

EXHIBIT A

January 7, 2010 Order
PCB 09-125

ILLINOIS POLLUTION CONTROL BOARD

January 7, 2010

SANITARY DISTRICT OF DECATUR,)	
)	
Petitioner,)	
)	
v.)	PCB 09-125
)	(Variance - Water)
ILLINOIS ENVIRONMENTAL)	
PROTECTION AGENCY,)	
)	
Respondent.)	

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

The Sanitary District of Decatur (District) has petitioned the Board for a variance that would authorize continued discharges of nickel and zinc from the District’s wastewater treatment plant (Main Plant) into the Sangamon River. Specifically, the District seeks a variance from the general use water quality standards for nickel and zinc (35 Ill. Adm. Code 302.208(e)) and the rule establishing the methodology for developing water quality based effluent limits as it applies to nickel and zinc (35 Ill. Adm. Code 304.105). The temporary relief would provide the District with additional time to investigate and evaluate potential compliance options for its nickel and zinc discharges. The Illinois Environmental Protection Agency (Agency) recommends that the Board grant the variance.

For the reasons set forth in this opinion, the Board finds that the District has proven that compliance with the water quality and effluent standards at issue would impose an arbitrary or unreasonable hardship. The Board finds that the requested variance may be issued without any significant negative impact on the public or the environment and is consistent with federal law. The Board therefore grants the District a variance, subject to the conditions set forth in the order following this opinion. The variance term begins today and ends on July 1, 2014, at which point the District must be in compliance.

In this opinion, the Board first describes the legal framework for variances, followed by the procedural history of this case. The Board then sets forth the regulations from which the District seeks relief. Next, the Board provides factual background on the District’s Main Plant and operations, the receiving waterway, and the District’s National Pollutant Discharge Elimination System (NPDES) permit, discharges of nickel and zinc, and compliance efforts. The Board then discusses the requested variance, including the District’s proposed compliance plan and conditions, the Agency’s recommendation, and the District’s response to the Agency’s recommendation. Lastly, the Board discusses its conclusions of law.

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 (2008)), 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.” *See* 415 ILCS 5/35(a) (2008).

The Board may grant a variance, however, only to the extent consistent with applicable federal law. *See* 415 ILCS 5/35(a) (2008). Further, the Board may issue a variance with or without conditions, and for only up to five years. *See* 415 ILCS 5/36(a) (2008). The Board may extend a variance from year to year if the petitioner shows that it has made “satisfactory progress.” *See* 415 ILCS 5/36(b) (2008).

Specifically, as it relates to the District’s request for variance, the Act provides:

To the extent consistent with applicable provisions of the Federal Water Pollution Control Act, as now or hereafter amended . . . 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) (2008); *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) (2008); *see also* 35 Ill. Adm. Code 104.200, 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 the petitioner’s facility is located. *See* 415 ILCS 5/37(a) (2008); 35 Ill. Adm. Code 104.214. The Board will hold a hearing on the variance petition if the 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) (2008); 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) (2008)) 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) (2008); 35 Ill. Adm. Code 104.216). The burden of proof is on the petitioner. *See* 415 ILCS 5/37(a) (2008); *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 the 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

The District filed its petition for variance on June 15, 2009 (Pet.), attaching 12 exhibits (Pet. Exh. A-L). In the petition, the District waived its right to a hearing on the variance request. Pet. at 48. On June 18, 2009, the Board issued an order accepting the petition.

On July 30, 2009, the Agency filed its recommendation (Rec.) on the variance petition (Rec.), attaching two exhibits (Rec. Exh. A and B). The recommendation included proof that notice of the variance petition had been published on June 29, 2009, in the *Decatur Herald & Review*. In addition, the Agency, on June 26, 2009, mailed notice of the petition to Macon County State’s Attorney Jack Ahola, State Representatives Robert Flider and Bill Mitchell, State Senators Bill Brady and Kyle McCarter, and Chairman of the Macon County Board Jay A. Dunn. Rec. at 2; Rec. Exh B; *see also* 35 Ill. Adm. Code 104.214(a), (b), (f). Neither the Agency (Rec. at 2) nor the Board received any request for hearing or objection to the grant of the variance.

After receiving requests for extensions of time to respond, the District filed its response to the Agency’s recommendation on September 30, 2009 (Resp.). On December 21, 2009, the District filed its answers (Ans.) to questions that were prepared by Board staff and posed in a hearing officer order of December 14, 2009. On December 24, 2009, the Agency filed a comment (Comm.) on the District’s December 21, 2009 answers. On January 4, 2010, the District filed a response to the Agency’s comment by way of clarifying two of the District’s December 21, 2009 answers (Clarif.).

REGULATIONS FROM WHICH RELIEF IS SOUGHT

The District seeks a variance with respect to the general use water quality standards for nickel and zinc at Section 302.208(e) of the Board’s regulations (35 Ill. Adm. Code 302.208(e)) and from Section 304.105 of the Board’s regulations (35 Ill. Adm. Code 304.105) as it applies to establishing water quality based effluent limits. Pet. at 2-5. To protect aquatic organisms, Section 302.208(e) provides formulae using conversion factor multipliers for dissolved metals to establish acute (AS) and chronic (CS) numeric water quality standards for nickel and zinc. *See* 35 Ill. Adm. Code 302.208(e). Section 302.208(e) reads in pertinent part as follows:

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	STORET Number	AS (µg/L)	CS (µg/L)
Nickel (dissolved)	01065	$e^{A+B \ln(H)} \times 0.998^*$, where $A = 0.5173$ and $B = 0.8460$	$e^{A+B \ln(H)} \times 0.997^*$, where $A = -2.286$ and $B = 0.8460$
Zinc (dissolved)	01090	$e^{A+B \ln(H)} \times 0.978^*$, where $A = 0.9035$ and $B = 0.8473$	$e^{A+B \ln(H)} \times 0.986^*$, where $A = -0.8165$ and $B = 0.8473$

where: µg/L = microgram per liter
 e^x = base of natural logarithms raised to the x- power
 $\ln(H)$ = natural logarithm of Hardness (STORET 00900)
 * = conversion factor multiplier for dissolved metals

35 Ill. Adm. Code 302.208(e).

Except in waters where mixing is allowed, the acute standards for nickel and zinc “shall not be exceeded at any time” and the chronic standards for nickel and zinc “shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days.” 35 Ill. Adm. Code 302.208(a), (b), (d).

Section 304.105 states:

In addition to the other requirements of this Part, no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standard. When the Agency finds that a discharge which would comply with effluent standards contained in this Part would cause or is causing a violation of water quality standards, the Agency shall take appropriate action under Section 31 or Section 39 of the Act to require the discharge to meet whatever effluent limits are necessary to ensure compliance with the water quality standards. When such a violation is caused by the cumulative effect of more than one source, several sources may be joined in an enforcement or variance proceeding, and measures for necessary effluent reductions will be determined on the basis of technical

feasibility, economic reasonableness and fairness to all dischargers. 35 Ill. Adm. Code 304.105.

Lastly, the District requests that the Board order the Agency to modify the District's NPDES permit (No. IL0028321) consistent with the variance pursuant to Section 309.184 of the Board's regulations (Pet. at 5), which provides:

To the extent authorized by the CWA¹ and the Act, the Board may grant variances from standards, limitations, and requirements imposed by these NPDES Regulations upon a showing that compliance would impose an arbitrary and unreasonable hardship on the applicant or permittee. Any request for such relief shall be commenced in accordance with Section 104.101 and Part 104 shall govern the proceeding. *If such a variance is granted the Board shall order the Agency to issue or modify an NPDES Permit consistent with the Board Order, the CWA, Federal NPDES Regulations and the Act.*

(Note: Prior to codification, Rule 401 and Part IV of Procedural Rules) 35 Ill. Adm. Code 309.184 (emphasis added).

FACTUAL BACKGROUND

Overview

The District operates a wastewater treatment plant located in Decatur, Macon County, downstream of the dam that retains the water within Lake Decatur for the City of Decatur's water supply. Pet. at 2, 6; Rec. at 1. The District was issued an NPDES permit (No. IL0028321), allowing the District to discharge into the Sangamon River. Rec. at 2. In 2007, the Agency renewed the District's NPDES permit, imposing new effluent limits for nickel and zinc to meet the general use water quality standards. Pet. at 2; Pet. Exh. A. This was the first permit in which the District received water quality based effluent limits for nickel and zinc premised on the dissolved metals standards adopted by the Board in 2002.² Rec. at 4.

The District explains that "during very dry periods, no water is released from the dam, and little or no flow is present upstream of the District's discharge." Pet. at 12. The District was not granted a "mixing zone,"³ and the District's effluent limits directly reflect the water quality standards for nickel and zinc. *Id.* at 2. According to the petition, neither the District nor Archer Daniels Midland Company (ADM), one of the District's largest industrial users and a significant contributor to nickel and zinc loading, could investigate options for and implement an adequate

¹ "CWA" means the Federal Water Pollution Control Act, as amended by the "Clean Water Act." 35 Ill. Adm. Code 301.240.

² See Water Quality Triennial Review: Amendments to 35 Adm. Code 302.105, 302.208(e)-(g), 302.504(a), 302.575(d), 309.141(h); and Proposed 35 Ill. Adm. Code 301.267, 301.313, 301.413, 304.120, and 309.157, R02-11 (Dec. 19, 2002).

³ See 35 Ill. Adm. Code 302.100, 302.102.

treatment system in time to meet the compliance schedule set forth in the District's NPDES permit.⁴ *Id.*

The District's Main Plant and Operations

The District treats domestic and industrial wastewater for the City of Decatur, the Villages of Forsyth and Mt. Zion, and for industrial and commercial users in the Decatur metropolitan area. Pet. at 6, 11. The District has about 61 full-time employees. The District was formed in 1917 and its Main Plant, located at 501 Dipper Lane in Decatur, was completed in 1924. *Id.* Major expansions and plant upgrades were made in 1928, 1957, 1964, and 1976. The current plant was completed in 1990. *Id.*

The District serves approximately 90,000 residents of the City of Decatur and the Villages of Forsyth and Mt. Zion. Pet. at 6. The District also serves 26 significant industrial users (SIUs) and over 1,000 other industrial and commercial users. *Id.* Approximately 35 million gallons per day (MGD) on average are processed at the Main Plant and then discharged to the Sangamon River. *Id.* The design average flow of the plant is 41 MGD and the design maximum flow of the plant is 125 MGD. *Id.* The District describes treatment at the Main Plant as consisting of the following: screening, grit removal, primary clarification, two-stage activated sludge, secondary clarification, disinfection, dechlorination, discharge to surface water, anaerobic digestion, flotation thickening, and land application of sludge on area farmland. *Id.* The District has an approved pretreatment program with 17 non-categorical SIUs and 9 categorical SIUs.⁵ *Id.*

The Receiving Waterway

The main discharge from the Main Plant of the District is through Outfall 001 to the Sangamon River at 39° 49' 56" North Latitude, 89° 0' 7" West Longitude. Pet. at 6. The discharge point is located approximately three miles downstream from the Lake Decatur dam. *Id.* at 12. The Sangamon River is designated a general use water (35 Ill. Adm. Code 303.201) at the discharge point. *Id.* at 6-7.

The segment of the Sangamon River that receives the District's discharge from the Main Plant, known as "Segment E-09," is a "zero 7Q10 flow" segment, meaning that "on average over a period of 10 years, the stream will have no flow for at least one period of seven consecutive days."⁶ Rec. at 2, 4; Pet. at 7. The Agency notes that a mixing zone "is effective when flow is

⁴ The petition is supported by two affidavits, one from Timothy R. Kluge, Technical Director for the District, and the other from Mahlon Kaloupek, Plant Advisor for ADM.

⁵ See 35 Ill. Adm. Code 310.110 for definitions of "pretreatment," "industrial user," and "significant industrial user."

⁶ The United States Environmental Protection Agency defines "7Q10" as the "[s]even-day, consecutive low flow with a ten year return frequency; the lowest stream flow for seven consecutive days that would be expected to occur once in ten years." *Terms of Environment:*

consistent in the water body,” adding that a mixing zone is “not appropriate for a zero 7Q10 flow river segment . . . because of the relatively inconsistent periods of flow.” Rec. at 4.

Segment E-09 of the Sangamon River, also referred to as “Assessment Unit ID IL_E-09,” is on the most recent Section 303(d) list⁷ of impaired waters, the “partially federally approved 2008 List.” Rec. at 6; Pet. at 7. The list states that the segment is impaired for aquatic life, fish consumption, and primary contact uses. *Id.* According to the District, manganese, dissolved oxygen, polychlorinated biphenyls, and fecal coliform are listed as the potential causes of impairment for the segment. Pet. at 7. The Agency observes, however, that because the District:

discharges to the most downstream portion of E-09, the discharges did not influence any of the sampling points used to gather data at E-09; therefore those discharges did not influence the decision of impairment nor potential causes of impairment at the E-09 segment. Rec. at 6.

