

ILLINOIS POLLUTION CONTROL BOARD
May 15, 2008

CITGO PETROLEUM CORPORATION and)
PDV MIDWEST REFINING, L.L.C.,)
)
Petitioners,)
)
v.) PCB 08-33
) (Variance – Water)
ILLINOIS ENVIRONMENTAL)
PROTECTION AGENCY,)
)
Respondent.)

OPINION AND ORDER OF THE BOARD (by T.E. Johnson):

On November 14, 2007, CITGO Petroleum Corporation (CITGO) and PDV Midwest Refining, L.L.C. (PDVMR) (petitioners) filed a petition to extend the variance issued by the Board in CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C. v. IEPA, PCB 05-85 (Apr. 21, 2005). In PCB 05-85, the Board granted petitioners a variance from two of the Board’s water quality standards for Total Dissolved Solids (TDS) (35 Ill. Adm. Code 302.208(g), 302.407). The temporary regulatory relief granted in 2005 applies to petitioners’ oil refinery in Lemont (Lemont Refinery), which CITGO operates and PDVMR owns.

In this proceeding, PCB 08-33, respondent, the Illinois Environmental Protection Agency (IEPA), recommends that the Board grant the variance extension, subject to conditions proposed by IEPA. Petitioners have waived hearing, and no request for a hearing or objection to the variance extension has been filed. The Board finds that it may issue a final decision on the merits based on the current record, which by incorporation includes the record of PCB 05-85. The proposed variance extension would last for five years and continue to 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 come from air pollution control equipment that petitioners were required to install and use under a Consent Decree with the United States Environmental Protection Agency (USEPA), the State of Illinois, and several other states.

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 extension 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 extension, subject to the conditions set forth in the order following this opinion. The variance relief begins today and lasts through May 15, 2013.

In this opinion, the Board first describes the legal framework for variances, followed by a general description of the PCB 05-85 proceeding. Next, the Board sets forth the procedural history of PCB 08-33. The Board then provides background on petitioners' facility, the Consent Decree, the air pollution control equipment, the S & S Canal and the Des Plaines River, and water sampling results. Next, the Board sets forth the TDS water quality standards from which petitioners seek continued relief: the TDS general use water quality standard and the TDS secondary contact water quality standard. The Board then discusses the requested variance extension and IEPA's recommendation, including the proposed compliance plans. Lastly, the Board makes its findings on hardship, environmental impact, consistency with federal law, and conditions for the variance extension.

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 (2006)), 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) (2006).

The Board may grant a variance, however, only to the extent consistent with applicable federal law. *See* 415 ILCS 5/35(a) (2006). Further, the Board may issue a variance with or without conditions, and for only up to five years. *See* 415 ILCS 5/36(a) (2006). 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) (2006). The Board has granted variance extensions for longer than a year. *See The Ensign-Bickford Company v. IEPA*, PCB 00-24 (Nov. 18, 1999); *Village of North Aurora v. IEPA*, PCB 95-42 (Apr. 20, 1995); *City of Springfield v. IEPA*, PCB 93-135 (Dec. 16, 1993); *Dept. of the Army v. IEPA*, PCB 92-107 (Oct. 1, 1992).

Specifically, as it relates to petitioners' request for a TDS water quality variance extension, 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) (2006); *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. Such variance may be extended from year to year by affirmative action of the Board, but only if satisfactory progress has been shown. 415 ILCS 5/36(a), (b) (2006); *see also* 35 Ill. Adm. Code 104.200, 104.210, 104.242, 104.244.

The Act requires IEPA 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) (2006); 35 Ill. Adm. Code 104.214. The Board will hold a hearing on the variance petition (1) if petitioner requests a hearing, (2) if IEPA or any other person files a written objection to the variance within 21 days after the newspaper notice publication, together with a written request for hearing, or (3) if the Board, in its discretion, concludes that a hearing would be advisable. *See* 415 ILCS 5/37(a) (2006); 35 Ill. Adm. Code 104.224, 104.234.

The Act requires IEPA to appear at hearings on variance petitions (415 ILCS 5/4(f) (2006)) 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) (2006); 35 Ill. Adm. Code 104.216). The "burden of proof shall be on the petitioner." 415 ILCS 5/37(a) (2006); *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).

BACKGROUND ON PCB 05-85

In PCB 05-85, the Board granted CITGO and PDVMR a variance from the general use water quality standard for TDS of 1,000 milligrams per liter (mg/L) (35 Ill. Adm. Code 302.208(g)) and the secondary contact and indigenous aquatic life water quality standard for TDS of 1,500 mg/L (35 Ill. Adm. Code 302.407). By the terms of the Board's order, the variance relief lasts through December 15, 2009, and is subject to various conditions. Before granting the variance, the Board found that petitioners proved that compliance with the TDS water quality standards would impose an arbitrary or unreasonable hardship on petitioners, and 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 variance allows petitioners greater amounts of TDS in their wastewater discharge to the S & S Canal, which leads to the Des Plaines River. The higher levels of TDS in petitioners' effluent come from air pollution control equipment that petitioners had to install and use under a Consent Decree with USEPA, Illinois, Louisiana, New Jersey, and Georgia. IEPA recommended that the Board grant the variance requested in PCB 05-85, which the Board did by order of April 21, 2005.

