation to the Board as to the disposition of the petition" (415 ILCS 5/37(a) (2002); 35 Ill. Adm. Code 104.216). At hearing, the "burden of proof shall be on the petitioner." 415 ILCS 5/37(a) (2002); *see also* 35 Ill. Adm. Code 104.200(a)(1), 104.238(a). In a variance proceeding then, the burden is on the petitioner to prove that immediate compliance with Board regulations would cause an arbitrary or unreasonable hardship that outweighs public interest in compliance with the regulations. *See Willowbrook Motel v. PCB*, 135 Ill. App. 3d 343, 349-50, 481 N.E.2d 1032, 1036-1037 (1st Dist. 1985).

PROCEDURAL HISTORY

Petitioners filed their petition for variance on November 8, 2004, requesting a hearing. On November 18, 2004, the Board accepted the petition for hearing. On February 7, 2005, the Agency filed its recommendation on the variance petition, which included proof of publication of the variance petition notice on November 26, 2004, in the *Lemont Reporter/Metropolitan*.¹ This initial recommendation of the Agency was that the Board should deny the requested variance.

On February 17, 2005, petitioners filed the prefiled testimony of two witnesses: Claude Harmon and James Huff. Petitioners included 15 exhibits associated with the prefiled testimony. Harmon has been with CITGO as the Environmental Manager of the Lemont Refinery since 1994, and has been in the environmental field for 30 years. *See* Hearing Transcript at 17-18. Huff is a registered Professional Engineer and Vice President of Huff & Huff, Inc., an environmental consulting firm. Over the last 25 years, Huff has been involved in over 30 environmental impact studies associated with wastewater discharge impacts on receiving streams, including surveys of the S & S Canal and the Des Plaines River. Huff has worked with the Lemont Refinery for the past 22 years on various wastewater issues. Huff was retained by petitioners to assist in evaluating alternatives for the wastewater stream to be generated by the new air pollution control equipment, identifying associated water quality impacts, preparing related permit applications, and providing technical support on the variance petition. *See* Hearing Transcript at 29-32; Hearing Exhibit 8.

¹ The Board cites the variance petition as "Pet. at _." The Board cites the Agency's February 7, 2005 recommendation as "Agency Rec. at _."

Hearing Officer Bradley Halloran conducted the hearing on the variance petition in Chicago on February 24, 2005. At hearing, the prefiled testimony of Harmon and Huff was entered into the record as if read, and petitioners' 15 exhibits were offered and admitted into the record, all without objection.² The Agency offered no testimony or exhibits at hearing. Counsel for the Agency stated on the record at the close of hearing that with petitioners' submission of testimony and exhibits, the Agency was prepared to support petitioners' request for variance. Tr. at 47-48.

The parties agreed to file their post-hearing briefs simultaneously. Petitioners filed their opening brief on March 14, 2005. The Agency filed its opening brief on March 15, 2005, in which the Agency recommended that the Board grant petitioners the requested variance. The parties waived their opportunity to file response briefs.³

BACKGROUND

Overview

As noted, PDVMR owns and CITGO operates the Lemont Refinery, which is located at 135th Street and New Avenue in Lemont, Will County. Exh. 4 at 1; Exh. 11 at 1; Tr. at 13. Petitioners entered into a Consent Decree with USEPA and the States of Illinois, Louisiana, New Jersey, and Georgia to resolve alleged air quality violations at three refineries owned or operated by CITGO and related entities. Exh. 1; Exh. 4 at 1; Exh. 6 at 1; Tr. at 7, 20. The Consent Decree was entered on January 26, 2005, in the United States District Court for the Southern District of Texas, Case No. H-04-3883. Exh. 1 at 165; Tr. at 20; Pet. Br. at 2.

According to petitioners, under the Consent Decree, petitioners must reduce air emissions at the Lemont Refinery, a process that will contribute additional levels of TDS to the facility's treated wastewater. Tr. at 24; Exh. 4 at 1; Pet. Br. at 2. Petitioners maintain that, to comply with the Consent Decree, they must construct certain equipment and obtain air and water construction and operating permits from the Agency. Exh. 4 at 1; Exh. 3 (construction permit drawings). Petitioners state that they face significant stipulated penalties if they fail to comply with the Consent Decree schedule. Tr. at 10, 21; Exh. 2 (schedule); Pet. Br. at 4. Harmon testified that petitioners will be undertaking a "major construction project extending approximately 20 months." Tr. at 20-21; *see also* Pet. Br. at 2; Exh. 2.

The Lemont Refinery discharges its treated wastewater to the S & S Canal. Exh. 4 at 2. In December 2004, petitioners submitted to the Agency a construction permit application to install new wastewater treatment equipment—that application is still pending before the Agency. Agency Rec. at 8; Exh. 5 (application for wastewater construction permit); Tr. at 21-22.

² The Board cites the hearing transcript as "Tr. at _" and the hearing exhibits as "Exh. _ at _." The variance petition was admitted as a hearing exhibit, and is cited as either "Pet. at _" or "Exh. 4 at _."