The next downstream segment of the Sangamon River is E-05. Rec. at 6. The Agency maintains that it is more appropriate to use segment E-05 than segment E-09 in determining nickel and zinc water quality standards with regard to the District’s NPDES permit. *Id.* Segment E-05 is also impaired for aquatic life, fish consumption, and primary contact uses. *Id.* Station E-05 is located 7.3 miles downstream of the District’s discharge. *Id.* Based on data from 2001-2003, which did not include adequate nickel and zinc measurements, the potential causes given for the aquatic life use impairment in segment E-05 are total phosphorus, total suspended solids, and dissolved oxygen. *Id.* Based on data from October 2004-2008, however, the Agency believes that:

when segment E-05 of the Sangamon River is re-assessed for the period of 2004 through 2008, and if aquatic life remains impaired, the 303(d) List will include Nickel and Zinc as potential causes of aquatic life impairment for the E-05 segment of the Sangamon River. The Nickel and Zinc present is attributed to the [District’s] effluent because no other point source exists below the Lake Decatur dam and above the segment E-05 sampling point. *Id.*

The District’s NPDES Permit and the Water Quality Standards

On April 20, 2007, the Agency renewed the District’s NPDES permit (No. IL0028321), which contains effluent limits for nickel and zinc to meet the general use water quality standards. Pet. at 2; Pet. Exh. A. The permit became effective on July 1, 2007, with an expiration date of June 30, 2012. Pet. Exh. A. The permit required the District to comply with the nickel and zinc effluent limits within 24 months of the permit’s effective date, *i.e.*, by July 1, 2009. Pet. at 9. The Agency issued a modified NPDES permit on June 30, 2009, effective July 1, 2009. Rec. Exh. A. The permit still expires on June 30, 2012. *Id.*

Glossary, Abbreviations and Acronyms, <http://www.epa.gov/glossary/terms.html> (last updated Oct. 2, 2006).

⁷ Section 303(d) of the federal Clean Water Act (33 U.S.C. § 1313(d)).

Among the June 30, 2009 permit modifications, the Agency extended the schedule for the District's compliance with the nickel and zinc effluent limits from July 1, 2009 to July 1, 2010. Rec. at 9. By extending the compliance schedule from two years to three years, the Agency provided the District with "additional time to identify and implement wastewater treatment technology to bring [the District] into compliance with the Nickel and Zinc standards of the NPDES Permit." *Id.* The Agency also changed the nickel and zinc effluent limits based on site-specific information discussed below. *Id.* at 9-10.

The Agency explains that it used the critical hardness value for the river at Ambient Water Quality Monitoring Network (AWQMN) Station E-05, Sangamon River at Niantic, 242 milligrams per liter (mg/L), to set nickel and zinc effluent limits in the April 20, 2007 permit that directly reflect the water quality standards. Rec. at 4. The Agency notes that the total metal effluent values of the permit were converted from the dissolved metal water quality standards using the default conversion factor from the regulations. *Id.*

According to the Agency, after receiving the April 20, 2007 permit, the District used the United States Environmental Protection Agency (USEPA) metals translator procedure to "raise total Nickel and Zinc permit limits to higher concentrations while maintaining the applicable dissolved water quality standard in the receiving stream." Rec. at 5; *see also* Pet. at 19. The USEPA methodology determines a "site-specific conversion factor," converting the dissolved metal water quality standard into a total metal value based on the qualities of the effluent and receiving water body:

Applicants for the metals translator procedure must measure both dissolved and total metal in their effluent and in the receiving water. The most conservative ratio, i.e., the ratio that gives the lowest total metal value in relation to the dissolved concentration, is used to establish a total metals permit limit.⁸ Rec. at 5.

For the District, the Agency states, the most conservative translator value was from the effluent for both nickel (0.966) and zinc (0.848). *Id.* The District also produced a "site-specific hardness value," 359 mg/L, by monitoring the receiving stream below the discharge. *Id.*

The Agency explains that the site-specific metals translators and the site-specific hardness value resulted in new total metal effluent limits for the permit: acute zinc, 0.416 mg/L; chronic zinc 0.075 mg/L; and chronic nickel, 0.015 mg/L. Rec. at 5. These effluent limits are reflected in the June 30, 2009 permit modification and "are the permit limits . . . from which [the District] now seeks relief." *Id.* According to the Agency, based on the change in the critical hardness value, the dissolved water quality standards that must be met in-stream and on which the permit's total metal effluent limits are based are as follows: acute zinc, 0.353 mg/L; chronic zinc, 0.0637 mg/L; and chronic nickel, 0.0148 mg/L. *Id.*

⁸ *See* definitions at 35 Ill. Adm. Code 301.267 ("conversion factor") and 301.313 ("metals translator"); *see also* 35 Ill. Adm. Code 309.157 (permit limits for total metals).

The District's Discharge of Nickel and Zinc

As noted above, the District's main discharge is through Outfall 001. Pet. at 6. The District has three permitted discharge points for combined sewer overflow treatment facilities upstream of Outfall 001, but the upstream outfalls are "currently not significant contributors of nickel or zinc." Ans. at 2.

During dry weather, ADM and Tate & Lyle Ingredients Americas, Inc. (Tate & Lyle), both industrial users, provide an estimated 50% of the wastewater flow received by the District. Pet. at 11. Based on its monitoring of industrial sources, wastewater entering the treatment plant, the treated discharge to the Sangamon River, and other locations, the District has identified sources of nickel and zinc in the incoming wastewater, as discussed below. *Id.*

For nickel, sampling at locations in the collection system receiving only domestic and commercial wastewater indicated concentrations below the laboratory detection limit. Pet. at 11. Average industrial loadings of nickel are:

ADM	9.403 pounds per day (0.102 mg/L)
Tate & Lyle	0.351 pounds per day (0.010 mg/L)
All other industries	0.034 pounds per day (0.006 mg/L)

Id.

For zinc, "small amounts" are present in domestic and commercial wastewater, but the majority of the District's incoming load is from industry. Average loadings of zinc are:

ADM	31.446 pounds per day (0.319 mg/L)
Tate & Lyle	4.487 pounds per day (0.124 mg/L)
All other industries	1.281 pounds per day (0.226 mg/L)
Domestic and commercial	7.507 pounds per day (0.052 mg/L)

Id.

"Industrial monitoring" for nickel and zinc has recently been increased from quarterly to twice monthly at ADM and Tate & Lyle. Pet. at 38. Industrial monitoring for nickel and zinc is performed semi-annually at other industrial users that could discharge nickel and zinc. *Id.*

The District's Main Plant includes physical and biological treatment processes, but no specific treatment process to remove metals. Pet. at 11. However, according to the District, "significant incidental removal" of metals from the wastewater does occur. *Id.* at 11-12. The District's removal efficiency is approximately 53% percent for nickel and 77% for zinc. *Id.* at 12.

The District regulates incoming wastewater constituents through ordinance. The District explains that it adopted a pretreatment ordinance "pursuant to its NPDES permit requirement to implement an industrial pretreatment program." Pet. at 12. The ordinance limits are incorporated into discharge permits. The District issues the discharge permits to SIUs. *Id.*

According to the District, both ADM and Tate & Lyle are in compliance with their respective discharge permit limits for nickel and zinc. *Id.*

District sampling data from January through November 2009 show the following average discharge quantities to the Sangamon River:

Total nickel: 6.34 pounds/day
 Total zinc: 9.54 pounds/day. Ans. at 3.

According to the District, the flow available for mixing in the Sangamon River is “highly variable.” Pet. at 12. The District explains that during “very dry periods,” no water is released from the dam and “little or no flow” is present upstream of the District’s discharge, adding that “[v]ery dry conditions” occurred in the fall of 2007. *Id.*

The District’s monitoring results from March 2007 through March 2009 are summarized below:

	Sangamon River Approximately Two Miles Upstream of Discharge	District Discharge	Sangamon River Approximately Two Miles Downstream of Discharge
Total nickel mg/L 2007-09 Minimum	<0.005	0.013	<0.005
Total nickel mg/L 2007-09 Average	<0.005	0.024	0.012
Total nickel mg/L 2007-09 Maximum	0.015	0.046	0.033
Total zinc mg/L 2007-09 Minimum	<0.010	0.030	0.010
Total zinc mg/L 2007-09 Average	<0.013	0.051	0.022
Total zinc mg/L 2007-09 Maximum	0.087	0.099	0.087

Pet. at 13; Ans. at 3.

Upstream samples were collected at the Illinois Route 48 Bridge crossing the Sangamon River, which is located approximately two miles upstream of Outfall 001. Ans. at 3-4; Ans. Exh. A. The downstream sampling point used by the District historically is located at the Wyckles Road (County Highway 41) Bridge, which is approximately three stream miles downstream of

Outfall 001. Ans. at 4; Ans. Exh. A. Within the past year, sampling points were added at approximately 100 yards, 600 yards, and 1,000 yards (Rock Springs Bicycle Trail Bridge) downstream of Outfall 001. *Id.* Accordingly, downstream monitoring has been modified to include four locations in the Sangamon River rather than the one location monitored since 2007. Pet. at 37. The District recently acquired instrumentation to perform metals analyses in-house, “making expanded monitoring more feasible.” *Id.* Monitoring for nickel and zinc is currently performed twice each month. *Id.*

The Agency states that based on the petition information, the Agency “has determined that some water quality standards have been violated by [the District] in the Sangamon River.” Rec. at 6. The District maintains that its “discharge does not result in exceedences of the water quality standard except [during] very low flow conditions in the Sangamon River.” Pet. at 38. The District adds that the concentration of nickel and zinc in the river is “highly dependent on rainfall and upstream flows” and “[i]n the absence of very dry weather, the water quality standard is regularly achieved as demonstrated by downstream river monitoring.” *Id.* at 43.

Compliance Efforts

Prior to the reissuance of the NPDES permit on April 20, 2007, the District began investigating potential options to comply with nickel and zinc effluent limits. Pet. at 13-14, 19. These potential compliance options include employing treatment technology at the Main Plant to improve removal and reducing industrial contributions through the existing industrial pretreatment program. *Id.* at 13-14. The District maintains that it cannot meet the NPDES permit compliance schedule for nickel or zinc “without significant changes to treatment processes or operations.” *Id.* at 14, 17.

Nickel

Any nickel treatment process at the Main Plant would need to be “sized to handle at least the design average flow of 41 MGD, and potentially the design maximum flow of 125 MGD.” Pet. at 14. Treatment technologies (*e.g.*, precipitation as nickel hydroxide) for removing relatively high metals concentrations are well established, but “their applicability is limited by the very low concentrations in the District’s wastewater stream.” *Id.* at 14-15. The District maintains that the majority of its effluent nickel is in the dissolved form and would not be removed by filtration. *Id.* at 15.

The add-on chemical treatment technologies of ion exchange and reverse osmosis should remove dissolved nickel. Pet. at 15. However, the District represents that both require “significant operating costs for energy, labor, and membranes (reverse osmosis) or resin (ion exchange).” *Id.* Reverse osmosis treatment is estimated to cost \$4 per gallon per day, not including operating and brine disposal costs, resulting in a minimum capital cost of \$100 million, which could be doubled with the addition of a brine disposal system. *Id.* at 15-16. According to the District, the capital cost of an ion exchange system should be much less than that of reverse osmosis, but “a substantial amount of research would be required to find an ion exchange resin suitable for removing nickel that is likely to be in a complexed form in the District’s effluent.” *Id.* at 16.

With any treatment technology, removing nickel at the industrial source would minimize the volume of water to be treated and, therefore, the capital cost. Pet. at 16. Accordingly, the District has concentrated on working with industrial users, particularly ADM, the largest industrial discharger of nickel to the system. *Id.* Nickel has been used as a catalyst in several of ADM's production processes. *Id.* at 20. ADM began reviewing treatment technology for concentrating and recovering nickel from its wastewater stream, including a completed trial of electrocoagulation that unexpectedly resulted in increased nickel concentrations. *Id.* at 20-21.

The District calculated tentative pretreatment local limits that would need to be imposed on industrial users to allow the District's discharge to comply with the original NPDES permit limit for nickel. For the District to meet its original NPDES permit effluent limit for nickel, ADM would need to reduce its nickel discharge by nearly two-thirds. Pet. at 16-17.

Zinc

Zinc treatment options at the District's Main Plant are the same as described above with respect to nickel, according to the District. Pet. at 17. The District also calculated tentative pretreatment local limits that would need to be imposed on industrial users to allow the District's discharge to comply with the original effluent limit for zinc. The District learned that zinc-containing cooling tower treatment chemicals were in use at ADM and Tate & Lyle and were the largest source of zinc in the District's wastewater. *Id.* Both industrial users have since "substantially reduced or eliminated zinc from their cooling tower treatment programs." *Id.*; see also *id.* at 25, 31.