PROCEDURAL HISTORY OF PCB 08-33

Petition and Amended Petition

Petitioners filed their petition for variance extension on November 14, 2007, waiving hearing. On December 20, 2007, the Board issued an order identifying several informational deficiencies in the petition and directing petitioners to file an amended petition to provide the additional information. On January 22, 2008, petitioners filed an amended petition, setting forth only the changed portions of the original petition, as permitted by Board procedural rule. In a February 21, 2008 order, the Board found that with the amended petition, petitioners provided the information required by the Board's procedural rules for the contents of a petition for variance extension.¹

Incorporation of PCB 05-85 Record

On January 22, 2008, petitioners filed a motion to incorporate the record of PCB 05-85 into this proceeding. On February 21, 2008, the Board granted the motion and directed the Clerk to place a copy of the PCB 05-85 record into the PCB 08-33 record. As the PCB 05-85 record forms a part of the PCB 08-33 record, the Board cites to the PCB 05-85 record throughout today's opinion and below provides an abbreviated procedural history of that case.

In PCB 08-85, petitioners filed their petition for variance on November 8, 2004, requesting a hearing. On February 7, 2005, IEPA filed its recommendation on the variance petition. This initial recommendation of IEPA was that the Board should deny the requested variance.²

Before hearing in PCB 05-85, petitioners filed the pre-filed testimony of two witnesses: Claude Harmon and James Huff. Petitioners included 15 exhibits associated with the pre-filed testimony. Harmon had been with CITGO as the Environmental Manager of the Lemont Refinery since 1994, and had 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. At the time, Huff had been involved in over 30 environmental impact studies associated with wastewater discharge impacts on receiving streams over a 25-year period, including surveys of the S & S Canal and the Des Plaines River. Huff had worked with the Lemont Refinery for the past 22 years on various wastewater issues. Huff had been 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 original variance petition. *See* Hearing Transcript at 29-32; Hearing Exhibit 8.

¹ The Board cites the petition for variance extension as "Ext. Pet. at _" and the amended petition as "Ext. Am. Pet. at _."

² The Board cites the PCB 05-85 variance petition as "Pet. at _." The Board cites IEPA's February 7, 2005 recommendation in PCB 05-85 as "Agency Rec. at _."

Hearing Officer Bradley Halloran conducted the hearing on the PCB 05-85 variance petition in Chicago on February 24, 2005. At hearing, the pre-filed 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.³ IEPA offered no testimony or exhibits at hearing. Counsel for IEPA stated on the record at the close of hearing that with petitioners' submission of testimony and exhibits, IEPA was prepared to support petitioners' request for variance. Tr. at 47-48. Petitioners filed their post-hearing brief on March 14, 2005. IEPA filed its post-hearing brief on March 15, 2005, in which IEPA recommended that the Board grant petitioners the requested variance.⁴ As stated above, the Board granted the variance, subject to conditions, on April 21, 2005.

IEPA Notice and Recommendation

On December 26, 2007, IEPA filed a motion for extension of time to publish notice of the petition for variance extension in PCB 08-33. The Board granted IEPA's motion by order of January 10, 2008. On March 3, 2008, IEPA filed proof that the notice was published in the *Lemont Reporter/Metropolitan* on December 28, 2007, and February 1, 2008.

On March 10, 2008, IEPA filed a recommendation that the Board grant the requested variance extension, subject to the conditions of a compliance plan set forth in the recommendation.⁵

Statutory Decision Deadline

The 120-day statutory period for the Board to decide this case recommenced upon the filing of the amended petition for variance extension, making the decision deadline May 21, 2008. *See* 415 ILCS 5/38 (2006).

BACKGROUND

Overview

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

³ The Board cites the PCB 05-85 hearing transcript as "Tr. at _" and the hearing exhibits as "Exh. _ at _." The PCB 05-85 variance petition was admitted as a hearing exhibit, and is cited as either "Pet. at _" or "Exh. 4 at _."

⁴ For the post-hearing briefs in PCB 05-85, the Board cites petitioners' brief as "Pet. Br. at _" and IEPA's brief as "Agency Br. at _."

⁵ The Board cites IEPA's recommendation in PCB 08-33 as "Ext. Agency Rec. at _."

entered on January 25, 2003, in the United States District Court for the Southern District of Texas, Case No. H-04-3883. Ext. Agency Rec. at 5-6; 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 IEPA. 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 in the prior proceeding that petitioners would 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 IEPA a construction permit application to install new wastewater treatment equipment. Agency Rec. at 8; Exh. 5 (application for wastewater construction permit); Tr. at 21-22. According to Harmon, IEPA advised petitioners that it could not 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 during the original proceeding that "two critical issues" raised by IEPA pose "challenges for the consent decree schedule." Tr. at 22; Pet. Br. at 2. First, IEPA would not grant the construction permit without also issuing a modified National Pollutant Discharge Elimination System (NPDES) permit. Second, because there had been an exceedence of the TDS standard in the past "in association with snow melt runoff, carrying road salt and similar compounds into streams," IEPA 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 in the prior proceeding 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.

In PCB 05-85, petitioners maintained that the variance was 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 stated 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. Ext. Pet. at 4; 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 in Illinois and 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. Ext. Pet. at 4, 7; Exh. 4 at 2, 5. According to petitioners, the Refinery takes approximately 5.0 million gallons of water daily from the Canal, and discharges approximately 4.5 million gallons to the Canal—the difference constituting cooling tower evaporation and steam losses. Ext. Pet. at 4-5. 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. Ext. Pet. at 5; Exh. 4 at 3.