³ The Board cites petitioners' brief as "Pet. Br. at _" and the Agency's brief as "Agency Br. at _."

According to Harmon, the Agency advised petitioners that it cannot issue a wastewater construction permit because of occasional water quality violations for TDS. Tr. at 22; Exh. 4 at 2; Exh. 5; Pet. Br. at 2, Exh. B.

Specifically, Harmon testified that “two critical issues” raised by the Agency “pose challenges for the consent decree schedule.” Tr. at 22; Pet. Br. at 2. First, the Agency will not grant the construction permit without also issuing a modified National Pollutant Discharge Elimination System (NPDES) permit. Second, because there has been an exceedence of the TDS standard in the past “in association with snow melt runoff, carrying road salt and similar compounds into streams,” the Agency could not issue an NPDES permit for this project unless petitioners obtained a variance from the Board. Tr. at 22; Pet. Br. at 2-3. Huff likewise testified that “the Agency position that the addition of this wastewater stream would contribute to the existing TDS violations that periodically occur due to salt runoff from highway deicing activities leads to this variance request.” Tr. at 40.

Petitioners maintain that the variance is needed because, with increased TDS discharge, there is a potential impact both in the S & S Canal and downstream at the Interstate 55 (I-55) Bridge over the Des Plaines River. Exh. 4 at 2; Tr. at 24. Petitioners state that their variance petition was filed soon after the Consent Decree was lodged. Pet. Br. at 3.

The Lemont Refinery

The Lemont Refinery was built during the period 1967 through 1970, and became operational in late fall 1969. Exh. 4 at 2. Approximately 25 different products are made at the Lemont Refinery, including gasolines, turbine fuels, diesel fuels, furnace oils, petroleum coke and various specialty naphthas that can be manufactured into intermediate products such as antifreeze, Dacron, detergent, industrial alcohols, plastics, and synthetic rubber. *Id.* Ninety percent of the Lemont Refinery’s output goes toward making gasolines, diesel fuels, home heating oils, and turbine fuels for use throughout the Midwest. *Id.* Currently, the Lemont Refinery produces 168,626 barrels daily on average and employs approximately 530 people. *Id.*

The Lemont Refinery draws water from the S & S Canal, and discharges into the Canal upstream of the Lockport Lock & Dam. Exh. 4 at 2, 5. According to petitioners, the Refinery takes approximately 4.0 million gallons of water daily from the Canal, and discharges approximately 3.8 million gallons to the Canal—the difference constituting cooling tower evaporation and steam losses. *Id.* at 2-3. The wastewater effluent contains dissolved solids derived from crude oil compounds that are removed at the Refinery, as well as concentrating the TDS present in the Canal intake water from the evaporation cooling. *Id.* at 3.

The Lemont Refinery operates under an NPDES permit (No. IL0001589), which was issued by the Agency and became effective September 1, 1994. Exh. 4 at 3; Exh 12 (existing NPDES permit); Agency Rec. at 8. Petitioners timely submitted a renewal application for the NPDES permit, so the permit continues in full force and effect during the Agency’s review of the renewal application, which is still pending. Exh. 4 at 3; Agency Rec. at 8. The NPDES permit includes Outfall 001 at river mile 296.5 on the S & S Canal (latitude 41°38’58” and longitude 88°03’31”). The current NPDES permit does not have effluent limits on TDS. Exh. 4 at 3. In

August 2004, petitioners submitted to the Agency an application to modify their NPDES permit—that application is also still under review by the Agency. Agency Rec. at 8; Exh. 11 (NPDES permit modification application).

The Lemont Refinery includes a physical/chemical and biological wastewater treatment plant, which performs primary, secondary, and tertiary treatment on the generated wastewater before it is discharged to the S & S Canal. Exh. 4 at 3-4. Besides the discharge that is the subject of this variance petition, no specific projects are currently being developed that would increase the production rate of the amount of TDS discharged. Tr. at 22-23.

S & S Canal and Des Plaines River

Below the Lockport Lock & Dam, the S & S Canal merges with the Des Plaines River, passes through Joliet, and 11 miles downstream of Joliet passes beneath the I-55 Bridge. Exh. 4 at 5; Exh. 6 at 1. Upstream of the I-55 Bridge, the waters are designated as secondary contact waters. Downstream of the I-55 Bridge, the Des Plaines River is a general use water. The general use waters begin 18.5 miles downstream of petitioners' outfall. Tr. at 33; Exh. 4 at 5; Exh. 6 at 1.

According to Huff, from 1998 to 2005, petitioners weekly sampled for TDS in their water intake from the S & S Canal, collected upstream of the Lemont Refinery's wastewater discharge. Tr. at 33-34; Exh. 6 at 3; Exh. 9. From 1998 to 2002, the mean TDS ranged from a low of 541 milligrams per liter (mg/L) in 1998 to a high of 629 mg/L in 2001. Huff testified that the maximum TDS result (and the only exceedence of the 1,500 mg/L secondary contact TDS standard from 1998 to 2005 recorded by petitioners at the water intake) was 1,636 mg/L on March 8, 2002. Tr. at 34; Exh. 6, Table 1; Exh. 9.

The Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) also had a weekly sampling program in 2001 and 2002. Tr. at 34; Exh. 6 at 3. The MWRDGC data is contained in Huff's report entitled *Impact of CITGO's Proposed Discharge on Water Quality* (December 2004), which was entered into the record at hearing as Exhibit 6. Tr. at 34. At the first MWRDGC sampling site downstream of the Lemont Refinery, at Lockport, the average TDS for January 2001 through July 2002 was 626 mg/L—petitioners' average since 2001 was 599 mg/L. Exh. 6 at 3, 8-9. At the I-55 Bridge, MWRDGC measured a mean TDS since 2001 of 705 mg/L. *Id.*

Huff testified that at the Lockport Lock & Dam, downstream of the Lemont Refinery outfall, the MWRDGC recorded one TDS exceedence (1,595 mg/L), on January 4, 2001, adding that the Lemont Refinery recorded 1,408 mg/L TDS the next day. Tr. at 34. At the sampling station at Jefferson Street in Joliet, which is the next MWRDGC station downstream from the Lockport Lock & Dam, the MWRDGC recorded one TDS exceedence (1,535 mg/L), on February 24, 2000. *Id.* Further downstream at the Empress casino, one TDS exceedence (1,867 mg/L) was recorded, also on February 24, 2000. *Id.* At the I-55 Bridge, where the general use water quality standard begins, the 1,000 mg/L TDS standard was exceeded on March 16, 2000 (1,902 mg/L), on January 25, 2001 (1,194 mg/L), on February 1, 2001 (1,075 mg/L), and on February 8, 2001 (1,139 mg/L). *Id.* at 34-35. The last three exceedences occurred over three

consecutive sampling events, which Huff testified implies that the “TDS excursion was persistent for at least 15 days.” *Id.* at 35.

According to Huff, there is a “strong correlation between the upstream TDS readings and the downstream TDS readings,” which “is to be expected as TDS is considered a ‘conservative’ pollutant; that is, there is little or no reduction due to chemical or biological processes.” Tr. at 36. Huff added that “the preponderance of flow at the I-55 Bridge originates from the Chicago area, so there [are] limited dilutional effects until further downstream.” *Id.*

Huff testified that a “review of all the TDS data (Exhibits 6 and 9) reveals that all of the elevated TDS readings occur in the winter, and are attributable to snowmelt runoff carrying salt runoff from highway deicing activities.” Tr. at 35. Huff’s report likewise concluded:

The source of the elevated TDS in the waterway is from highway de-icing runoff. The significant tons of road salt that is applied in the drainage basin causes these TDS exceedances, independent of other activities. Exh. 6 at 5.

Because of deicing and snow melt run-off, petitioners maintain that the TDS violations would occur with or without petitioners’ current or future contribution of TDS. Exh. 4 at 6, 8; Tr. at 8.

Wet Gas Scrubber

Under the Consent Decree, petitioners will install a wet gas scrubber, along with substantial support equipment and controls, at the Lemont Refinery. The wet gas scrubber is designed to reduce sulfur dioxide (SO₂) in air emissions from the carbon monoxide boiler on the Fluid Catalytic Converter Unit (FCCU). Exh. 3; Exh. 4 at 5; Exh. 6 at 1; Tr. at 8, 20-21. It is expected that by July 2006, construction of the wet gas scrubber will be complete and the discharge will begin. Exh. 4 at 12.

Huff testified that the wet gas scrubber discharge “will contain significant sodium sulfate, which essentially is the source of the TDS subject to the variance request.” Tr. at 33. Specifically, the wet gas scrubber process generates water purge, which contains particulate and SO₂. The purge stream will be removed from the wet gas scrubber to control TDS and Total Suspended Solids levels in the scrubber water. Exh. 6 at 1; Tr. at 33.

Purge water from the wet gas scrubber will then be treated to remove suspended solids and ammonia, and cooled to 90°F. Effluent from the purge treatment unit will contain approximately 94,000 mg/L TDS and will be discharged to the treated water basin of the Lemont Refinery’s wastewater treatment system and discharged through Outfall 001, along with the existing process wastewater. Exh. 4 at 5; Exh. 6 at 1-2; Pet. Br., Exh. A at 2. The combined outfall will have a projected TDS level of 8,700 mg/L. Exh. 6 at 4.

The purge treatment unit’s effluent is expected to add 274,000 gallons per day average flow to the Lemont Refinery’s wastewater discharge, and 215,000 pounds per day of TDS. Exh. 6 at 1; Tr. at 21, 33, 38-39; *see also* Exh. 5, 11. Huff estimated that low-flow stream conditions (7-day, 10-year) in the S & S Canal at the Lemont Refinery would be 1,134 million gallons per

day (MGD) and in the Des Plaines River at the I-55 Bridge would be 1,260 MGD. Tr. at 38-39; Exh. 4 at 5; Exh. 6 at 3-4.