Additional time is needed to ensure the zinc NPDES permit effluent limit can be met consistently. ADM is reviewing its wastewater treatment plant (WWTP) operations, particularly solids management alternatives, to determine whether it can comply with the District's tentative pretreatment local limit for zinc under all conditions. Pet. at 18. Two new industrial facilities that will be discharging wastewater to the District's Main Plant are currently in the design phase, and "a large portion of these proposed wastewater streams would consist of cooling tower blowdown streams." *Id.* Further, the District needs to verify the accuracy of assumptions used in the local limit development process, including assumptions concerning allocations for industrial users and the projected removal rate from the District's treatment process. *Id.*

Presently, it is anticipated that ADM would be able to meet its tentative local zinc limit only about 25% of the time. Pet. at 18. ADM's ability to meet the proposed limit is based almost entirely on the amount of sludge wasted from the ADM pretreatment system. *Id.* However, according to the petition, reduced sludge wasting would be "only a very short term solution" as this would:

cause the sludge to build up within the pretreatment system and cause major disruptions in the aerobic portion of the system within a matter of weeks. At that point, significant and uncontrollable amounts of suspended solids would carry over with their effluent to the District. These solids would likely compromise the District's ability to properly operate its Main Plant. To counteract the solids

“carry over,” the volume through ADM’s WWTP would have to be reduced. To that end, major portions of ADM’s Decatur Complex would have to be shut down and could not be restarted until a sludge removal and drying system could be installed. The design, permitting and construction of such a system would be very costly and would likely take more than a year. *Id.* at 18-19.

Timeline

The District worked from March 2007 through November 2007 on the metals translator study, discussed above with respect to the NPDES permit modifications. Pet. at 19. The District also had compiled, by the end of the summer of 2007, sample data, including industrial samples, the District’s effluent samples, and stream sampling information, showing that “the source of nickel in the District’s wastewater was ADM’s pretreated industrial flow, and the most significant sources of zinc were industrial flow from both ADM and Tate & Lyle.” *Id.* In turn, the District met with SIUs, including ADM and Tate & Lyle, in August and September 2007 and then with the Agency on October 30, 2007. *Id.*

In the District’s December 20, 2007 first interim report to the Agency under the NPDES permit issued on April 20, 2007, the District stated:

review of information that could potentially support a site-specific standard is ongoing. At the suggestion of [the Agency] and U.S. EPA, guidance for determining a Water Effect Ratio and whether that process might be applicable to this situation is being reviewed. Information on the biotic ligand model is also being reviewed to determine its potential usefulness. Pet. Exh. C at 3; *see also* Pet. Exh. F at 3 (third interim report, Dec. 29, 2008).

In early 2008, the District calculated tentative local pretreatment limits, which were provided to ADM and Tate & Lyle and served as the basis for discussions with the industries during 2008. Pet. at 20. The District has increased metals monitoring at the major industrial users and the Main Plant to twice per month. *Id.*

Based on a December 4, 2008 meeting of the Agency, the District, and ADM, the District submitted an application to modify the April 20, 2007 NPDES permit on January 12, 2009. Pet. at 21. On April 3, 2009, the District submitted supplemental information to the Agency regarding the District’s application to modify. *Id.* Within the supplemental information, the District stated that “[a]dditional time is being requested to allow the District to investigate options for a rule change, a flow-based limit, or treatment technology, as well as to allow ADM to continue to investigate process changes and pretreatment options.” Pet. Exh. J at 1.

The District represents that it and ADM did not know that achieving compliance with the nickel effluent limit in the District’s NPDES permit would be:

impossible while continuing to operate both facilities until ADM discovered, in mid-2008, that incoming grain was responsible for significant amounts of nickel in the effluent sent to the District. *** In light of this information, [the Agency],

the District and ADM agreed that seeking a variance would also be appropriate in this situation. Because of the complexity of the issues at hand, it has taken time for the District and ADM to coordinate with [the Agency] and to prepare this Petition. On April 28, 2008, the District provided a draft of this Petition to [the Agency] for its review. On May 14, 2009, the District, ADM and [the Agency] met to discuss the same. Pet. at 21-22.

The District filed its petition for variance on June 15, 2009. As discussed above, the Agency issued a modified NPDES permit on June 30, 2009, which, among other things, extended the schedule for the District's compliance with the nickel and zinc effluent limits from July 1, 2009 to July 1, 2010. Rec. Exh. A. However, more time is needed to further investigate potential compliance options. Pet. at 35.

As of the end of September 2009, the District expected that by October 30, 2009, its Board of Trustees would have adopted amendments to the District's pretreatment ordinance to include nickel and zinc limits for all SIUs, "present and future, that will ensure compliance with [the District's NPDES] permit limits for those parameters." Resp. at 4.

Additional Detail on Certain of ADM's Efforts

ADM identified unexpected contributors of nickel and zinc to its wastewater system. ADM determined that soybeans contain approximately 4.1 parts per million (ppm) nickel and approximately 46 ppm zinc, while corn contains approximately 0.53 ppm nickel and approximately 32 ppm zinc. Pet. at 24. ADM's Decatur Complex processes about 550,000 bushels of corn and 200,000 bushels of soybeans each day, meaning that "15 times more nickel and 25 times more zinc than ADM would be allowed to discharge . . . comes into the Decatur Complex just through its raw materials." *Id.*

After evaluation, high pH precipitation and electrocoagulation do not appear to be viable treatment options with respect to corn processes, according to the petition. Pet. at 27-28. The single largest contributor of nickel in ADM's effluent is the company's East Soybean Processing Plant, and all of the nickel is from the soybeans processed. *Id.* at 28. ADM is attempting to locate a feed or fertilizer outlet for the East Soybean Processing Plant wastewater stream contributing the most nickel. *Id.* at 28-29. Also, ADM identified "small concentrations" of nickel present in 50% sodium hydroxide, but because nearly six million pounds of sodium hydroxide is used by ADM in various processes each month, the contribution of additional nickel to the ADM wastewater system is significant. *Id.* at 24.

The use of nickel catalysts in the ADM Corn Plant's sorbitol process and in the ADM West Soybean Processing Plant's hydrogenation process were readily identified by ADM as significant nickel contributors. Pet. at 26, 28. ADM considered electroplating and high pH precipitation for the sorbitol process but concluded the treatment options were infeasible due to technical and economic difficulties. *Id.* at 26. However, after a process change to reduce nickel through a combination of water capture and redirection yielded positive results, ADM began making changes to implement the option, including considerable piping installations and modifications. *Id.* at 27. ADM has implemented new housekeeping practices and is

investigating handling system modifications to address nickel losses from catalyst handling at the West Soybean Processing Plant. *Id.* at 28.

In the fall of 2008, sampling confirmed that ADM’s new anaerobic treatment system was contributing nickel and zinc. *Pet.* at 29. Insoluble metal sulfides forming in the system had built up in the sludge. ADM determined that the nickel contained in this sludge alone exceeded its tentative local pretreatment limit. *Id.* ADM has sought assistance to address this source of metals. *Id.* at 29-30.

To summarize, ADM has to date “either implemented the following technologies/process changes or determined that they are not feasible”:

Nickel, Alternative Catalysts	Because of processing and product quality issues, no viable alternatives to the nickel catalyst used in two processes.
Nickel, Ion Exchange Followed by Nickel Electroplating	Concentration of nickel yielded too low.
Nickel, High pH Precipitation for Sorbitol Process	Gluconate nickel complex preventing precipitation.
Nickel, High pH Precipitation for Other Streams	Only moderate precipitation efficiency with significant quantities of chemicals required.
Nickel, Operation Changes	Modified the Sorbitol ion exchange regeneration rinse sequence to reduce nickel discharged to WWTP.
Zinc, Cooling Tower Water Treatment Program	Implemented alternative program at Corn Plant and BioProducts Plant that does not contain zinc in the chemicals. No other facilities at ADM’s Decatur Complex were on a zinc-based treatment program.
Zinc, BioProducts Cooling Tower	Implemented higher pH program to stop zinc leaching from tower.
Nickel and Zinc Electrocoagulation	Effective for zinc removal but no nickel removal observed.

Pet. at 30-31.

ADM continues to evaluate “a combination of treatment schemes,” including rerouting a steam condensate, ion exchange, evaporation and sale as feed/fertilizer, and ultra-filter/reverse osmosis and removing filtered material to a landfill. *Pet.* at 35-36.

THE REQUESTED VARIANCE, COMPLIANCE PLAN, CONDITIONS

The District is “proposing the following plan to achieve compliance with nickel and zinc permit limits . . . and suggests that this variance be granted subject to the following conditions”:

1. The District requests a variance from 35 Ill. Admin. Code § 302.208(e) and 35 Ill. Admin. Code § 304.105 as those sections apply to nickel and zinc in the following portions of the Sangamon River: the segment of the Sangamon River that receives discharge from the Main Plant (Assessment

Unit ID IL E-09), and downstream segments potentially impacted by the District's nickel and zinc discharges.

2. The variance expires on July 1, 2014.
3. The District will continue plant influent and effluent monitoring for nickel and zinc, along with monitoring upstream and downstream of the discharge in the Sangamon River. Currently, monitoring for nickel and zinc are performed twice monthly. Downstream monitoring has recently been modified to include four locations in the Sangamon River rather than the one location monitored since 2007. The District has recently acquired an instrument to perform metals analyses in-house, making expanded monitoring more feasible.
4. Industrial monitoring for nickel and zinc, currently performed quarterly at ADM and Tate & Lyle and semi-annually at other industrial users that could discharge nickel and zinc, has been increased to twice monthly at ADM and Tate & Lyle.
5. The District will continue refinement of pretreatment local limits for nickel and zinc necessary to meet its permit limits, and will continue work with ADM and Tate & Lyle on options for achieving compliance with local limits. Ongoing verification monitoring will be conducted to confirm that cooling tower treatment programs are achieving the necessary zinc reductions. The District will remain in frequent contact with ADM personnel regarding their ongoing work with identifying nickel sources and control options and will continue to meet with ADM personnel at least semiannually and exchange information, and meet more frequently as needed.
6. The District will explore the possible development of stream flow-based compliance options. As noted above, the District's discharge does not result in exceedences of the water quality standard except very low flow conditions in the Sangamon River. A flow-based permit limit would not avoid the capital cost of equipment installed for nickel treatment, for example, but significant operating and energy cost savings could be possible if treatment equipment was only operated when justified by low river flows.
7. The District will continue investigation of updated toxicity information and possible alternatives for applying a nickel water quality standard. The District has done some preliminary investigations of possible options including a Water Effect Ratio calculation and application of a Biotic Ligand Model. Exploration of other possibilities such as a site-specific water quality standard will continue.

8. Over the course of the first two years of the variance, the District and ADM will be undertaking several parallel paths to review additional technologies and compliance strategies. The technologies ultimately used for compliance may be closely tied to the compliance strategy to ensure the most practical solution is employed. That is, technologies will be evaluated based on compliance strategies involving both individual process streams and total effluent flows. Thus, even if the treatment of an individual stream appears economically reasonable, if it will not be sufficient to achieve overall compliance, expenditures on such treatment could be wasted if ADM were required to provide treatment of the effluent flows. Thus, neither the District nor ADM will be in a position to properly evaluate the cost effectiveness of an overall compliance strategy until all potential treatment options have been evaluated individually.

9. The following schedule is a general guide to the key tasks that must be completed to determine the compliance strategy to be implemented. The Board should note that the technologies set forth below for evaluation are all of the technologies of which the District and ADM are currently aware. Both the District and ADM will continue to explore the potential for other technologies and developments in technologies already evaluated throughout the first three years of the requested variance.
 - a. 2009 - 2010
 - i. ADM will complete technical and economic feasibility reviews for the following control technologies. The reviews will include determination of technical feasibility, capital and operating costs, reliability, and pilot testing as appropriate.
 1. Nickel — Proprietary Precipitation Process —
A wastewater treatment chemical company has evaluated process streams and has reported positive results for a metals precipitation process. Work is ongoing to determine feasibility and confirm results.
 2. Nickel — Chemical Precipitation Process Using Carbamates or Organic Sulfides —
Discussions with wastewater experts for metals have identified chemicals suited for low concentration precipitation of metals. Work is underway to complete confidentiality agreements and contracts to further evaluate. Concurrently, ADM has begun evaluation of these chemicals as provided by GE Betz Company.

3. Nickel — Reuse of Ion Exchange Resin — ADM currently disposes of resins from the fructose process that are no longer suitable from a quality perspective. Initial tests have indicated there is suitable capacity to provide effective nickel reductions. The difference between use of spent ion exchange resin and the ion exchange process reviewed and determined to be infeasible is that the spent resin would not be regenerated which saves significant chemical and energy costs.
4. Nickel and Zinc — Soybean Process Stream Alternative — ADM is considering installation of a thickening system necessary for sale of this product as a feed or fertilizer additive. Installation is dependent on funding and procurement of customers.
5. Nickel and Zinc — BioProducts Process Stream Alternative — ADM is reviewing options to install equipment to thicken a process stream for use as a fertilizer additive.
6. Nickel and Zinc — WWTP Sludge Removal System — Evaluation of options for sludge removal and management for the WWTP.
7. Nickel and Zinc — Reverse Osmosis — ADM has completed preliminary technical and cost evaluation for treating a portion of the effluent with reverse osmosis. Review has concluded that the technology will work to reduce both nickel and zinc. However, capital and operating costs are prohibitive based on the volume of wastewater to be treated. Continued evaluation of this option will occur in combination with other potential treatment options.
8. Nickel and Zinc — Sludge - Discussions are scheduled concerning a device which breaks apart WWTP organisms. The purpose would be to change the characteristics of the anaerobic sludge, stop its carryover and thus lower nickel and zinc content in the sludge to the District.