The Lemont Refinery operates under an NPDES permit (No. IL0001589), which was issued by IEPA. Ext. Pet. at 5, Exh. B; Ext. Agency Rec. at 8; Exh. 4 at 3; Exh 12; Agency Rec. at 8. The NPDES permit includes Outfall 001 at the Refinery at river mile 296.5 on the S & S Canal (latitude 41°38'58" and longitude 88°03'31"). Ext. Pet. at 5, Exh. B; Exh. 4 at 3. The NPDES permit was re-issued and modified by IEPA on June 22, 2007. Ext. Pet. at 5, Exh. B; Ext. Agency Rec. at 8. The permit does not have effluent limits on TDS, nor did the permit in effect at the time of the PCB 05-85 proceeding. Ext. Pet. at 5, Exh. B; Exh. 4 at 3. The NPDES permit contains a special condition 18, which provides:

The permittee was granted a variance from the water quality standard for Total Dissolved Solids (TDS) for the discharge at outfall 001 in accordance with Illinois Pollution Control Board Order PCB 05-85. The permittee shall commence its study of downstream TDS concentrations in accordance with the schedule contained in this order. This permit may be modified to include any final limitations or monitoring requirements which may be necessary based on the results of the study, or future Illinois Pollution Control Board actions with result to Total Dissolved Solids water quality standards. This variance expires on December 15, 2009. Ext. Pet., Exh. B at 11.

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. Ext. Pet. at 5; Exh. 4 at 3-4. The Refinery has invested \$45 million over the last ten years to upgrading the wastewater treatment system, including a purge treatment unit for scrubber discharge in 2007, discussed below. Ext. Pet. at 7.

Wet Gas Scrubber

Under the Consent Decree, petitioners installed a wet gas scrubber (WGS) in the Fluid Catalytic Converter Unit (FCCU) at the Lemont Refinery. Ext. Am. Pet. at 3. The wet gas scrubber is designed to reduce sulfur dioxide (SO₂) in air emissions from the FCCU. Ext. Am. Pet. at 3; Exh. 3; Exh. 4 at 5; Exh. 6 at 1; Tr. at 8, 20-21.

When the variance petition was filed in PCB 05-85, the Lemont Refinery projected that the wet gas scrubber would be complete and operational in August 2006. Ext. Am. Pet. at 3; Exh. 3; Exh. 4 at 12. However, according to petitioners:

That schedule assumed that the Consent Decree [] schedule required the WGS to come on line either when a turnaround of the FCC unit was completed (then scheduled for later in 2006) or by December 2007. Further discussions resulted in the conclusion that December 2007 was the critical date under the Consent Decree. As a result, the schedule for the WGS as well as the increased discharge from the WGS to the Chicago Sanitary and Ship Canal were deferred. Ext. Am. Pet. at 3.

In October 2007, the wet gas scrubber began discharging. *Id.* The wet gas scrubber is “undergoing start up and optimization activities.” *Id.*

Petitioners state that the SO₂ is “ultimately converted to sodium sulfate salts which are contained in a purge stream.” Ext. Am. Pet. at 3. Huff had testified at the PCB 05-85 hearing that the wet gas scrubber discharge would “contain significant sodium sulfate, which essentially is the source of the TDS subject to the variance request.” Tr. at 33. The purge stream is discharged to the Lemont Refinery’s wastewater treatment system. The design specifications for the wet gas scrubber blowdown limit the exit temperature to 90°F before discharge to the basin. Ext. Am. Pet. at 3. “Other design features have been made to address nitrates and ammonia nitrogen levels and avoid the need for relief from any other regulation.” *Id.*; *see also* Exh. 6 at 1; Tr. at 33. The preliminary estimates are that the wet gas scrubbing system would add 304,000 pounds per day of TDS to the Lemont Refinery’s wastewater discharge, assuming all sodium salts. Petitioners are monitoring the discharge as “optimization continues for the new equipment.” Ext. Am. Pet. at 3.

Estimated low-flow stream conditions (7-day, 10-year) are as follows: 1,134 million gallons per day (MGD) in the S & S Canal at the Lemont Refinery; and 1,260 MGD in the Des Plaines River at the I-55 bridge. Ext. Pet. at 7; Tr. at 38-39; Exh. 4 at 5; Exh. 6 at 3-4. At low flow, the incremental increase in TDS levels from the FCCU effluent after mixing is expected to be 32 mg/L in the S & S Canal and 29 mg/L in the Des Plaines River at the I-55 bridge. Ext. Pet. at 9. Petitioners state that “TDS probably would continue to exceed the existing water quality standard for the secondary contact waters to the I-55 Bridge during times of snow melt run-off.” *Id.* Using the projected discharge loadings and 25% of the S & S Canal’s low flow yields, petitioners estimate a 128 mg/L incremental increase in TDS water quality at the edge of the mixing zone. *Id.* at 9-10.

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; Ext. Pet. at 7. 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; Ext. Pet. at 7.

TDS Data from the PCB 05-85 Proceeding

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 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 the PCB 05-85 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. At the time of the PCB 05-85 proceeding, petitioners' average since 2001 was 599 mg/L and at the I-55 bridge, MWRDGC measured a mean TDS since 2001 of 705 mg/L. Exh. 6 at 3, 8-9.

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's testimony in the prior proceeding, 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 at the PCB 05-85 hearing 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 maintained in PCB 05-85 that the TDS violations would occur with or without petitioners' current or future contribution of TDS. Exh. 4 at 6, 8; Tr. at 8. Petitioners stated that the compliance plan negotiated with IEPA for that proceeding would require 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 would "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 in the original proceeding that after two seasons of TDS testing, the Lemont Refinery would "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.