According to Huff's estimate, the incremental increase at low flow in TDS levels from the FCCU effluent would be 23 mg/L in the S & S Canal and 21 mg/L in the Des Plaines River at the I-55 Bridge. Exh. 6 at 4. Using the existing water quality data described above and adding this incremental amount, petitioners project the following TDS concentrations after mixing: 606 mg/L in the S & S Canal and 726 mg/L in the Des Plaines River at the I-55 Bridge. *Id.* Huff added that the maximum TDS reading of 1,902 mg/L in the Des Plaines River is the equivalent of 38,000,000 pounds per day of TDS, and "the Lemont Refinery's contribution would be on the order of 0.6 percent of the total loading." Tr. at 36.

APPLICABLE REGULATIONS

Petitioners seek a variance from TDS water quality standards at 35 Ill. Adm. Code 302.208(g) and 302.407. Part 302 sets forth water quality standards applicable throughout the State as designated in 35 Ill. Adm. Code 303. *See* 35 Ill. Adm. Code 302.101(a).

Subpart B of Part 302, which contains Section 302.208(g), sets forth general use water quality standards that must be met in waters of the State for which there is no specific designation. *See* 35 Ill. Adm. Code 302.101(b); *see also* 35 Ill. Adm. Code 303.201 ("general use waters"). Section 302.208(g) provides a general use water quality standard for TDS of 1,000 mg/L. Petitioners seek variance relief from this standard for the Des Plaines River. Section 302.208(g) reads in relevant part:

Section 302.208 Numeric Standards for Chemical Constituents

- g) Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.

Constituent	Unit	STORET Number	Standard
Total Dissolved Solids	mg/L	70300	1000

35 Ill. Adm. Code 302.208(g).

Subpart D of Part 302, which contains Section 302.407, sets forth the secondary contact and indigenous aquatic life water quality standards. *See* 35 Ill. Adm. Code 302.201(d). Section 302.407 provides a TDS standard of 1,500 mg/L. Petitioners seek variance relief from this standard regarding the S & S Canal. The S & S Canal is designated among Illinois' secondary contact and indigenous aquatic life waters, as is the Des Plaines River "from its confluence with the Chicago Sanitary and Shipping Canal to the Interstate 55 bridge." *See* 35 Ill. Adm. Code

303.441(a), (i). The provision from which petitioners seek relief, Section 302.407, reads in pertinent part:

Section 302.407 Chemical Constituents

Concentrations of other chemical constituents shall not exceed the following standards:

CONSTITUENTS	STORET NUMBER	CONCENTRATION (mg/L)
Total Dissolved Solids	70300	1500

35 Ill. Adm. Code 302.407.

THE REQUESTED VARIANCE AND AGENCY RECOMMENDATION

In their petition, petitioners request a five-year variance from the TDS water quality standards of Sections 302.208(g) and 302.407. Pet. at 2, 13. Based on the petition, the Agency originally recommended that the Board deny the requested variance for two primary reasons. First, the Agency believed that petitioners “had not adequately supported [their] contention that a binding consent decree required the installation of air pollution control equipment that prompted the variance petition.” Agency Br. at 2. Second, the Agency maintained that petitioners’ compliance plan set forth in the petition was inadequate. *Id.*

The Agency now believes that petitioners have addressed these two alleged deficiencies. Agency Br. at 1-3. As for the Agency’s former concern regarding the Consent Decree, the Agency states that “[w]ith the introduction of the executed consent decree into the record of this matter, CITGO has now resolved this deficiency.” *Id.* at 2. As for the Agency’s former concern regarding the petition’s compliance plan, the Agency states that petitioners’ Exhibit 7 consists of a “detailed compliance plan,” which is the “product of a series of meetings and negotiations between CITGO representatives and Illinois EPA staff.” *Id.* at 2-3. This “new compliance plan fully resolves the Illinois EPA’s concerns.” Agency Br. at 3; Tr. at 11-12. The Agency therefore now recommends that the Board grant the requested variance. Agency Br. at 1, 3.

Petitioners’ new compliance plan in Exhibit 7 reads as follows:

DATE	TASK
October 1, 2006	Identify a location near the I-55 Bridge for collecting water samples and secure access.
November 1, 2006	Retain a contractor to collect TDS samples in the Des Plaines during snow melt conditions.

December 1, 2006	CITGO will collect TDS samples, three times per week during the winter months (December 1 to March 30). During the defined sampling period, CITGO will attempt to identify the relationship between TDS levels at the discharge versus TDS levels at the I-55 bridge, with the expectation that this information will assist CITGO in identifying the scope of the period that CITO would need to hold the discharge.
April 1, 2008	End water quality testing.
May 1, 2008	Size the required retention system for the wet gas scrubber bleed for the maximum number of days the TDS level at the I-55 Bridge remains above 1,000 mg/L.
June 1, 2008	Initiate design of the system to hold the FCC wet gas scrubber bleed for the maximum number of days required when the TDS exceeds 1,000 mg/L at the I-55 Bridge.
December 1, 2008	Submit a wastewater construction permit application.
March 1, 2009	Begin construction as needed on retention system for FCC wet gas scrubber bleed stream system.
December 1, 2009	Place FCC wet gas scrubber bleed stream system into operation, as needed. Monitor the Des Plaines River five days per week (excluding weekends and holidays) during the winter months (December 1 to March 30).
December 15, 2009	Achieve final compliance with 35 IAC 302.208(g) and 302.407.