9. Nickel and Zinc — Sludge — ADM has been contacted by a company which has the potential to purchase all of ADM's sludge. Testing of the sludge is scheduled at the company's site. This would bring ADM into zinc compliance and close the gap on nickel compliance.
 - ii. The District will complete the following tasks on a parallel track to ADM's technology reviews. The outcome of these tasks may impact the feasibility of the various options being considered and will be valuable in reviewing the ultimate feasibility of various control combinations.
 1. Review of soluble/insoluble ratio of SIU dischargers versus the District's total discharge numbers, and determine if pretreatment limits need to be adjusted. Determine how much of the insoluble nickel and zinc entering the District's Main Plant is removed in the sludge and whether or not the pretreatment limits should be expressed as total or soluble limits.
 2. The District will pursue variable limits based on flow with [the Agency] and will seek permit modifications as necessary.
- b. First Half of 2011
 - i. Compile various control strategies based on one or more of the feasible technologies. Develop flow diagrams depicting removal options, pros and cons, capital expenditures and operating costs.
 - ii. Present findings to ADM division managers.
10. The District proposes the following time schedule for achieving compliance with permit limits for nickel and zinc:

January 1, 2010	-	Submit an interim report to [the Agency] describing progress on each of the elements of the compliance plan above.
July 1, 2010	-	Submit interim report, as above.
January 1, 2011	-	Submit interim report, as above.

- July 1, 2011 - Submit interim report, as above.
- January 1, 2012 - Submit interim report, as above.
- July 1, 2012 - Submit a final compliance plan to [the Agency] containing nickel and zinc controls, treatment technologies, proposed permit modifications, or proposed site-specific water quality standards that will achieve compliance with permit limits.
- January 1, 2013 - Submit interim report, as above.
- July 1, 2013 - Submit interim report, as above.
- January 1, 2014 - Submit interim report, as above.
- July 1, 2014 - Achieve compliance with nickel and zinc NPDES permit limits.

Pet. at 37-42.

The District originally sought a “partially retroactive variance” to begin on July 1, 2009. Pet. at 44. The District stated, however, that if the Agency issued the modified NPDES permit with the extended compliance date, the District would “not need the variance to apply retroactively” and instead the District would “seek a variance that will begin on July 1, 2010, and end on July 1, 2014.” *Id.* As noted above, the Agency issued a modified NPDES permit on June 30, 2009, effective July 1, 2009, which extended the schedule for the District’s compliance with the nickel and zinc effluent limits from July 1, 2009 to July 1, 2010. Rec. at 9; Rec. Exh. A.

THE AGENCY’S RECOMMENDATION AND THE DISTRICT’S RESPONSE

The Agency recommended that the Board grant the variance, but made its recommendation contingent upon the Board subjecting the District to four additional conditions. Rec. at 11. The District responded to each of the Agency’s suggested conditions. The District’s response documents that based on subsequent communications between the District and the Agency, (1) the District does not object to two of the Agency’s four conditions, (2) the District and the Agency have agreed that another of the Agency’s conditions is unnecessary, and (3) the District and the Agency have agreed upon alternate language for the fourth Agency condition. Resp. at 2, 4-7.

First, the Agency requested a condition requiring the District to “amend its pretreatment ordinance within three months after the filing of this Recommendation to include Nickel and Zinc limits for all Significant Industrial Users, present and future, that will ensure compliance with Petitioner’s NPDES permit limits for those parameters.” Rec. at 11. The District responded that it has “begun the process” of so amending its pretreatment ordinance and “expects that its

Board of Trustees will adopt the amended pretreatment ordinance in advance of the three month deadline specified by the Agency, which is October 30, 2009.” Resp. at 4. The District accordingly does not object to this Agency condition.⁹ *Id.*

Second, the Agency stated that the “options identified for treatment or minimization of Nickel and Zinc” in paragraph 9(a)(i) of the District’s proposed compliance plan “provide a basis for future compliance with the permit limits,” but the Agency asked that the Board impose another condition requiring investigation of “the additional technologies of electro-chemical decomposition and capacitive deionization.” Rec. 7, 12. The District does not object to this Agency condition¹⁰ and adds that ADM has already begun researching these technologies and has “indicated its commitment to continue that evaluation on a track parallel to the other technologies it has committed to evaluate” as set forth in proposed paragraph 9(a). Resp. at 7.

Third, the Agency asked for a condition both requiring that the District “pursue a sludge wasting technology that eliminates the sludge produced by ADM from the [District] wastewater treatment influent,” and noting that the Agency “has determined that this technology is available to the [District] and is likely to eliminate the permit compliance problem for the Zinc parameter and reduce the permit compliance problem for the Nickel parameter.” Rec. at 11-12. The District believes it is inappropriate to require implementation of sludge wasting technology before completing the assessment of all potentially viable technologies. Resp. at 5. The District represents that sludge wasting is one of a number of possible compliance strategies and maintains that the District should be allowed to evaluate all such strategies before being required to implement any of them. *Id.* The District adds that sludge wasting is one of the technologies to be considered under paragraph 9(a)(6) of its proposed compliance plan.¹¹ *Id.* at 6. The District represents that it and the Agency have communicated about the Agency’s recommended condition and now “agree that sludge wasting will be evaluated as part of the assessment of all potentially viable technologies.” *Id.*

Fourth and finally, the Agency requested a condition requiring the District to include the Agency in certain meetings and further providing as follows:

Before [the District] can dismiss treatment technology as a solution to the Zinc and Nickel water quality standards problem, [the Agency] must agree with [the District] that all viable technologies have been adequately explored by [the District]. Only after such agreement with [the Agency] may [the District] pursue site-specific relief from the Board. If [the District] identifies an appropriate technology to remedy the Zinc and Nickel water quality standards problem, [the District] must pursue the technology as soon as possible to achieve compliance with NPDES Permit No. IL0028321. Rec. at 12.

⁹ See paragraph 1(d) of today’s order.

¹⁰ See paragraph 1(h)(i)(J) of today’s order.

¹¹ The District’s proposed paragraph 9(a)(6) is paragraph 1(h)(i)(F) of today’s order.

In turn, the District and the Agency agreed to the following revised condition:

Petitioner must include [the Agency] in meetings to discuss interim progress at the July 1, 2010 and July 1, 2011 benchmarks. If any technically reasonable technology is identified that does not impose an arbitrary or unreasonable hardship on [the District] and remedies the Zinc and Nickel water quality standards problem, in whole or in part, [the District] must pursue that technology either (i) as soon as possible after identification or (ii) immediately following the July 1, 2011 benchmark meeting with [the Agency], whichever comes first. Resp. at 6-7.¹²

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 compliance with the Board regulation at issue would impose an arbitrary or unreasonable hardship. *See* 415 ILCS 5/35(a) (2008).

Before reissuance of the District's NPDES permit in April 2007, the District operated under a series of permits with no effluent limits for nickel or zinc. Pet. at 32. In 2001, at the time of the prior NPDES permit reissuance, the water quality standard for total nickel was 1.0 mg/L, as was the water quality standard for total zinc. *Id.*; Water Quality Triennial Review, R02-11, slip op. at 24. The District represents that its discharge concentration "was, and continues to be, well below that value." Pet. at 32.

The Agency states that the dissolved water quality standards that must be met in-stream are acute zinc, 0.353 mg/L, chronic zinc, 0.0637 mg/L, and chronic nickel, 0.0148 mg/L. Rec. at 5. The District's effluent limits directly reflect these general use water quality standards. *Id.*; Pet. at 2. The District argues that requiring it to meet the current NPDES permit effluent limits for nickel and zinc according to the compliance schedule in the permit, *i.e.*, by July 1, 2010, would impose an arbitrary and unreasonable hardship on the District. Pet. at 32, 34, 35.

The cost to the District of complying with the NPDES permit limits would be "felt by rate payers, thus creating an unreasonable hardship." Pet. at 35. The District's current user fee of \$0.81 per 100 cubic feet of wastewater discharged applies to residential, commercial, and industrial users. *Id.* The \$100,000,000 estimated capital cost for reverse osmosis treatment at the District would result in an additional \$0.53 per 100 cubic feet or a 69% increase in the user charge, excluding operating and brine disposal costs. *Id.* According to the District, "[t]he cost to ADM of the District's having to comply also imposes an unreasonable hardship on ADM." *Id.* The District adds that to date, ADM has been unable to identify a treatment plan that is both technically feasible and economically reasonable, but in any event, "design, permitting, purchase, installation and start-up would take a minimum of two years and would entail very large capital and operating costs." *Id.* at 36.

¹² *See* paragraph 1(1) of today's order.

The District maintains that immediate compliance is “not possible without requiring ADM to shut down much of its Decatur Complex,” which would seriously disrupt the local economy. Pet. at 31. Further, the District states that it cannot cease operating the Main Plant because the plant treats domestic and industrial wastewater for the City of Decatur, the Villages of Forsyth and Mt. Zion, and for industrial and commercial users in the Decatur metropolitan area. *Id.* The District and ADM were unaware that complying with the nickel limit in the District’s NPDES permit, according to the permit schedule, would be “impossible while continuing to operate both facilities until ADM discovered, in mid-2008, that incoming grain was responsible for significant amounts of nickel in the effluent sent to the District.” *Id.* at 34. The District and ADM have spent “significant amounts of time and resources attempting to determine the source of the nickel and zinc discharges, and investigating methods to decrease and/or treat those discharge amounts.” *Id.* at 35. The District requests additional time, until June 30, 2014, to continue studying potential compliance options. *Id.* at 31, 35.

The Agency believes that the District has met the burden under Section 35 of the Act to prove that compliance with Sections 302.208(e) and 304.105 would impose an arbitrary or unreasonable hardship on the District. Rec. at 1. The Agency states that the District has “done a thorough job of tracing the sources of Nickel and Zinc.” *Id.* at 7. The Agency further states that it has witnessed ADM, “one of the Nation’s leading agricultural processors,” and the District “working together to achieve compliance with the NPDES Permit up to this point.” *Id.* at 3. The Agency concludes that the District’s requested relief is necessary. *Id.* at 7.

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).

The District asserts that human health and aquatic life will not be adversely impacted by this variance because “the amount of nickel and zinc to be discharged would not increase beyond historical levels.” Pet. at 2. The District is not seeking to raise its discharges of nickel and zinc into the Sangamon River, but rather to continue its existing discharges while investigating and identifying potential compliance options. *Id.* at 2-3. The District cites recent Eastern Illinois University studies for the proposition that there are slightly improved water quality conditions downstream of the District’s discharge point, compared to upstream, based on calculations of the Macroinvertebrate Biotic Index and the Fish Index of Biotic Integrity. *Id.* at 43.

The Agency states, however, that the nickel and zinc in the District’s effluent is a significant problem in that it “causes water quality standard violations in the Sangamon River and is likely to exert a negative impact on the aquatic life community in the river.” Rec. at 6. Nevertheless, after noting that “[i]nterim limits are sometimes prescribed for dischargers receiving variances to hold down effluent concentrations as much as currently possible,” the Agency concludes that “concentrations coming to the [District] plant should be constant until control measures are in place making interim limits of little use.” *Id.* at 8. Finally, the Agency acknowledges that “some reduction from historic levels has already occurred” and that the

District's effluent "will be no worse during the variance period than it has been in recent years." *Id.* at 9.

CONSISTENCY WITH FEDERAL LAW

Under Section 35 of the Act (415 ILCS 5/35 (2008)), the Board may grant a variance only to the extent that doing so is consistent with applicable provisions of federal law. Section 104.208(b) of the Board procedural rules provides:

All petitions for variances from Title III of the Act, from 35 Ill. Adm. Code.Subtitle C, Ch. I "Water Pollution", or from water pollution related requirements of any other Title of the Act or Chapter of the Board's regulations, must indicate whether the Board may grant the relief consistent with the Clean Water Act (CWA) (33 USC 1251 et seq.), USEPA effluent guidelines and standards, any other federal regulations, or any area-wide waste treatment management plan approved by the Administrator of USEPA pursuant to Section 208 of the CWA (33 USC 1288). 35 Ill. Adm. Code 104.208(b).

The District maintains that its request is consistent with federal law, observing that the Board has granted variances from State water quality standards "in a number of cases, pursuant to its authority and discretion, consistent with federal law, to take such action." Pet. at 48, citing, *e.g.*, CITGO Petroleum Corp. and PDV Midwest Refining, L.L.C. v. IEPA, PCB 05-85 (Apr. 21, 2005). The Agency notes that USEPA has delegated authority to the State of Illinois to administer the NPDES for discharges into navigable waters within its jurisdiction under Section 402(b) of the Clean Water Act (33 U.S.C. § 1342(b)). Rec. at 9. Both the District and the Agency state that there are no applicable federal laws or regulations that preclude granting the District's variance request. Pet. at 48; Rec. at 9.

DISCUSSION

Board Findings

A petitioner must establish that the hardship resulting 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). The District requests a variance from the general use water quality standards for nickel and zinc (35 Ill. Adm. Code 302.208(e)) and the rule for developing water quality based effluent limits as it applies to nickel and zinc (35 Ill. Adm. Code 304.105). The Agency recommends that the Board grant the variance.