TDS Data Since the PCB 05-85 Proceeding

Petitioners represent that they have conducted the TDS water quality sampling required by the conditions of the current variance. Ext. Am. Pet. at 4. Those data "continue to show elevated TDS and chloride levels during periods of snow-melt conditions." *Id.* Samples were collected upstream of the Lemont Refinery in the S & S canal (Exh. C), at the I-55 bridge *before* the wet gas scrubber discharge began (Exh. D), and at the I-55 bridge *after* the wet gas scrubber discharge began (Exh. E). *Id.*

The two TDS results in the S & S Canal greater than 1,500 mg/L were from the Lemont Refinery water intake, *i.e.*, upstream of the Refinery discharge: 1,656 mg/L on January 29, 2007; and 1,520 mg/L on February 26, 2007. Ext. Pet. at 8, Exh. C. The highest recent TDS result at the I-55 bridge, *i.e.*, downstream of the Refinery discharge, was 1,300 mg/L, in samples collected on February 28, 2007 (before the WGS discharge began), and December 12, 17, 26, and 28, 2007 (after the WGS discharge began). Ext. Pet. at 8, Exh. D; Ext. Am. Pet. at 4, Exh. E.

Based on these data, petitioners conclude:

there is no relationship between the discharges from the Refinery and the water quality conditions relating to TDS, either for the conditions upstream of the Refinery intake, or for the conditions at the I-55 Bridge. The recent data does not indicate an exceedance of the applicable water quality standards at the I-55 Bridge. The highest levels recently recorded was 1,300 ppm, below both the 1,500 mg/l standard for secondary contact waters upstream of the bridge and the 1,686 mg/l seasonal standard for general use waters downstream of the bridge. *Id.*

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.

In a recent site-specific rulemaking, discussed further below, the Board adopted site-specific TDS water quality standards at 35 Ill. Adm. Code 303.445:

Section 303.445 Total Dissolved Solids Water Quality Standard for the Lower Des Plaines River

- a) Beginning November 1 and continuing through April 30 of each year, the total dissolved solids (TDS) water quality standard for Secondary Contact and Indigenous Aquatic Life Use waters in 35 Ill. Adm. Code 302.407 does not apply to the portion of the Des Plaines River from the ExxonMobil refinery wastewater treatment plant discharge point located at Interstate 55 and Arsenal Road (said point being located in Will County, T34N, R9E, S15, Latitude: 41°, 25', 20" North, Longitude: 88°, 11', 20" West) and continuing to the Interstate 55 bridge. TDS levels in these waters must instead meet a water quality standard for TDS (STORET Number 70300) of 1,686 mg/L.
- b) Beginning November 1 and continuing through April 30 of each year, the TDS water quality standard for General Use Waters in 35 Ill. Adm. Code 302.208 does not apply to the Des Plaines River from the Interstate 55 bridge to the confluence of the Des Plaines River with the Kankakee River. TDS levels in these waters must instead meet a water quality standard for TDS (STORET Number 70300) of 1,686 mg/L. 35 Ill. Adm. Code 303.445.

Petitioners do not seek relief from Section 303.445, which became effective on February 27, 2007.

DISCUSSION

The Requested Variance Extension

Petitioners now seek to extend the PCB 05-85 variance relief for five years, as well as modify a number of internal dates within the conditions of the variance. Petitioners have waived hearing. Ext. Pet. at 14. The petition and the amended petition are each supported by the

affidavit of Brigitte Postel, who has worked at the Lemont Refinery since October 2003 and held the position of Environmental Engineer, Water Coordinator.

Petitioners represent that they have “undertaken the activities required by the prior variance” (Ext. Pet. at 2) such that the “the conditions of the prior variance have been fully met” (Ext. Am. Pet. at 1-2, quoting 35 Ill. Adm. Code 104.210(d)(2)). In light of the data collected and the regulatory developments discussed below, petitioners seek to extend the dates of the current variance “to avoid unnecessary activities.” Ext. Pet. at 4.

Regulatory Developments Since the 2005 Variance

According to petitioners, since the variance was granted in April 2005, “several material facts have changed” that warrant the extension. Ext. Pet. at 2.

R06-24 ExxonMobil Site-Specific. First, petitioners note the effect of the concluded site-specific rulemaking, Revisions to Water Quality Standards for Total Dissolved Solids in the Lower Des Plaines River for ExxonMobil Oil Corporation: Proposed 35 Ill. Adm. Code 303.445, R06-24 (R06-24 Site-Specific). Ext. Pet. at 2, 7. On February 15, 2007, the Board in R06-24 Site-Specific increased to 1,686 mg/L the TDS secondary contact and general use water quality standards for certain waters during the months of November through April of each year. Specifically, the site specific rule applies in the Des Plaines River from the ExxonMobil refinery wastewater treatment plant discharge point located at I-55 and Arsenal Road (downstream of the Lemont Refinery discharge) and continuing to the I-55 bridge, and in the Des Plaines River from the I-55 bridge to the confluence of the Des Plaines River with the Kankakee River. *See* R06-24 Site-Specific, slip op. at 8 (Feb. 15, 2007) (adding 35 Ill. Adm. Code 303.445).