Exh. 7.

Petitioners state that this “negotiated compliance plan,” which was “completed to the satisfaction of IEPA,” requires petitioners to collect TDS data from the Des Plaines River at the I-55 Bridge during winter months. Pet. Br. at 3. Huff testified that the proposed TDS data collection is “extensive.” Tr. at 40. According to petitioners, this data “will provide information that the Agency might not otherwise have the funding to undertake and could lead to better

understanding of the snowmelt phenomenon and perhaps yield ideas on how to reduce that impact.” Tr. at 12.

Harmon testified that after two seasons of TDS testing, the Lemont Refinery “will be able to size the required holding tank or basin for the wet gas scrubber discharge during periods of high salinity.” Tr. at 25, 40-41; Pet. Br. at 3. According to Harmon, the retention system project would begin by March 1, 2009, and “would be completed by the winter season beginning December 1, 2009.” Tr. at 25, 41; Pet. Br. at 3.

HARDSHIP

In considering a variance request, the Board is required by Section 35(a) of the Act to determine whether the petitioner has presented adequate proof that it would suffer an arbitrary or unreasonable hardship if required to immediately comply with the Board’s regulation at issue. *See* 415 ILCS 5/35(a) (2002).

Petitioners state that their variance request is necessitated by the Consent Decree, to which the Agency is a party. Exh. 4 at 9. USEPA lodged the Consent Decree, explains petitioners, to “substantially reduce emissions of [SO₂], nitrogen oxides [NO_x] and Particulate Matter [PM].” *Id.* Petitioners will be investing over \$120 million at the Lemont Refinery, “most of which costs are for the very wet gas scrubber which generates the TDS” at issue in the variance request. *Id.* Petitioners state that they are subject to “substantial penalties” if they do not meet the Consent Decree schedule. Pet. Br. at 4.

The wet gas scrubber will increase the amount of TDS in the Lemont Refinery’s treated wastewater. Pet. Br. at 4; Exh. 6 at 1; Tr. at 21, 33, 38-39; *see also* Exh. 5, 11. Petitioners maintain that their contribution of TDS would be “readily within the assimilative capacity of the waterway,” and that there is no TDS water quality violation “except in association with snow melt conditions.” Exh. 4 at 9.

Petitioners investigated methods to avoid releasing the FCCU wastewater into the existing wastewater treatment system, including a managed release program with the use of a storm water basin for retention; deep well disposal; and installation of evaporation wastewater treatment technology. Petitioners maintain that none of these alternatives is practical. Exh. 4 at 10, 12-13; Pet. Br. at 4. Petitioners also investigated “sewering the discharge . . . to the [MWRDGC],” but the MWRDGC informed petitioners that it “did not have the capacity to handle the discharge.” Tr. at 10. The Agency ultimately does not take issue with any of petitioners’ conclusions regarding the viability of alternative technologies.

Further regarding the investigated alternatives, Harmon testified that the storm water basin at the Lemont Refinery is used to collect site storm water runoff and drainage from naturally existing waterways. Tr. at 25; Pet. Br. at 4. According to Harmon, because of residential developments near the northwest facility boundary, there has been a marked increase in storm water volume in the site’s storm water basin. Tr. at 25; Pet. Br. at 4. Runoff from the developments feeds into naturally existing waterways that terminate within boundaries of the Lemont Refinery and ends up in the site’s storm water basin. Tr. at 25; Pet. Br. at 4-5. Harmon

explained that a special condition in an Agency-issued “Groundwater Management Zone Approval Letter” requires that the basin’s water level be maintained below 12’9”. According to Harmon, it has been difficult to comply with this condition because of the additional volume of storm water runoff from the residential developments. Tr. at 26; Pet. Br. at 5. Under these circumstances, retaining the wet gas scrubber effluent in the storm water basin during periods of snowmelt and deicing is not viable, Harmon testified. Tr. at 26; Pet. Br. at 5. However, strategies to divert the residential runoff before it crosses the Lemont Refinery border are being pursued. Harmon testified that if such a diversion is implemented, the site’s storm water basin may be able to retain wet gas scrubber effluent during snowmelt conditions. Tr. at 26.

Deep well disposal of the scrubber effluent, according to petitioners, is also not a viable alternative because it would constitute a Class I injection well, which wells “are not permissible in northeastern Illinois because no cap rock exists over the depth where disposal wells are drilled.” Pet. Br. at 5. Huff testified that “Class I wells require injection beneath a cap rock that will prevent migration upwards into higher aquifers” and northeastern Illinois “does not have a cap rock above the Mount Simon formation used for disposal wells throughout the Midwest.” Tr. at 39; *see also* Pet. Br. at 5; Exh. 4 at 10; Exh. 13.