The Board has balanced the hardship that would result from requiring immediate compliance against the impact that granting the requested variance would have on the public and the environment, all as described in detail above. The District is not asking to be allowed to increase the concentrations of nickel and zinc in its effluent. Instead, the District wants to be able to continue its discharges while having more time to investigate potential options for

coming into compliance. Immediate compliance would likely require shutting down the District or much of the ADM Decatur Complex, to the extreme detriment of public services or the local economy. Based on initial cost estimates, implementing a treatment system at the Main Plant appears prohibitively expensive, necessitating a dramatic increase in user fees.

The District and ADM have cooperated and moved quickly to identify sources of nickel and zinc in the District's effluent. Both entities have already undertaken multiple steps in an effort to address the problem. Especially with the discovery that ADM's incoming grain is responsible for significant amounts of nickel in the wastewater sent to the District, more time is needed to assess and implement measures that will ensure consistent compliance. The parties acknowledge that throughout the course of the variance, the District's discharges of nickel and zinc to the Sangamon River would not increase beyond levels in recent history.

Based on this record, and considering the conditions to which the variance would be subject, the Board finds that the District has established that the hardship from immediate compliance outweighs any injury to the public or the environment from granting the relief. The Board accordingly finds that the District has presented adequate proof that an arbitrary or unreasonable hardship would result absent this relief. The Board further finds that the requested variance is consistent with federal law. The Board will therefore grant the variance, subject to conditions.

Board Conditions

As provided in Section 36(a) of the Act (415 ILCS 5/36(a) (2008)), "[i]n granting a variance the Board may impose such conditions as the policies of this Act may require." One feature of a variance is that it is, "by its nature, a temporary reprieve from compliance with the Board's regulations and compliance is to be sought regardless of the hardship which the task of eventual compliance presents an individual polluter." Central Illinois Public Service Co. (Coffeen Power Station) v. IEPA, PCB 97-131, slip op. at 3 (June 5, 1997), citing Monsanto, 67 Ill. 2d 276, 367 N.E.2d 684. The variance petitioner is usually "required, as a condition to grant of variance, to commit to a plan which is reasonably calculated to achieve compliance within the term of the variance." Central Illinois Public Service, PCB 97-131, slip op. at 3.

Generally, the Board will impose as conditions on the variance those conditions proposed by the District, as well as those additional conditions later agreed to by the Agency and the District. Several conditions require further discussion.

Effective Date

The Board finds that the retroactive relief asked for by the District is unnecessary because the Agency modified the District's NPDES permit, changing the date for compliance with the nickel and zinc effluent limits from July 1, 2009 to July 1, 2010. The District requests that under these circumstances, the variance begin on July 1, 2010, and terminate on July 1, 2014. The Board will impose the July 1, 2014 termination date, but as the District is presently subject to the general use water quality standards for nickel and zinc, the Board makes the variance effective

on January 7, 2010, the date of this order. The duration of the variance remains within the statutorily-permitted five years. *See* 415 ILCS 5/36(b) (2008).

Portion of Sangamon River

The District requests a variance “from the water quality standards for nickel and zinc, as set forth in Section 302.208(e), and from the effluent limits that could otherwise be imposed through Section 304.105.” Pet. at 51. In its petition, the District sought a variance from these rules as they apply to nickel and zinc:

in the following portions of the Sangamon River: the segment of the Sangamon River that receives discharge from the Main Plant (Assessment Unit ID IL E-09), and downstream segments potentially impacted by the District’s nickel and zinc discharges. *Id.* at 37.

In response to questions by Board staff posed to the District through a hearing officer order, the District attempted to more precisely identify the in-stream starting and ending points for its proposed variance.

Noting that the District discharges to the most downstream portion of segment E-09, Board staff inquired about whether there is any reason that Outfall 001 should not serve as the in-stream starting point for the requested variance. The District responded in the negative. Ans. at 1-2. Further, when asked to identify any other District outfall receiving discharges from zinc and nickel contributors, the District explained that while it has three permitted discharge points for combined sewer overflow treatment facilities upstream of the Main Plant discharge, the upstream outfalls are “currently not significant contributors of nickel or zinc.” *Id.* The Agency did not object to the selection of Outfall 001. Comm. at 1-2.

The District was also asked by Board staff to describe the in-stream ending point for the proposed variance with greater precision (*e.g.*, latitude/longitude, GPS coordinates, US Geological Survey gauging station numbers) and to justify the location selected. In response, the District initially re-emphasized that its river monitoring data indicate that “its discharge does not result in exceedences of the water quality standards except during very low flow conditions in the Sangamon River.” Ans. at 2. Referring to an Illinois State Water Survey map for the Sangamon River basin showing stream flows during seven-day, ten-year low flow conditions, the District maintained that during times of low flow, there is “no significant additional flow available in the Sangamon River for mixing with Petitioner’s discharge until the Sangamon River’s confluence with the South Fork, approximately two miles south of Riverton.” *Id.*, citing <http://www.isws.illinois.edu/docs/maps/lowflowimages/maps/map5.gif>. Based on this information, the District suggested that its variance end at the US Geological Survey stream gauging station 05576500 at Riverton, 39° 50’ 35” North Latitude, 89° 32’ 50” West Longitude. *Id.*

Although the Agency has recommends granting the variance, the Agency objects to the District’s suggested in-stream ending point. Comm. at 2. The Agency estimates that the distance in the stream from the District’s Outfall 001 to US Geological Survey stream gauging

station 05576500 is “in excess of 30 miles.” *Id.* at 1. Claiming it lacks information on the method that the District used to calculate the suggested end point, the Agency takes the position that “the in-stream segment of the requested variance” would be “larger than necessary,” resulting in “unnecessary degradation of the designated uses of the Sangamon River.” *Id.* at 2. The Agency therefore asked that the relief be “confined to as small an area in the Sangamon River as is practicable under the terms of the requested variance.” *Id.*

In response to the Agency’s comment about the suggested portion of the Sangamon River being larger than necessary, the District states that it “not seeking a determination of allowed mixing.” Clarif. at 2. The District concedes, however, that “a geographic limit will be somewhat arbitrary in this case since dry weather sampling data beyond [the District’s] Wyckles Road sample point is very limited.” *Id.* at 3. Further, the District expresses its belief that “it is not necessary for the Board to establish an end point for the requested variance.” *Id.* At bottom, the District “is seeking the variance for protection from a violation of a water quality standard caused by its discharge, regardless of where in the Sangamon River such a violation may occur.” *Id.* at 2 (emphasis in original).

Responding to the Agency’s comment about the District’s suggested in-stream reach of the variance causing unnecessary degradation of the designated uses of the Sangamon River, the District reiterates that it is “seeking only to maintain the status quo with respect to nickel and zinc levels in the Sangamon River” and quotes its petition: “human health and the existing aquatic life will not be adversely impacted through the granting of this variance since the amount of nickel and zinc to be discharged would not increase beyond historical levels.” Clarif. at 3-4.

The Board notes that as set forth above, the District’s petition proposed that the variance would apply in described “portions of the Sangamon River.” Pet. at 37. When the Board hearing officer’s order asked the District for greater specificity and corresponding justification, the above filings ensued. At this juncture, neither party is proposing that the Board’s order designate a specific portion of the Sangamon River as being subject to the District’s variance. More importantly, such a designation is neither supported by the record nor required to grant the variance. Consistent with CITGO Petroleum, PCB 05-85, slip op. at 16, the Board finds that the conditional language of this variance should just make the relief from Sections 302.208(e) and 304.105 applicable to the discharge at issue, *i.e.*, the District’s discharge to the Sangamon River from the Main Plant’s Outfall 001. The Board’s order reflects this ruling.

Industrial Users

The District seeks to have some of the proposed conditions apply directly to ADM and, to a much lesser extent, Tate & Lyle and conceivably other industrial users. Neither the District nor the Agency moved to join any industrial user as a party, and no industrial user sought to intervene in this case. *See* 35 Ill. Adm. Code 101.402, 101.403.

Though the record plainly indicates ADM’s commitment to aid in working toward the District’s compliance, the Board cannot impose conditions directly upon ADM or any other industrial user because none of them is a party to this proceeding. *See, e.g., Brethren Home of Girard, Inc. v. IEPA*, PCB 75-193, slip op. at 4 (July 24, 1975) (Variance granted with Board

finding that “[a]lthough the City of Girard is required to comply with the conditions in its NPDES Permit, the City is not a party in this proceeding and, therefore, these conditions cannot be included in this case.”). These conditions, as modified by the Board, provide instead that the District must require the measures of the given industrial users through the respective authorizations to discharge issued by the District to the industrial users under the District’s pretreatment ordinance.¹³

Evaluation

The Board also finds it neither necessary nor appropriate to comment, within these variance conditions, about whether potential compliance measures may or may not ultimately prove to be technically feasible and economically reasonable, or when the District’s discharge does or does not result in exceedences of water quality standards. The Board accordingly declines to include such proposed commentary in the conditions. Where certain factual representations within the proposed conditions have been retained in the order, the Board has done so solely to better identify the particular control technologies that must be evaluated; these representations therefore are in no way Board findings of fact. Likewise, the Board’s inclusion of proposed conditions concerning the assessment of a potential site-specific water quality standard and flow-based permit limit does not constitute Board pre-approval of any such measures.

Other Conditions

The District and the Agency agreed to a condition requiring that “if any technically reasonable technology is identified” that does not impose an arbitrary or unreasonable hardship on the District and remedies the zinc and nickel water quality standards problem, in whole or in part, the District must pursue “that technology either as soon as possible after identification or immediately following the July 1, 2011 benchmark meeting with the Agency, *whichever comes first.*” Resp. at 6-7 (emphasis added). It is possible, of course, that no such technology will have been identified by the time of the July 1, 2011 benchmark meeting, *i.e.*, the meeting “comes first.” In that case, it would be impossible for the District to pursue “that technology” “immediately following” the meeting. Therefore, the Board has modified this language to simply require the District to pursue the identified technology “as soon as possible after identification,” which would not appear to alter the parties’ intent.

The Board makes other minor clarifications to the proposed conditions, as well as changes to comport with the conditional language of a variance.

¹³ “Authorization to discharge” means “an authorization issued to an industrial user by a POTW [publicly owned treatment works] that has an approved pretreatment program. The authorization may consist of a permit, license, ordinance, or other mechanism as specified in the approved pretreatment program.” 35 Ill. Adm. Code 310.110.

NPDES Permit Modification

The District requested that the Board, under 35 Ill. Adm. Code 309.184, direct the Agency to modify the District's NPDES permit consistent with this variance. The Agency has not objected to this request. The Board so directs the Agency.

CONCLUSION

The Board finds that an arbitrary or unreasonable hardship would result if the District is not granted a variance from the Section 302.208(e) general use water quality standards for nickel and zinc and the Section 304.105 methodology as it applies to establishing water quality based effluent limits for nickel and zinc. The Board finds that issuance of the variance will not have a significant negative impact on the public or the environment and is consistent with federal law. Therefore, the Board grants the requested variance to the District, subject to the conditions set forth in this order. The variance relief begins today and ends on July 1, 2014.

If any provision of the Board's order is objectionable, the District may decline to execute the certificate of acceptance set forth below, and either or both parties may file a motion to reconsider or modify. *See* 35 Ill. Adm. Code 101.520, 101.902, 104.240, 104.248.

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

ORDER

1. The Board grants the Sanitary District of Decatur (District) a variance from the general use water quality standards for nickel and zinc (35 Ill. Adm. Code 302.208(e)) and the rule for establishing water quality based effluent limits as it applies to nickel and zinc (35 Ill. Adm. Code 304.105), subject to the following conditions:
 - a. The variance applies only to the District's Main Plant, located at 501 Dipper Lane in Decatur, Macon County, and only with respect to the District's discharge to the Sangamon River from the Main Plant's Outfall 001.
 - b. The variance begins on January 7, 2010, and ends on July 1, 2014.
 - c. The District must continue plant influent and effluent monitoring for nickel and zinc, along with monitoring upstream and downstream of the discharge in the Sangamon River. Monitoring for nickel and zinc must be performed at least twice monthly. Downstream monitoring must include at least the four locations in the Sangamon River referenced in the District's petition.
 - d. If the District has not already done so, the District must amend its pretreatment ordinance as soon as possible to include nickel and zinc limits for all Significant Industrial Users (SIUs), present and future, that will ensure compliance with the effluent limits for those parameters set forth in the District's National Pollutant Discharge Elimination System (NPDES) permit.