According to petitioners, had this site-specific rule been in effect when petitioners filed for the original variance relief in 2004, “one of the two places where the TDS standard had been exceeded would not have been a violation.” Ext. Pet. at 2. Further, petitioners note:

Adding in the Exxon-Mobil increased discharge, in combination with the increased CITGO discharge, the maximum additional TDS levels at the I-55 bridge was projected to be 72 mg/l. *See* Petition, ¶26 in R06-24 (February 7, 2006). But the data shows that the maximum TDS levels in December 2007 were the same as recorded before the WGS discharge began. The difference between the observed sampling information for TDS and the applicable water quality standard today (even before the Board takes final action in R 07-09) is so large that it does not appear likely that the General Use water quality standard as adopted for the Des Plain[e]s River downstream of the I-55 Bridge in the proceeding initiated by ExxonMobil will be a relevant factor. Ext. Am. Pet. at 4.

R07-9 Triennial. Second, in a pending rulemaking, Triennial Review of Sulfate and Total Dissolved Solids Water Quality Standards: Proposed Amendments to 35 Ill. Adm. Code 302.102(b)(6), 302.102(b)(8), 302.102(b)(10), 302.208(g), 309.103(c)(3), 405.109(b)(2)(A), 409.109(b)(2)(B), 406.100(d); Repealer of 35 Ill. Adm. Code 406.203 and Part 407; and Proposed New 35 Ill. Adm. Code 302.208(h), R07-9 (R07-9 Triennial), the Board proposed first-

notice amendments on Sept. 20, 2007, that would eliminate the TDS general use water quality standard. Ext. Pet. at 2, 7. “Of course,” continue petitioners, if the Board removes the TDS standard for all general use waters, “sampling at the I-55 Bridge will not be relevant.” Ext. Am. Pet. at 4. On May 1, 2008, the Board issued an order in R07-9 Triennial proposing for public comment proposed second-notice amendments that retained the elimination of the TDS general use water quality standard. See R07-9 Triennial, slip op. at 22 (May 1, 2008).

Further, the Board stated at first notice in R07-9 Triennial:

While the Board declines to eliminate TDS standard for secondary contact waters, the Board recognizes that CITGO may face some hardship if TDS standard for secondary contact waters is not resolved in a timely manner. Specifically, CITGO may have to expend funds on designing wastewater storage system for wastewater from refinery’s wet gas scrubber in order to comply with CITGO’s variance conditions [PCB 05-85]. In this regard, the Board believes that CITGO has a number of options CITGO can pursue to avoid undertaking any exercise that may be unnecessary in the future, including seeking an extension of the current variance with amended conditions. R07-9 Triennial, slip op. at 30 (Sept. 20, 2007).

R08-9 CAWS/LDPR. In another pending rulemaking, Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System and the Lower Des Plaines River: Proposed Amendments to 35 Ill. Adm. Code 301, 302, 303 and 304, R08-9, IEPA “has proposed to remove the TDS standard in the Canal.” Pet. at 2. On April 24, 2008, the Board concluded its tenth day of hearing in R08-9, which has not been to first notice. Additional hearings are expected to be held in the summer and fall of 2008.

Petitioners’ Proposed Variance Extension Language

Petitioners ask that “the focus be moved to the conditions in the Ship Canal upstream of the Refinery, where occasional exceedances of the existing TDS standard exist.” Ext. Am. Pet. at 5. Specifically, petitioners propose the following revisions to the Board’s April 21, 2005 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~~ [date of Board order] through December 15, ~~2009~~ 2012. This variance modifies and extends certain conditions of the variance in PCB 05-85, entered April 21, 2005.
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, p~~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, p~~Petitioners must retain a contractor to collect TDS samples at that location. ~~From December 1, 2006 through~~ Until 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~~ Until 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 [Fluid Catalytic Converter Unit] wet gas scrubber bleed.
6. By May 1, ~~2008~~ 2011, 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~~ Chicago Sanitary and Ship Canal exceeds the applicable water quality standard for TDS.
7. By June 1, ~~2008~~ 2011, 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~~ Chicago Sanitary and Ship Canal exceeds the applicable water quality standard for TDS.
8. By December 1, ~~2008~~ 2011, if needed to meet an applicable water quality standard for TDS, 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~~ 2012, if needed to meet an applicable water quality standard for TDS, petitioners must begin construction as needed on the FCCU wet gas scrubber bleed retention system.
10. By December 1, 2012, if needed to meet an applicable water quality standard for TDS, petitioners must operate the FCCU wet gas scrubber bleed retention system as needed. ~~From December 1, 2009~~ 2012 through March 30, ~~2010~~ 2013, if such system is necessary, petitioners must collect TDS samples from the ~~Des Plaines~~

~~River at the I-55 Bridge~~ Chicago Sanitary and Ship Canal five days per week (excluding weekends and holidays). Petitioners must submit the TDS sample results monthly to the Agency. *See* Ext. Pet. at 3-4; *see also* CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C. v. IEPA, PCB 05-85, slip op. at 16-17 (Apr. 21, 2005).

These amendments, according to petitioners, will provide a five-year variance that “has the effect of moving the prior schedule back 3 years.” Ext. Am. Pet. at 2. Moreover, petitioners state that:

If the Board removes the existing water quality standard for TDS in the Ship Canal, this variance will become moot according to its terms, and not require further action by the Board. Ext. Pet. at 4.

Agency Recommendation

IEPA recommends that the Board grant petitioners’ requested variance extension for five years from the date of the Board’s order, subject to compliance plan conditions set forth by IEPA in its recommendation. Ext. Agency Rec. at 1, 4, 8.