Petitioners also state that technologies for removing sodium sulfate from a dilute aqueous stream are limited: electrodialysis has not been applied in the chemical or refinery industries on this scale; biological sulfate reduction will not reduce the overall TDS concentration by simply replacing the sulfate ions with carbonate ions; and reverse osmosis concentration is limited because scaling problems would develop given the high concentration of sodium sulfate. Exh. 4 at 10; Pet. Br. at 5.

Petitioners maintain that the only alternative technology potentially available would be evaporation, which they describe as an energy intensive approach that would result in increased carbon dioxide emissions. Pet. Br. at 5-6.; Exh. 4 at 10-11, Attachment A; Tr. at 40. According to petitioners, this alternative “would result in substantial adverse affects on the environment in the form of increased emissions to evaporate the wastewater.” Exh. 4 at 13. Additionally, in 2004 dollars, the capital cost for applying a falling film evaporator with mechanical vapor recompression to this wastewater stream is approximately \$7 million. Operating costs are estimated at \$1 million per year, including depreciation. Exh. 4 at 11; Pet. Br. at 6; Exh. 14 (evaporation costs). Huff testified that over the years, TDS variance “requests consistently have found evaporation technology cost- and energy-prohibitive.” Tr. at 40.

Petitioners are unaware of any such massive evaporation project being built or operated, and conclude that requiring it here for the wet gas scrubber discharge would impose on them an arbitrary and unreasonable hardship. This is especially so, according to petitioners, because: installation is not practical, particularly in light of the time schedule required by the Consent Decree; petitioners are not the cause of TDS exceedences; petitioners are investing substantial funds to reduce air emissions; and the TDS discharge at issue is “relatively modest.” Exh. 4 at 12; Tr. at 35-36; Pet. Br. at 6.

Huff testified that TDS effluent limits are not proposed as a condition of the variance because “it is clear that the TDS water quality violations are due solely to salt runoff from

highway deicing activities.” Tr. at 43. Huff added that “the Lemont Refinery will have no control over the TDS concentrations, so the only possibility to control the pounds per day discharged is by limiting the discharge rate.” *Id.* at 45. Limiting the discharge rate would require the Refinery to hold treated effluent, and presumably cease all discharge if the Des Plaines River TDS is greater than 1,000 mg/L, according to Huff. *Id.* Huff testified that today there is no storage capacity at the Lemont Refinery to accomplish this:

[T]hese [TDS water quality] violations appear to occur over 15 consecutive days, but less than 22 days. The Lemont Refinery will have to come up with in excess of 4,000,000 gallons of capacity to isolate the wet gas scrubber during these periods of elevated TDS levels at the I-55 Bridge. Currently, this excess capacity does not exist, and the actual number of days that would require holding wet gas scrubber water currently is poorly understood. The requested compliance time frame is for the collection of the necessary data to properly size this holding basin/tankage. *Id.* at 45-46.

ENVIRONMENTAL IMPACT

When deciding to grant or deny a variance petition, the Board is required to balance the petitioner’s hardship in complying with Board regulations against the impact that the requested variance will have on the environment. Monsanto Co. v. PCB, 67 Ill. 2d 276, 292, 367 N.E.2d 684, 691 (1977). Petitioner must establish that the hardship it would face from denial of its variance request would outweigh any injury to the public or the environment from granting the relief, and “[o]nly if the hardship outweighs the injury does the evidence rise to the level of an arbitrary or unreasonable hardship.” Marathon Oil. Co. v. EPA, 242 Ill. App. 3d 200, 206, 610 N.E. 2d 789, 793 (5th Dist. 1993).

Petitioners state that there would be no cognizable benefit to the public or the environment in making them comply with the existing TDS water quality standards. Pet. Br. at 7. Huff testified that because TDS is composed of a variety of anions and cations, “there are no ‘toxicity’ values that can be applied to the generic TDS parameter.” Tr. at 36. Petitioners maintain that the Agency has been investigating whether having a TDS water quality standard is necessary, and that the Agency may soon propose eliminating TDS as a water quality parameter. Exh. 4 at 9. According to Huff, the Agency believes at this point that the “technical data supported elimination of the TDS water quality standard.” Tr. at 37; Pet. Br. at 7; Exh. 10.

Petitioners state, and the Agency does not dispute, that neither the S & S Canal nor the downstream Des Plaines River has been listed by the Agency as impaired for TDS. Exh. 4 at 7, 10. Huff testified that “sodium sulfate, at the proposed levels discharged, will not impact the aquatic community in the Chicago Sanitary and Ship Canal or in the Des Plaines River” and that there is “no adverse effect on aquatic life due to TDS and sulfate levels.” Tr. at 37-38. Petitioners maintain that there would be no “significant injury to the public or the environment” from the requested variance. Pet. Br. at 7; Tr. at 37-38.