- e. The District must investigate the possible development of stream flow-based compliance options; continue to investigate updated toxicity information and possible alternatives for applying a nickel water quality standard; and continue to investigate the possible development of a site-specific water quality standard.
- f. The District must require, through authorizations to discharge issued by the District under its pretreatment ordinance, industrial monitoring for nickel and zinc at least twice monthly at Archer Daniels Midland Company (ADM) and Tate & Lyle Ingredients Americas, Inc. (Tate & Lyle) and at least semi-annually at other industrial users that could discharge nickel and zinc.
- g. The District must continue refinement of pretreatment local limits for nickel and zinc necessary to meet its NPDES permit effluent limits, and must continue work with ADM and Tate & Lyle on options for achieving compliance with local limits. The District must require, through authorizations to discharge issued by the District under its pretreatment ordinance, that ongoing verification monitoring be conducted to confirm that cooling tower treatment programs are achieving the necessary zinc reductions. The District must remain in frequent contact with ADM personnel regarding ADM's ongoing work identifying nickel sources and control options and must continue to meet with ADM personnel at least semiannually and exchange information, and must meet more frequently as needed.
- h. The District must require, through an authorization to discharge issued by the District under its pretreatment ordinance, that ADM complete the technology review as described below. Technologies may be evaluated based on compliance strategies involving both individual process streams and total effluent flows.
 - i. By December 31, 2010, complete technical and economic feasibility reviews for the following control technologies. The reviews must include determination of technical feasibility, capital and operating costs, reliability, and pilot testing as appropriate.
 - A. Nickel — Proprietary Precipitation Process. A wastewater treatment chemical company has evaluated process streams and has reported positive results for a metals precipitation process. Work is ongoing to determine feasibility and confirm results.
 - B. Nickel — Chemical Precipitation Process Using Carbamates or Organic Sulfides. Discussions with wastewater experts for metals have identified chemicals suited for low concentration precipitation of metals. Work is underway to complete confidentiality agreements and contracts to further evaluate. Concurrently, ADM has begun evaluation of these chemicals as provided by GE Betz Company.

- C. Nickel — Reuse of Ion Exchange Resin. ADM currently disposes of resins from the fructose process that are no longer of suitable quality. Initial tests have indicated that there is suitable capacity to provide effective nickel reductions. The difference between use of spent ion exchange resin and the ion exchange process reviewed and determined to be infeasible is that the spent resin would not be regenerated, which saves significant chemical and energy costs.
 - D. Nickel and Zinc — Soybean Process Stream Alternative. ADM is considering installation of a thickening system necessary for sale of this product as a feed or fertilizer additive. Installation is dependent on funding and procurement of customers.
 - E. Nickel and Zinc — BioProducts Process Stream Alternative. ADM is reviewing options to install equipment to thicken a process stream for use as a fertilizer additive.
 - F. Nickel and Zinc — WWTP Sludge Removal System. Evaluation of options for sludge removal and management for the WWTP.
 - G. Nickel and Zinc — Reverse Osmosis. ADM has completed preliminary technical and cost evaluation for treating a portion of the effluent with reverse osmosis. Review has concluded that the technology will work to reduce both nickel and zinc. However, capital and operating costs are prohibitive based on the volume of wastewater to be treated. Continued evaluation of this option will occur in combination with other potential treatment options.
 - H. Nickel and Zinc — Sludge. Discussions are scheduled concerning a device that breaks apart WWTP organisms. The purpose would be to change the characteristics of the anaerobic sludge, stop its carryover, and thus lower nickel and zinc content in the sludge to the District.
 - I. Nickel and Zinc — Sludge Purchase. ADM has been contacted by a company that has the potential to purchase all of ADM's sludge. Testing of the sludge is scheduled at the company's site.
 - J. Electro-Chemical Decomposition and Capacitive Deionization. ADM has begun researching these technologies.
- ii. Until July 1, 2012, continue to investigate the potential for other technologies and developments in technologies already evaluated.
- i. By December 31, 2010, the District must complete the following tasks:

- i. Review soluble/insoluble ratio of SIU dischargers versus the District's total discharge numbers, and determine if pretreatment limits need to be adjusted.
 - ii. Determine how much of the insoluble nickel and zinc entering the District's Main Plant is removed in the sludge and whether or not the pretreatment limits should be expressed as total or soluble limits.
 - iii. Pursue variable limits based on flow with the Illinois Environmental Protection Agency (Agency) and seek permit modifications as necessary.
- j. By July 1, 2011, the District must complete the following tasks:
- i. Compile various control strategies based on one or more of the feasible technologies. Develop flow diagrams depicting removal options, pros and cons, capital expenditures, and operating costs.
 - ii. Present findings to ADM division managers.
- k. The District must comply with the following schedule for achieving compliance with NPDES permit effluent limits for nickel and zinc:
- | | | |
|-----------------|---|---|
| July 1, 2010 | - | Submit an interim report to the Agency describing progress on each of the elements of the compliance plan above. |
| January 1, 2011 | - | Submit interim report, as above. |
| July 1, 2011 | - | Submit interim report, as above. |
| January 1, 2012 | - | Submit interim report, as above. |
| July 1, 2012 | - | Submit a final compliance plan to the Agency containing nickel and zinc controls, treatment technologies, proposed permit modifications, or proposed site-specific water quality standards that will achieve compliance with the District's NPDES permit effluent limits for nickel and zinc. |
| January 1, 2013 | - | Submit interim report, as above. |
| July 1, 2013 | - | Submit interim report, as above. |
| January 1, 2014 | - | Submit interim report, as above. |

July 1, 2014 - Achieve compliance with the District's NPDES permit effluent limits for nickel and zinc.

1. The District must include the Agency in meetings to discuss interim progress at the July 1, 2010 and July 1, 2011 benchmarks set forth in paragraph 1(k). If any technically reasonable technology is identified that does not impose an arbitrary or unreasonable hardship on the District and remedies the zinc and nickel water quality standards problem, in whole or in part, the District must pursue that technology as soon as possible after identification.
2. Pursuant to 35 Ill. Adm. Code 309.184, the Board directs the Agency to modify the District's NPDES permit consistent with this variance.

IT IS SO ORDERED.

If the District chooses to accept this variance, it 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, _____, having read the opinion and order of the Illinois Pollution Control Board in docket PCB 09-125, dated January 7, 2010, 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 SANITARY DISTRICT OF DECATUR

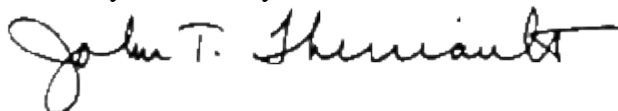
By: _____
Authorized Agent

Title: _____

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) (2008); *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 Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on January 7, 2010, by a vote of 5-0.



John Therriault, Assistant Clerk
Illinois Pollution Control Board

EXHIBIT B

Interim Report
July 1, 2010

Sanitary District of Decatur

501 DIPPER LANE • DECATUR, ILLINOIS 62522 • 217/422-6931 • FAX: 217/423-8171

July 1, 2010

Illinois Environmental Protection Agency
Attn.: Michael S. Garretson
Bureau of Water Compliance Assurance Section, MC #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Re: NPDES Permit IL0028321
Compliance Schedule Interim Report

Dear Mr. Garretson:

Enclosed is the Interim Report regarding compliance with nickel and zinc limits required by Special Condition 18 of the Sanitary District of Decatur's NPDES Permit and the Pollution Control Board Order in PCB 2009-125.

Please contact me at 422-6931 ext. 214 or at timk@sdd.dst.il.us if you have any questions regarding this report.

Sincerely,



Timothy R. Kluge, P.E.
Technical Director

cc: Bob Mosher, DWPC Standards
Rick Pinneo, DWPC Permits
Joe Koronkowski, Champaign Region

**Sanitary District of Decatur
Nickel and Zinc Limits
June 2010 Interim Report**

The modified NPDES permit for the Sanitary District of Decatur that became effective July 1, 2009 contains limits for nickel and zinc and a one-year compliance schedule extension for meeting the limits. Special Condition 17 requires that an interim progress report be submitted to Illinois EPA by July 1, 2010. A summary of information gathered and activities since the previous report is provided below.

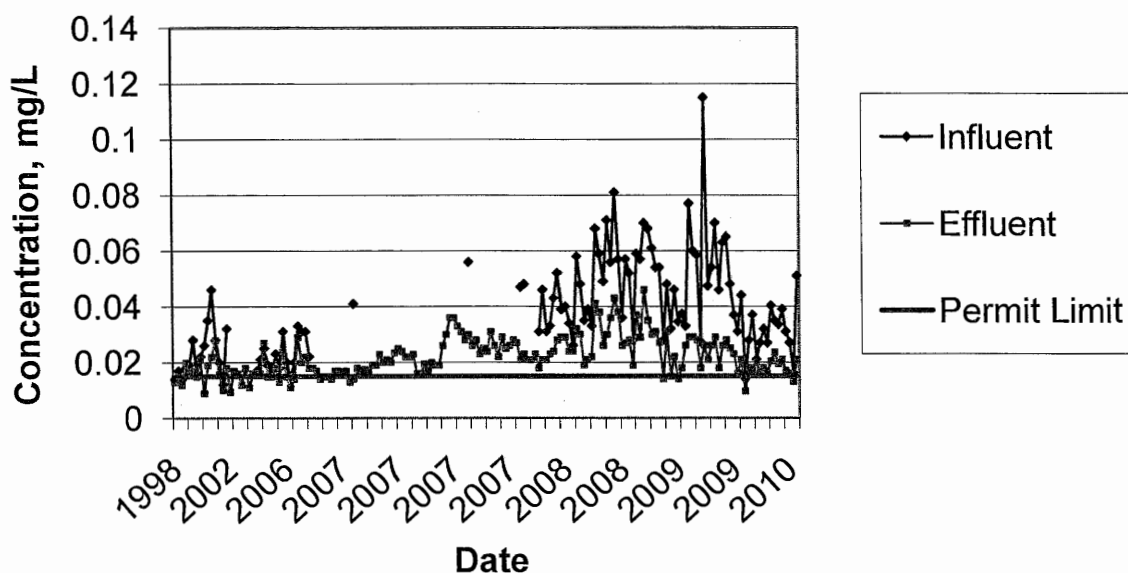
On January 7, 2010 the Illinois Pollution Control Board granted a variance to the District allowing additional time to comply with final permit limits (PCB 09-125). The final compliance date contained in the Board Order is July 1, 2014. The District's NPDES Permit has not yet been modified to incorporate the variance.

Plant Influent and Effluent Sampling

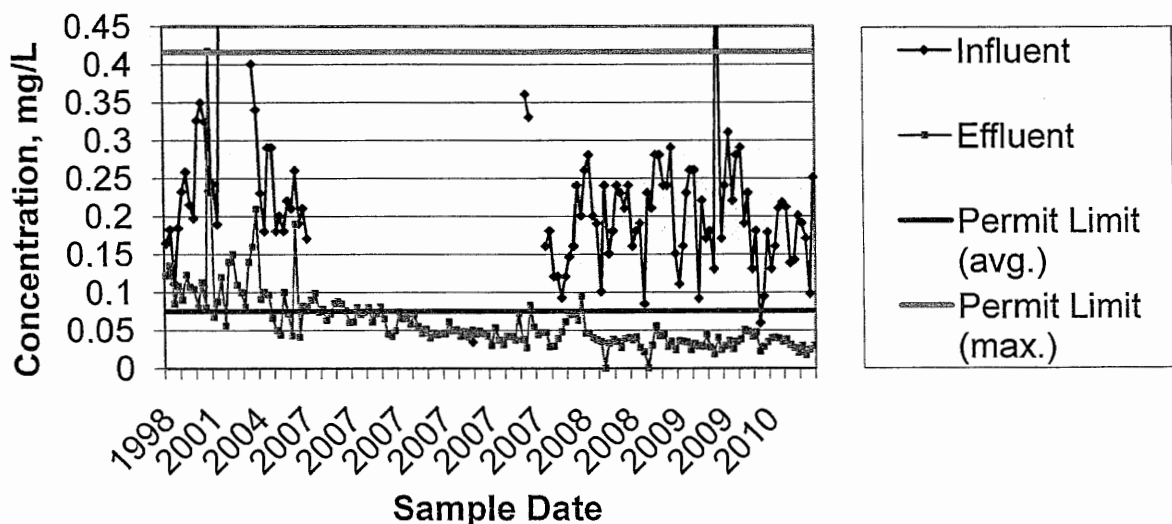
Nickel and zinc have been included in quarterly plant influent and effluent sampling for many years. Ongoing influent and effluent sampling for nickel and zinc continues at a frequency of twice monthly. The District began performing metals analysis in-house in early 2009.

An updated summary of influent and effluent values is shown below. Review of past data shows that the plant discharge is not able to consistently meet the current nickel permit limit. Recent zinc concentrations are below the permit limit.

Influent and Effluent Nickel



Influent and Effluent Zinc



Industrial Source Sampling and Investigations

Sampling of the major industries (ADM and Tate & Lyle) for metals has been increased to twice monthly and other industries discharging metals are now sampled quarterly. Sample results obtained from the major industries within the past year are attached.

Pretreatment local limits have been calculated based on the current permit limits for nickel and zinc, and the District's Board of Trustees adopted the new limits on October 21, 2009. The District's operating permit issued to ADM was modified on November 18, 2009 and again on June 17, 2010 to reflect the new limits and provide a compliance schedule for meeting the limits.

Both industries formerly utilized zinc as part of their cooling tower treatment programs, and both have eliminated or greatly reduced zinc in their towers. At this time, both industries are meeting the zinc pretreatment limit. ADM is continuing to investigate the possible impact of the zinc limit on their planned wasting of solids from their pretreatment system to the District's collection system.

The discharge from ADM is by far the most significant industrial source of nickel. Investigations conducted by ADM are summarized in the District's June 15, 2009 variance petition (pages 22-31) and further in the District's September 30, 2009 response to the Agency's variance recommendation (pages 4-7). ADM has been very active in seeking treatment technology for nickel removal, involving plant management and research department personnel in addition to environmental compliance and legal staff. The District's pretreatment permit requires semi-annual reports of ADM's investigations,

and a copy of the most recent report is attached. The District and ADM have scheduled a meeting with Illinois EPA on July 8 to review these investigations in more detail.