IEPA notes that petitioners’ petition includes a proposed compliance plan. Ext. Agency Rec. at 5. However, since the petition was filed, IEPA and petitioners “have been in discussions regarding the nature of the relief.” *Id.* It is “[b]ased on these discussions” that IEPA “proposes the following modifications to CITGO’s compliance plan”:

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 for five years from the date of the Board order. This variance modifies and extends the variance relief granted in PCB 05-85, entered April 21, 2005.
2. This variance applies only to Petitioner's Lemont Refinery at 135 th Street and New Avenue in Lemont, Will County, regarding TDS concentrations in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent Order Decree entered January 25, 2003, in the United States District Court for the Southern District of Texas, Case No. H-04-3833.
3. Until the U.S. EPA approves the elimination of the General Use water standard for TDS, Petitioner will monitor and collect samples from the Des Plaines River near 1-55 Bridge three times per week, during the winter months (December 1 to March 30), and analyze for TDS. Petitioner must submit the TDS sample results monthly to the Agency.

4. Until the U.S. EPA approves the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, Petitioner will monitor its water intake from the Chicago Sanitary & Ship Canal two times per week, during the winter months (December 1 to March 30) for TDS. Petitioner must submit the TDS sample results monthly to the Agency.
5. Until the U.S. EPA approves the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, Petitioner must monitor TDS in the effluent from Outfall 001 two times per week, during winter months (December 1 to March 30). Petitioner must submit the TDS effluent sample results monthly to the Agency.
6. Until the U.S. EPA approves the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, Petitioner will diligently attempt to identify any relationship between the TDS levels in the effluent from Outfall 001, and the water quality samples required to be collected pursuant to paragraphs 3, 4, and 5 of this Order. To the extent there is a correlation between effluent TDS concentration and any exceedance of an applicable water quality standard for TDS, Petitioner shall determine the time period that the water from the FCCU wet gas scrubber bleed may require additional management or treatment, including but not limited to holding, treatment, or alternative disposal.
7. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 45 months from the date of the Board order, Petitioner must prepare a TDS water quality management plan to address any contribution from the FCCU wet gas scrubber bleed as determined by the analyses performed pursuant to paragraph 6. Elements to be considered in developing this plan shall include a system to retain, treat, or dispose of the FCCU wet gas scrubber bleed or any other approach to eliminate wet gas scrubber bleed from Outfall 001 during periods when applicable TDS water quality standards are exceeded. Options to be considered may include holding tanks, deep well disposal, crystallization, and any other technology or management strategy identified.
8. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 46 months from the date of the Board order, Petitioner must design the TDS water quality management plan for the conditions identified in paragraph 7.
9. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 48 months from the date of the Board order, Petitioner must submit to the Agency a wastewater construction permit application for any elements of the TDS

water quality management plan for which permits or amended permits are required.

10. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 54 months from the date of the Board order, Petitioner must begin construction as needed for an FCCU wet gas scrubber bleed control system and/or implement the TDS water quality management plan.
11. Unless the U.S. EPA has approved the elimination of the TDS water quality standard for the Chicago Sanitary & Ship Canal, by 60 months from the date of the Board order, Petitioner must operate any equipment required to be constructed by the TDS water quality management plan as needed so as to not cause or contribute to any exceedences of applicable water quality standards due to the operation of the wet gas scrubber identified in paragraph 2 of this Order. *Id.* at 5-7.

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) (2006).

Petitioners state that their request for variance extension is necessitated by the Consent Decree, to which IEPA is a party. *Ext. Pet.* at 11; *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 agreed to the reductions and are investing over \$140 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 extension request. *Ext. Pet.* at 11. Petitioners state that they are subject to "substantial penalties" if they do not meet the Consent Decree schedule. *Pet. Br.* at 4.

At the time of the original variance request, petitioners stated that the wet gas scrubber would 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 is "readily within the assimilative capacity of the waterway," and that there is no TDS water quality violation in the Canal "except in association with snow melt conditions." *Ext. Pet.* at 11-12; *see also Exh. 4* at 9. Petitioners add:

And since the adoption of the modified TDS standard in the Lower Des Plaines River, as requested by Exxon-Mobil, there is no longer a violation of the modified TDS standard for that General Use body of water. *Ext. Pet.* at 12.

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. Ext. Pet. at 12-14; 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. IEPA does not take issue with any of petitioners’ conclusions regarding the viability of alternative technologies.

Further, regarding the investigated alternatives, Harmon testified at the PCB 05-85 hearing 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 was 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 were 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. Ext. Pet. at 12; 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: electro dialysis 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. Ext. Pet. at 13; 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 to the atmosphere. Ext. Pet. at 13; 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. Ext. Pet. at 13; 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:

CITGO is not the cause of any current water quality standard exceedance; upstream conditions in the Ship Canal from snow melt conditions exceed the existing TDS standard, and the Agency has asked the Board to remove that standard as well. Further, CITGO is investing substantial monies in the Refinery to substantially reduce air emissions and substantially reducing the overall environmental releases from the Refinery, and the wastewater discharge involved is relatively modest. Ext. Pet. at 14; *see also* Exh. 4 at 12; Tr. at 35-36; Pet. Br. at 6.

During the original proceeding, 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.