On the other hand, according to petitioners, their over-\$120 million investment in the Lemont Refinery under the Consent Decree is projected to “reduce SO₂ emissions by 15,300

tons/year, NO_x emissions by 1,100 tons/year, and PM emissions by 80 tons/year.” Exh. 4 at 9; *see also* Exh. 1; Tr. at 20.

CONSISTENCY WITH FEDERAL LAW

Under Section 35 of the Act (415 ILCS 5/35 (2002)), the Board may grant a variance only to the extent that doing so is consistent with applicable provisions of federal law. In its original recommendation, the Agency stated that if petitioners filed with the Board the information shared informally with the Agency, then “granting the requested variance would not be inconsistent with the Clean Water Act or any other federal standard.” Agency Rec. at 7. In its post-hearing brief recommending that the Board grant the requested variance, the Agency states that petitioners, at hearing, “offered all the documents and testimony it had previously discussed informally with the Illinois EPA.” Agency Br. at 2.

BOARD FINDINGS AND CONDITIONS

The Board has balanced the hardship petitioners would face in immediately complying with the TDS water quality standards against the impact that granting the requested variance would have on the public and the environment, all as described in detail above. Based on this record, and considering the conditions to which the variance would be subject, the Board finds that petitioners have established that the hardship they would experience outweighs any injury to the public or the environment from granting the relief. The Board finds that petitioners have presented adequate proof that they would suffer an arbitrary or unreasonable hardship if required to comply immediately with the Board regulations at issue. The Board further finds that the requested variance is not inconsistent with federal law.

As provided in Section 36(a) of the Act (415 ILCS 5/36(a) (2002)), “[i]n granting a variance the Board may impose such conditions as the policies of this Act may require.” With minor clarifying language changes, the Board will impose as conditions on the variance those conditions agreed to by petitioners and the Agency and set forth as petitioners’ compliance plan in Exhibit 7. The Board will impose additional conditions, however, specifically regarding sampling the wastewater effluent for TDS and reporting TDS sampling results. After discussing those new additional conditions, the Board will discuss when the variance terminates.

Effluent

The Board will require petitioners to monitor the effluent of Outfall 001 for TDS as a condition of the variance. *See* Condition 4. The Board finds this condition necessary given that petitioners have agreed to attempt to identify any relationship between TDS levels in the effluent of Outfall 001 and TDS levels in the Des Plaines River at the I-55 Bridge. *See* Condition 5. This data may also help to verify that the incremental TDS impacts from the Lemont Refinery will be as petitioners estimated. Further, the information may aid petitioners in identifying the time period that may be needed to hold the FCCU wet gas scrubber bleed. *See* Condition 5.

The Board will require this TDS effluent sampling twice per week, which is consistent with petitioners’ current NPDES permit sampling protocol for other parameters. *See* Exh. 12.

Also, to be in accordance with the agreed-upon winter time frame for TDS sampling in the Des Plaines River at the I-55 Bridge, the Board will require the TDS effluent sampling only during the winter months, *i.e.*, December through March. *See* Condition 3.

Reporting

Section 36(b) of the Act provides that if the Board grants a variance, the Board must do so “upon the condition that the person who receives such variance shall make such periodic progress reports as the Board shall specify.” 415 ILCS 5/36(b) (2002). Accordingly, as a condition of the variance, the Board will require petitioners to submit their in-stream and effluent TDS sampling results to the Agency on a monthly basis. *See* Conditions 3 and 4.

Duration

The record appears to contain conflicting statements on the duration of variance relief that petitioners seek. The petition itself, filed in November 2004, requests a “Variance for a period of 5 years from the date of granting this Variance on the conditions proposed herein.” Pet. at 13. The subsequently-filed compliance plan, however, requires petitioners to “[a]chieve final compliance with 35 IAC 302.208(g) and 302.407” by December 15, 2009. Exh. 7. As the Board is today, April 21, 2005, granting the variance, the difference in duration would be roughly four months. Those four months could be significant because they are winter months, *i.e.*, the deicing and snow-melt runoff season.

For several reasons, the Board uses the earlier date (*i.e.*, December 15, 2009) for expiration of the variance relief. First, the compliance plan was prepared *after* the petition. Second, at hearing, the parties agreed on the record to the conditions set forth in the compliance plan. Third, petitioners do not repeat in their post-hearing brief a request for a “5-year variance.” Fourth, the compliance plan provides not merely a time frame, but a date-certain, December 15, 2009.

Most importantly, under the compliance plan agreed to by petitioners and the Agency, petitioners have committed to begin operating, as necessary, the FCCU wet gas scrubber bleed retention system on December 1, 2009. As proposed, if the Des Plaines River is experiencing TDS exceedences at the I-55 Bridge, the retention system would hold the FCCU wet gas scrubber bleed, *i.e.*, the effluent expected to elevate TDS levels in Outfall 001. In other words, once the retention system is operational, the primary reason proffered by petitioners for needing the variance is eliminated. As Huff testified: “The requested compliance time frame is for the collection of the necessary data to properly size this holding basin/tankage.” Tr. at 45-46. Moreover, under the compliance plan, petitioners have committed to be in compliance by December 15, 2009, with the TDS water quality standards from which they seek relief. It is unclear on this record why then, after that date, petitioners would be entitled to relief from those very standards.