Receiving Stream Sampling

Upstream and downstream sampling continues at a twice monthly frequency to provide a more complete picture of nickel and zinc in the Sangamon River. While the Wyckles Road sampling site is not accessible until later this summer because of bridge construction, three additional river sampling sites closer to the treatment plant outfall are being sampled. These locations are approximately 100 yards, 600 yards, and 1000 yards (Rock Springs Bicycle Trail bridge) downstream of the District's outfall. All upstream and downstream sample results during the past year have been below the Illinois water quality standard. This period has been characterized by above-normal flows in the river.

Water Quality Standard Investigations

The District is continuing to investigate approaches to a water quality standard adjustment including the biotic ligand model and use of the water effect ratio. The District has contracted with HydroQual, Inc. (Dr. Robert Santore) in Syracuse, New York to conduct an evaluation of the applicability of these approaches based on available data. A preliminary summary of Dr. Santore's evaluation is attached. His evaluation indicates that a significantly higher site-specific nickel criterion could be justified based on bioavailability to aquatic organisms. This analysis is based on chemical data from the District's effluent, which contributes most or all of the Sangamon River flow during critical low flow conditions. Additional river sampling is planned during low flow conditions later this summer to verify stream concentrations.

Compliance Plan

A proposed compliance plan and schedule is included in the Board Order granting the District's variance. The District will continue to proceed in accordance with the schedule in the Order with efforts in three areas:

1. Continuing to work with ADM to investigate nickel removal technologies, and to determine a sludge wasting plan that will minimize zinc discharges. A summary of ADM's investigations is attached. The Order lists ten technologies that are to be investigated by December 31, 2010. Also, ADM recently reported to the District that they have done some testing and found that they should be able to dry their sludge using a centrifuge followed by a belt filter press. ADM would then be able to utilize the solids in their co-generation plant or landfill the dry solids rather than wasting to the sewer.
2. Conducting additional discussions with Illinois EPA permit personnel regarding variable permit limits based on the amount of flow available in the Sangamon River. Currently, the District anticipates a proposal with three to four tiers of river flow and accompanying permit limits.

3. Conducting additional discussions with Illinois EPA and U.S. EPA standards personnel regarding justification for a site-specific water quality standard for nickel, based on bioavailability. Further discussions are needed to gain initial input for possible development of a site-specific WQS proposal.

SDD Major Industrial Nickel and Zinc Results

Date	ADM A Total Ni	ADM A Total Zn	ADM D Total Ni	ADM D Total Zn
7/6/2009	0.101	0.327	0.114	0.313
7/13/2009	0.102	0.368	0.114	0.33
8/3/2009	0.101	0.461	0.13	0.396
8/10/2009	0.106	0.454	0.132	0.433
9/1/2009	0.0971	0.496	0.127	0.415
9/8/2009	0.094	0.5	0.122	0.393
9/28/2009	0.0833	0.342	0.105	0.324
9/29/2009	0.0897	0.406	0.107	0.33
9/30/2009	0.0956	0.462	0.117	0.425
10/1/2009	0.0901	0.504	0.121	0.459
10/13/2009	0.0657	0.339	0.0981	0.237
11/9/2009	0.107	0.449	0.112	0.372
11/23/2009	0.0989	0.346	0.0719	0.203
12/1/2009	0.0899	0.291	0.079	0.213
12/7/2009	0.0899	0.358	0.0948	0.325
1/11/2010	0.0825	0.362	0.0693	0.254
2/1/2010	0.0907	0.506	0.0949	0.435
2/8/2010	0.0921	0.375	0.112	0.378
3/8/2010	0.0824	0.329	0.0897	0.203
3/15/2010	0.0621	0.522	0.11	0.303
4/5/2010	0.0649	0.441	0.107	0.309
4/12/2010	0.106	0.593	0.119	0.374
5/3/2010	0.0654	0.386	0.0958	0.258
5/10/2010	0.0551	0.333	0.0774	0.189
SDD Ordinance Limit (Avg.)	0.0365	0.45		
SDD Ordinance Limit (Max.)	0.15	1.7		

Date	TLIA A Total Ni	TLIA A Total Zn	TLIA C Total Ni	TLIA C Total Zn
7/6/2009	0.0128	0.0903	0.00705	0.214
7/13/2009	0.00943	0.226	0.00593	0.0989
8/3/2009	0.0128	0.119	0.00826	0.109
8/10/2009	0.00849	0.126	0.00358	0.0833
9/1/2009	0.00717	0.0726	0.0118	0.309
9/28/2009	0.0286	0.073	0.00433	0.143
9/29/2009	0.00966	0.0763	0.0123	0.143
9/30/2009	0.0207	0.0574	0.00789	0.142
10/1/2009	0.014	0.112	0.0189	0.316
10/13/2009	0.00823	0.0915	0.00934	0.477
11/9/2009	0.0117	0.102	0.00563	0.221
12/1/2009	0.0046	0.0901	0.00233	0.0646
12/7/2009	0.00381	0.081	0.00898	0.118
1/11/2010	0.00307	0.0429	0.00598	0.453
2/1/2010	0.00392	0.112	0.00353	0.232
2/8/2010	0.00171	0.0294	0.00205	0.109
3/8/2010	0.00565	0.0752	0.00633	0.13
3/15/2010	0.00356	0.0606	0.00455	0.168
4/5/2010	0.00265	0.0354	0.00294	0.198
4/12/2010	0.0128	0.188	0.00489	0.579
5/3/2010	0.00339	0.0817	0.00479	0.234
5/10/2010	0.00429	0.107	0.00839	0.388
SDD Ordinance Limit (Avg.)	0.0365	0.45		
SDD Ordinance Limit (Max.)	0.15	1.7		



COPY

June 15, 2010

Pretreatment Coordinator
Sanitary District of Decatur
501 Dipper Lane
Decatur, Illinois 62522

RECEIVED

JUN 18 2010

SANITARY DISTRICT
OF DECATUR

Re: Interim Nickel and Zinc Report

Dear Sir,

Per Special Condition E.8. of Industrial Discharge Permit #200, we are submitting this summary of our research efforts to reduce nickel and zinc in our effluent. To date we have investigated the following:

1) Status of Anaerobic TSS Carry-over

- Anaerobic TSS carry-over and microbiologist findings
Effect of changes recommended by consultant.

2) Ongoing Nickel Reduction Work w/ outside companies

- Bench work at the start-up company's site w/ treated clay is on-going. Latest results erratic.
- Inorganic substrate with attached ligand/skeleton using nanotechnology. Latest results promising.
Work is on-going at start-up company's site. A 2nd Decatur visit is planned.
- Very small, water dispersable nano particles; nano-IX.
Testing at start-up company's site is on-going. Very little promise, so far.
- Liquid chemistry said to be 'green'. Apparently a 2 step process that can utilize a DAF unit.
2nd lengthy study completed. Process does not look as promising as originally hoped.
- Current ADM-contracted water treatment company has their Research team involved.
Nothing of interest at this point.
- Two more water treatment companies have received samples and performed tests.
Metal precipitant is currently under initial testing at ADM.

3) RO Pilot Work

- Long-expected proposal from GE Betz for 100gpm UF & RO test skid did not pan out. .
Looking elsewhere



4) Internal ADM Lab Work

- Performed tests based on a patent for inorganic substrate used to concentrate trace materials in pollutant testing. Not promising.

- Dry product, metal precipitant. Did not function well.

- Series of tests were performed using a combination of flocculants, polymers and coagulants. About 0.065ppm was the lowest soluble Ni attained.

- Diatomaceous earth-based, specially treated material can meet the Ni limit w/ Low Salt dilution. Not affordable w/o regeneration, which has not been done before. Will try their liquid version.

- A Dow adsorbent (de-colorizing resin) will meet the Ni limit with Low Salt dilution. Isotherm data has been collected & Dow performed vessel size & cycle time calculations. Problematic regeneration. Very expensive resin. Nickel waste requires RO treatment. We're waiting on Dow's final cost calculations to see if a column pilot study is warranted.

- Metal precipitant blend utilizing some DTC will meet the Ni limit w/ Low Salt dilution. Minimum dose studies have been performed. Another attempt being made to tie up residual DTC. Expect results in <2 weeks.

As you are aware, we are pursuing many options and will keep you apprised of our progress, and which technologies show the most promise. Feel free to contact me if you have any questions regarding this summary.

Respectfully submitted,

A handwritten signature in cursive script that reads "Mark Carroll".

Mark Carroll
Environmental Compliance Manager
ADM Decatur Corn Processing Plant

Estimate of BLM Adjustment to Ni Criterion for Decatur Sanitation District

Robert Santore
HydroQual, Inc



March 30, 2010

Preliminary results, Please do not cite or distribute

1

Outline

- Estimated downstream water quality
- Predicted toxicity to *Daphnia magna*
 - Example use as a WER test organism
- Predicted estimate of WQC

March 30, 2010

Preliminary results, Please do not cite or distribute

2

Supplied info

Plant Final Effluent										
Sampling Date	Sodium		Potassium		Calcium		Magnesium		Total	
	Total (mg/L)	Total (mg/L)	Total (mg/L)	Total (mg/L)	pH (s.u.)	Alkalinity (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Carbonaceous BOD ₅ (mg/L)	
11/13/2008	520	130	54	64	7.92	359		631	< 2.0	
11/18/2008					7.63	357	521		< 2.0	
11/20/2008					7.86	332		635	2.4	
11/25/2008					7.68	315	333		2.0	
11/26/2008					7.91	337		712		
11/27/2008									2.0	
12/2/2008					7.76	422	283		< 2.0	
12/4/2008	500		53	59	7.73	396		651	2.6	
12/9/2008					7.59	357	366		2.6	
12/11/2008					7.55	344		524	< 2.0	
12/16/2008					7.60	379	315		< 2.0	
12/18/2008			58	59	7.80	376		660	< 2.0	

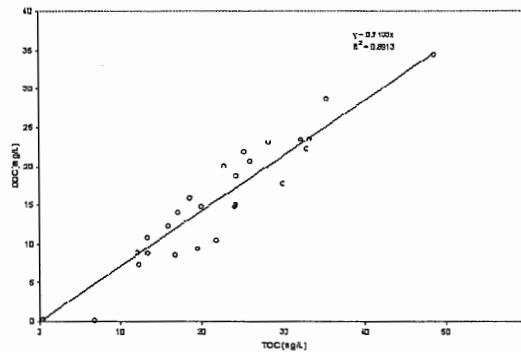
Hardness 390

March 30, 2010

Preliminary results, Please do not cite or distribute

3

Estimation of DOC



NYSDEC CARP project
(www.dec.state.ny.us/website/dow/bwam/CARP).

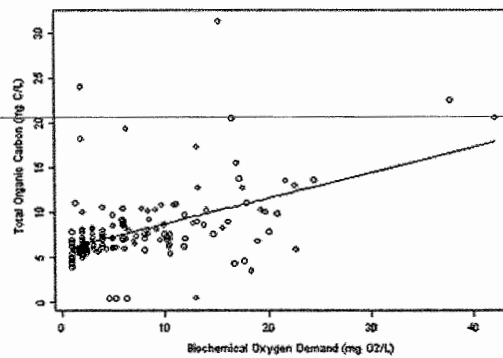
March 30, 2010

Preliminary results, Please do not cite or distribute

4

Estimation of TOC

TOCavg ~ BODavg (All Samples)



Monitoring data from all major POTWs reporting TOC and 5-day BOD in the United States were downloaded from the PCS web site, www.epa.gov/enviro/html/pcs/adhoc.html.