After reviewing the data collected at the I-55 bridge since the issuance of the 2005 variance, petitioners concede that it appears “the extent of elevated TDS levels may be longer than previously thought -- the 2006-07 winter alone produced elevated TDS levels over a three week long stretch.” Ext. Am. Pet. at 5, Exh. D. Though these levels continue to be “due to snowmelt conditions,” the existing variance condition “assumes that storage could occur for a long enough time so that the Refinery could avoid discharging during these events.” *Id.* It is now apparent, however, that the length of time and the volume of water required is greater than

anticipated when the PCB 05-85 compliance plan was proposed. *Id.* Based on the data available at the time of the prior proceeding, which was from MWRDGC, petitioners “did not expect the duration of elevated TDS levels to last for such a long period of time.” *Id.*

Petitioners believe that the TDS standards will be eliminated and that measures such as wastewater storage will not be required. Ext. Am. Pet. at 5. As the Lemont Refinery’s maximum permitted discharge is 5.79 MGD:

the quantity of tankage needed to store that volume of wastewater would be substantial (perhaps 100 million gallons for a 20-day period, assuming this period of time is a worst case scenario). However, at the present time, CITGO is not asking for a change in the final compliance measures - should any such measures be required. If the continued monitoring of the Ship Canal (as suggested by this Petition) continues to indicate that elevated TDS levels last for a couple of weeks at a time, and if the Board does not remove the TDS standard in the Ship Canal, CITGO may seek further relief from the Board - including a change to the existing compliance plan. *Id.* at 5-6.

Complying with the schedule in the existing variance and the TDS water quality standard is “substantial and there is no benefit to the public or the environment by compelling such compliance,” according to petitioners. Ext. Pet. at 14. Petitioners conclude:

Indeed, there does not appear to be any practical compliance alternative at this time. Even if there is an alternative, such would result in substantial adverse affects on the environment in the form of increased emissions to evaporate the wastewater. *Id.*

IEPA maintains that as “all the underlying facts are identical to the ones that were considered by the Board in PCB 05-85,” the Board’s 2005 finding, that petitioners would suffer an arbitrary or unreasonable hardship if required to comply immediately with the regulations at issue, also applies in this case. Ext. Agency Rec. at 4-5.

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. *See 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 in the original proceeding 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 emphasize that the Board has proposed eliminating the TDS general use water quality standard in R07-9 Triennial. Ext. Pet. at 12; *see also* Exh. 4 at 9; Tr. at 37; Pet. Br. at 7; Exh. 10. Petitioners expect that the proposed rule for TDS in secondary contact waters would be “no more stringent than for the General Use waters” and that accordingly “there would be no reason to store wastewater before discharging.” Ext. Pet. at 12. Moreover, add petitioners:

with the change in the water quality standards downstream, the point to assess the water quality conditions now would be the Canal, rather than at the I-55 Bridge on the Lower Des Plaines River. *Id.*

Petitioners state, and IEPA does not dispute, that neither the S & S Canal nor the downstream Des Plaines River has been listed by IEPA as impaired for TDS. Ext. Pet. at 10; 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 \$140 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 92 tons/year.” Ext. Pet. at 11, 14; *see also* Exh. 4 at 9; Exh. 1; Tr. at 20.

IEPA states that nothing has changed to alter the Board’s finding from PCB 05-85 that the hardship petitioners would experience outweighs any injury to the public or the environment from granting the relief. Ext. Agency Rec. at 5.

Consistency with Federal Law

Under Section 35 of the Act (415 ILCS 5/35 (2006)), the Board may grant a variance only to the extent that doing so is consistent with applicable provisions of federal law. In PCB 05-85, IEPA concluded that granting the requested variance would not be inconsistent with the Clean Water Act or any other federal standard. Agency Rec. at 7; Agency Br. at 2. In this proceeding for an extension of the variance relief, IEPA maintains that petitioners have again satisfied this requirement. Ext. Agency Rec. at 7.

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 extension 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 extension 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. Additionally, the Board finds that petitioners have made satisfactory progress toward compliance, including reporting the TDS results of samples collected at the I-55 bridge. Ext. Pet. at 7-8, 10-11, Exh. D; Ext. Am. Pet. at 3-5, Exh. E. The Board further finds that the variance extension is not inconsistent with federal law.

The Board grants petitioner's requested extension of variance, subject to the IEPA-proposed conditions, as supplemented below. Section 36(a) of the Act (415 ILCS 5/36(a) (2006)) provides that "[i]n granting a variance the Board may impose such conditions as the policies of this Act may require." The conditions set forth as a compliance plan in IEPA's recommendation were proposed in response to petitioners' proposed compliance plan and were based on discussions between IEPA and petitioners. IEPA's proposed plan differs from petitioners' in several respects.

Petitioners' proposal calls for both the sampling in the Des Plaines River near the I-55 bridge and the monitoring of the Outfall 001 effluent to terminate on March 30, 2008. IEPA proposes, in contrast, that petitioners (1) continue this in-stream sampling until USEPA approves elimination of the TDS general use water quality standard, and (2) continue the effluent sampling until USEPA approves elimination of the TDS water quality standard for the S & S Canal. In addition, IEPA proposes that petitioners monitor their water intake from the Canal for TDS, which petitioners have done in the past (*see* Ext. Pet., Exh. C) but have not proposed as a variance condition. The Board finds these conditions appropriate. The wet gas scrubber is relatively new equipment. It only began discharging in October 2007 and is still undergoing start up and optimization activities. The additional condition for intake monitoring will help to provide a more complete data picture in assessing any impact from TDS levels in the effluent.

Additionally, unlike petitioners' plan, the IEPA-proposed conditions do not mandate that the future control measure must be a retention system. Under either compliance plan, activities to control FCCU wet gas scrubber bleed contributing to TDS water quality standard exceedences would not be required until several years into the term of the variance extension. As noted, the 2005 variance contemplated that data collected under its terms would shed light on the scope of any retention system eventually built. Based on the recent data collection, petitioners raise uncertainties about the practicality of the WGS bleed retention system's volume.