The Board notes that, as provided in the compliance plan, the Board is requiring petitioners to monitor TDS in the Des Plaines River during the 2009 and 2010 winter season. This will therefore include sampling *after* the variance relief from the TDS water quality

standards has expired. This is simply a condition of the variance relief, and is in no way inconsistent with petitioners avoiding being subject to the general rules from April 21, 2005 through December 15, 2009.

If the Board's decision on the expiration of the variance relief does not effectuate the intent of the parties, or if any condition imposed by the Board is objectionable, petitioners may decline to execute the certificate of acceptance set forth below, and either or both parties may file a motion to reconsider. *See* 35 Ill. Adm. Code 101.520, 101.902, 104.240, 104.248.

CONCLUSION

The Board finds that if this petition for a variance from the TDS general use and secondary contact water quality standards (35 Ill. Adm. Code 302.208(g) and 302.407) is not granted, petitioners will incur an arbitrary or unreasonable hardship. The Board finds that issuance of the variance is not inconsistent with federal law and will not significantly impact public health or the environment. Therefore, the Board grants the requested variance to petitioners, subject to the conditions set forth in this order. The variance relief begins today and runs through December 15, 2009.

This opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

The Board grants CITGO and PDVMR a variance from the TDS water quality standards of 35 Ill. Adm. Code 302.208(g) and 302.407, subject to the following conditions:

1. The duration of the variance relief from the identified TDS water quality standards is from April 21, 2005 through December 15, 2009.
2. This variance applies only to petitioners' Lemont Refinery at 135th Street and New Avenue in Lemont, Will County, regarding elevated TDS levels in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent Decree entered January 26, 2005, in the United States District Court for the Southern District of Texas, Case No. H-04-3883.
3. By October 1, 2006, petitioners must identify a location near the I-55 Bridge for collecting water samples from the Des Plaines River and secure access for the sampling. By November 1, 2006, petitioners must retain a contractor to collect TDS samples at that location. From December 1, 2006 through March 30, 2008, petitioners must collect TDS samples from the Des Plaines River three times per week during the winter months (December 1 to March 30). Petitioners must submit the TDS sample results monthly to the Agency.
4. From December 1, 2006 through March 30, 2008, the effluent of Outfall 001 must be monitored for TDS two times per week during the winter months (December 1

to March 30). Petitioners must submit the TDS sample results monthly to the Agency.

5. Petitioners must diligently attempt to identify any relationship between TDS levels in the effluent of Outfall 001 and TDS levels in the Des Plaines River at the I-55 Bridge. Petitioners must use any resulting relevant information to identify the time period that may be needed to hold the FCCU wet gas scrubber bleed.
6. By May 1, 2008, petitioners must begin to size the system needed to retain the FCCU wet gas scrubber bleed for the maximum number of days that the TDS level in the Des Plaines River at the I-55 Bridge exceeds 1,000 mg/L.
7. By June 1, 2008, petitioners must begin to design the system needed to retain the FCCU wet gas scrubber bleed for the maximum number of days that the TDS level in the Des Plaines River at the I-55 Bridge exceeds 1,000 mg/L.
8. By December 1, 2008, petitioners must submit to the Agency a wastewater construction permit application for the FCCU wet gas scrubber bleed retention system.
9. By March 1, 2009, petitioners must begin construction as needed on the FCCU wet gas scrubber bleed retention system.
10. By December 1, 2009, petitioners must operate the FCCU wet gas scrubber bleed retention system as needed. From December 1, 2009 through March 30, 2010, petitioners must collect TDS samples from the Des Plaines River at the I-55 Bridge five days per week (excluding weekends and holidays). Petitioners must submit the TDS sample results monthly to the Agency.

IT IS SO ORDERED.

If petitioners choose to accept this variance, they must, within 45 days after the date of this opinion and order, file with the Board and serve on the Agency a certificate of acceptance and agreement to be bound by all the terms and conditions of the granted variance. "A variance and its conditions are not binding upon the petitioner until the executed certificate is filed with the Board and served on the Agency. Failure to timely file the executed certificate with the Board and serve the Agency renders the variance void." 35 Ill. Adm. Code 104.240. The form of the certificate follows:

CERTIFICATE OF ACCEPTANCE

I (We), _____, having read the opinion and order of the Illinois Pollution Control Board in docket PCB 05-85, dated April 21, 2005, understand and accept the opinion and order, realizing that this acceptance renders all terms and conditions of the variance set forth in that order binding and enforceable.

Petitioner CITGO PETROLEUM CORPORATION

Petitioner PDV MIDWEST REFINING, L.L.C.

By: _____
Authorized Agent

By: _____
Authorized Agent

Title: _____

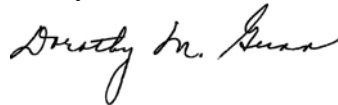
Title: _____

Date: _____

Date: _____

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2002); see also 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; see also 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on April 21, 2005, by a vote of 5-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board