Under the conditions proposed by IEPA for the variance extension, more TDS data will be collected, as discussed above. That data must be considered to identify any correlation between effluent TDS concentration and water quality exceedences and, as needed, to determine the proper response with respect to the FCCU wet gas scrubber bleed. Under these circumstances, the Board declines to provide now that the control measure to be instituted in 2012-13, if any, must necessarily be the retention system. Rather, the Board finds that this record supports preserving greater flexibility for the consideration of control options that may be viable later. Unless USEPA has approved eliminating the TDS water quality standard for the S & S Canal, petitioners would remain subject to interim milestones concerning control measures and, by May 15, 2013, would have to "operate any equipment required to be constructed by the

TDS water quality management plan as needed so as to not cause or contribute to any exceedences of applicable water quality standards due to the operation of the wet gas scrubber.”

Under the Board’s procedural rules, petitioners could have filed a response to IEPA’s recommendation, but did not. *See* 35 Ill. Adm. Code 104.220. The Board will impose on the variance extension those conditions proposed by IEPA, with minor clarifying language changes. In addition, 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) (2006). Under the IEPA-proposed condition 8 of the variance extension, by 46 months from the date of today’s order, petitioners must design a TDS water quality management plan addressing any contribution of the FCCU wet gas scrubber bleed to any exceedence of an applicable TDS water quality standard. The Board will also require that petitioners submit the plan to IEPA.

If the Board’s decision 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 an extension of variance relief 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 extension is not inconsistent with federal law and will not significantly impact public health or the environment. Therefore, the Board grants the requested variance extension to petitioners, subject to the conditions set forth in this order. The relief provided to petitioners today is an extension of the variance granted on April 21, 2005, in PCB 05-85. The variance extension begins today and lasts for five years.

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

ORDER

The Board grants CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C. (petitioners) a variance from the Total Dissolved Solids (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 five years, from May 15, 2008 through May 15, 2013. This variance modifies and extends the variance relief granted in PCB 05-85, issued April 21, 2005.
2. This variance applies only to petitioners’ Lemont Refinery at 135th Street and New Avenue in Lemont, Will County, regarding TDS concentrations in the effluent of Outfall 001 due to operation of the wet gas scrubber under the Consent

Order Decree entered January 25, 2003, in the United States District Court for the Southern District of Texas, Case No. H-04-3833.

3. Unless and until the United States Environmental Protection Agency (USEPA) approves the elimination of the general use water quality standard for TDS, petitioners must monitor and collect samples from the Des Plaines River near the I-55 bridge three times per week, during the winter months (December 1 to March 30), and analyze for TDS. Petitioners must submit the TDS sample results monthly to the Illinois Environmental Protection Agency (IEPA).
4. Unless and until USEPA approves the elimination of the TDS water quality standard for the Chicago Sanitary and Ship Canal (S & S Canal), petitioners must monitor their water intake from the S & S Canal two times per week, during the winter months (December 1 to March 30) for TDS. Petitioners must submit the TDS sample results monthly to IEPA.
5. Unless and until USEPA approves the elimination of the TDS water quality standard for the S & S Canal, petitioners must monitor TDS in the effluent from Outfall 001 two times per week, during winter months (December 1 to March 30). Petitioners must submit the TDS sample results monthly to IEPA.
6. Unless and until USEPA approves the elimination of the TDS water quality standard for the S & S Canal, petitioners must diligently attempt to identify any relationship between the TDS levels in the effluent from Outfall 001, and the water quality samples required to be collected pursuant to paragraphs 3, 4, and 5 of this order. To the extent there is a correlation between effluent TDS concentration and any exceedence of an applicable water quality standard for TDS, petitioners must determine the time period that the water from the Fluid Catalytic Converter Unit (FCCU) wet gas scrubber bleed may require additional management or treatment, including holding, treatment, or alternative disposal.
7. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 45 months from the date of the Board order, petitioners must prepare a TDS water quality management plan to address any contribution from the FCCU wet gas scrubber bleed as determined by the analyses performed pursuant to paragraph 6 of this order. Elements to be considered in developing this plan must include a system to retain, treat, or dispose of the FCCU wet gas scrubber bleed or any other approach to eliminate wet gas scrubber bleed from Outfall 001 during periods when applicable TDS water quality standards are exceeded. Options to be considered may include holding tanks, deep well disposal, crystallization, and any other technology or management strategy identified.
8. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 46 months from the date of the Board order, petitioners

must design the TDS water quality management plan for the conditions identified in paragraph 7 of this order and submit the plan to IEPA.

9. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 48 months from the date of the Board order, petitioners must submit to IEPA a wastewater construction permit application for any elements of the TDS water quality management plan for which permits or amended permits are required.
10. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 54 months from the date of the Board order, petitioners must begin construction as needed for an FCCU wet gas scrubber bleed control system and/or implement the TDS water quality management plan.
11. Unless USEPA has approved the elimination of the TDS water quality standard for the S & S Canal, by 60 months from the date of the Board order, petitioners must operate any equipment required to be constructed by the TDS water quality management plan as needed so as to not cause or contribute to any exceedences of applicable water quality standards due to the operation of the wet gas scrubber identified in paragraph 2 of this order.

IT IS SO ORDERED.

If petitioners choose to accept this variance extension, they must, within 45 days after the date of this opinion and order, file with the Board and serve on IEPA 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 08-33, dated May 15, 2008, 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) (2006); *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, John T. Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on May 15, 2008, by a vote of 4-0.



John T. Therriault, Assistant Clerk
Illinois Pollution Control Board