March 30, 2010

Preliminary results, Please do not cite or distribute

5

Method 1 – Calculate WER

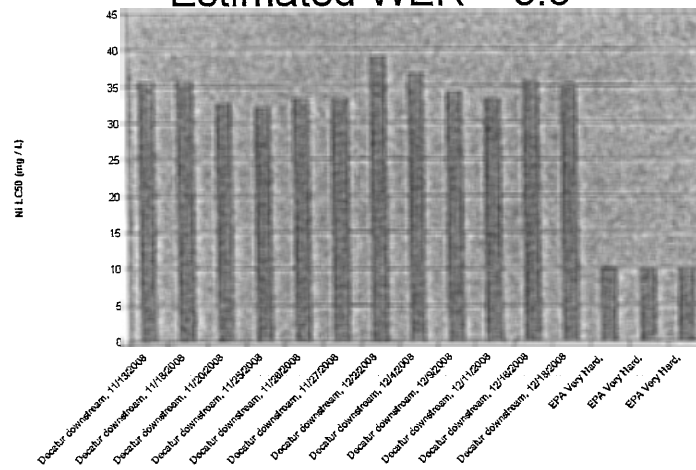
- Use the BLM to estimate Ni toxicity to a sensitive aquatic organism suitable for use in a WER study
- Site water will be characterized by the provided chemistry, along with estimated DOC from BOD
- Reference water will be standard EPA recipe
- $WER = (\text{Site Water LC50}) / (\text{Reference LC50})$

March 30, 2010

Preliminary results, Please do not cite or distribute

6

BLM Estimated Ni toxicity to *D magna* Estimated WER = 3.5



7

Estimated WER

- The acute standard in IL
CMC = $e(0.8460[\ln(\text{hardness})] + 0.5173)$
 - At a hardness of 390, CMC = 261 $\mu\text{g/L}$
 - Adjusted by WER, SSCMC = 913 $\mu\text{g/L}$
- The chronic (geomean) standard in IL
FCV = $e(0.8460[\ln(\text{hardness})] - 1.865)$
 - At a hardness of 390, FCV = 14 $\mu\text{g/L}$
 - Adjusted by WER, SSFCV = 84 $\mu\text{g/L}$

Method 2 – Use the BLM to estimate SSWQC

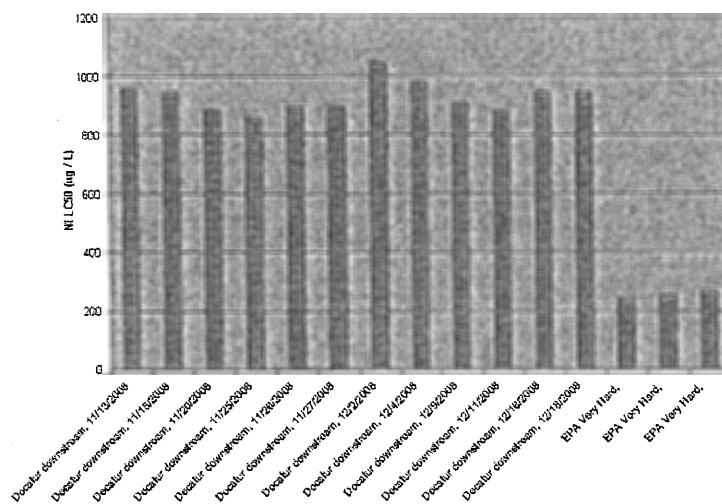
- The BLM was adjusted to match the CMC at a hardness of 50 in a typical test water (e.g., standard EPA recipe)
- Application of the BLM to waters with higher hardness and DOC can then estimate a site-specific WQC

March 30, 2010

Preliminary results, Please do not cite or distribute

9

BLM Estimated Ni CMC



10

Summary and Conclusions

- Downstream water quality was estimated from effluent characteristics (personal communication from T. Kluge, the downstream water is effluent dominated and frequently there is no other flow upstream of discharge)
- The Ni BLM was used to estimate downstream Ni criteria in two ways, using both a WER approach, and using a direct estimate of the CMC
- Both approaches yielded similar results, suggesting that a site-specific criterion for Ni will be considerably higher than the default value used for the state

March 30, 2010

Preliminary results, Please do not cite or distribute

11

EXHIBIT C

Interim Report
December 29, 2010

Sanitary District of Decatur

501 DIPPER LANE • DECATUR, ILLINOIS 62522 • 217/422-6931 • FAX: 217/423-8171

December 29, 2010

Illinois Environmental Protection Agency
Attn.: Michael S. Garretson
Bureau of Water Compliance Assurance Section, MC #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276


Re: NPDES Permit IL0028321
IPCB Order PCB 09-125
Interim Report

Dear Mr. Garretson:

Enclosed is the Interim Report regarding compliance with nickel and zinc limits required by Special Condition 18 of the Sanitary District of Decatur's NPDES Permit and the Pollution Control Board Order in PCB 09-125.

Please contact me at 422-6931 ext. 214 or at timk@sdd.dst.il.us if you have any questions regarding this report.

Sincerely,



Timothy R. Kluge, P.E.
Technical Director

**Sanitary District of Decatur
Nickel and Zinc Limits
December 2010 Interim Report**

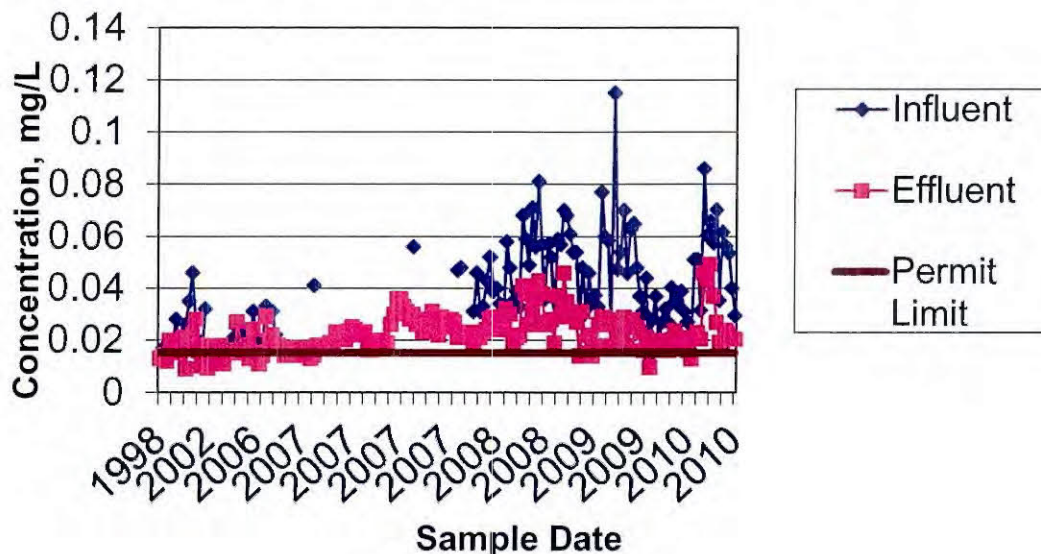
The modified NPDES permit for the Sanitary District of Decatur that became effective July 1, 2009 contains limits for nickel and zinc and a one-year compliance schedule extension for meeting the limits. Special Condition 17 requires that an interim progress report be submitted to Illinois EPA by January 1, 2011.

On January 7, 2010 the Illinois Pollution Control Board granted a variance to the District allowing additional time to comply with final permit limits (PCB 09-125). The final compliance date contained in the Board Order is July 1, 2014. The District's NPDES Permit has not yet been modified to incorporate the variance. The Board Order also requires that an interim progress report be submitted by January 1, 2011 and lists a number of other activities and investigations that are to be completed. This report is submitted to meet both the permit and variance requirements.

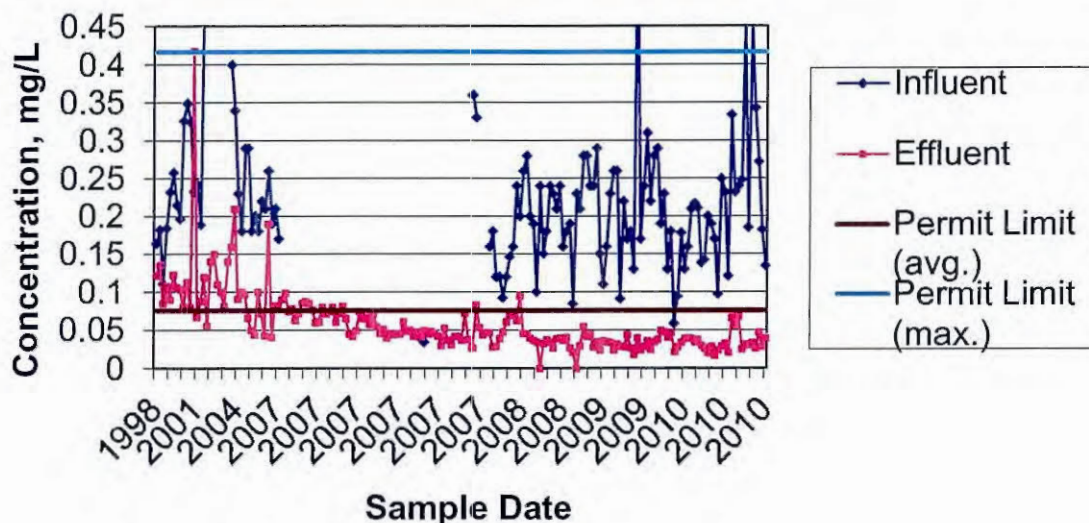
Plant Influent and Effluent Sampling

Ongoing influent and effluent sampling for nickel and zinc continues at a frequency of twice monthly. An updated summary of influent and effluent values is shown below. Past data shows that the plant effluent is not able to consistently meet the current nickel permit limit. Zinc concentrations remain below the permit limit.

Influent and Effluent Nickel



Influent and Effluent Zinc



Receiving Stream Sampling

Upstream and downstream sampling continues at a twice monthly frequency to provide a more complete picture of nickel and zinc in the Sangamon River. One upstream and four downstream sampling sites are being monitored. All upstream and downstream zinc results during the past year have been below the Illinois water quality standard. Downstream nickel concentrations during the relatively dry fall weather in 2010 reflected effluent concentrations with minimal upstream dilution available. A summary of 2010 river monitoring data is attached.

Pretreatment Ordinance Limits

The District's pretreatment ordinance was amended in October 2009 as noted in previous reports.

Stream Flow-Based Compliance Options

The District continues investigation of flow-based permit limits, to take advantage of upstream flow for mixing when it is available. This concept could potentially allow a savings in treatment facility operating costs when the upstream flow is sufficient to meet water quality standards after mixing with treatment plant effluent. A USGS flow gaging station is located about two miles upstream of the District's discharge point, and provides near- real time flow information. We are currently developing a proposal that would establish three to four tiers of limits based on ranges of upstream flow, providing an administratively straightforward way to define and evaluate permit compliance. Informal discussions with Illinois EPA personnel have indicated that the concept of flow-based

limits could be considered. We expect to have a proposal for presentation to Illinois EPA early in 2011, to be followed at a later time with a permit modification request.

Water Quality Standard Investigations

The District is continuing to investigate approaches to a water quality standard adjustment including the biotic ligand model (BLM) and use of the water effect ratio. Additional river sampling was conducted during low flow conditions later this summer to verify stream concentrations. On December 9, discussions were initiated with U.S. EPA and Illinois EPA on the reaction to a bioavailability approach. Personnel from U.S. EPA indicated that they would like to review published information on the nickel BLM and a follow-up call is anticipated in early January 2011. The District anticipates preparation of a petition for a site-specific nickel standard to occur in the first half of 2011.

The District has also been notified by Illinois EPA of a possible revision of the zinc water quality standard, based on an error discovered in the derivation of the current standard. We are currently evaluating the impact of this possible change on the District's zinc pretreatment ordinance limit.

Industrial Source Sampling and Investigations

Sampling of the major industries (ADM and Tate & Lyle) for metals continues at a frequency of twice monthly and other industries discharging metals are sampled quarterly. Sample results obtained from the major industries within the past year are attached.

The District's operating permit issued to ADM was modified on November 18, 2009 and again on June 17, 2010 to reflect the new limits and provide a compliance schedule for meeting the limits. Final local limits will be effective upon expiration of the District's variance.

Both major industries formerly utilized zinc as part of their cooling tower treatment programs, and both have eliminated or greatly reduced zinc in their towers. At this time, both industries are meeting the zinc pretreatment limit. ADM is continuing to investigate the possible impact of the zinc limit on their planned wasting of solids from their pretreatment system to the District's collection system.

The discharge from ADM is by far the most significant industrial source of nickel. ADM has been very active in seeking treatment technology for nickel removal, involving plant management and research department personnel in addition to environmental compliance and legal staff. The District's pretreatment permit requires semi-annual reports of ADM's investigations, and a copy of the most recent report is attached. The report includes status updates on the specific treatment technologies required to be investigated. District staff met with ADM on December 22, 2010 to review the information in the report.

Additional Pretreatment Limit Investigations

Pretreatment ordinance limits adopted in 2009 were adopted as total (rather than soluble) limits based on review of soluble/insoluble data. Refinement of pretreatment limits is an ongoing process and will depend on final permit limits as well as treatment technologies that might be employed by industrial users. The required determination of soluble/insoluble vs. total limits will be updated as part of the final compliance plan submitted to the Agency.

Compliance Plan

In summary, the District's proposed compliance plan includes ongoing work as required by the Board Order granting the District's variance. The District will continue to proceed in accordance with the schedule in the Order with efforts in three areas:

1. Continuing to work with ADM to investigate nickel removal technologies, and to determine a sludge wasting plan that will minimize zinc discharges. The Order lists ten technologies that are to be investigated by December 31, 2010, and the summary documents work on all ten as required.
2. Conducting additional discussions with Illinois EPA permit personnel regarding variable permit limits based on the amount of flow available in the Sangamon River. As noted above, Illinois EPA has been receptive to this concept. Additional evaluations are underway to possibly extend the concept to other parameters. The District plans to submit a comprehensive proposal to Illinois EPA during the first half of 2011.
3. Conducting additional discussions with Illinois EPA and U.S. EPA standards personnel regarding justification for a site-specific water quality standard for nickel, based on bioavailability. As noted above, development of a petition for the Pollution Control Board is planned in the first half of 2011.

EXHIBIT D

Interim Report
June 29, 2011

Sanitary District of Decatur

501 DIPPER LANE • DECATUR, ILLINOIS 62522 • 217/422-6931 • FAX: 217/423-8171

June 29, 2011

Illinois Environmental Protection Agency
Bureau of Water Compliance Assurance Section, MC #19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276


Re: NPDES Permit IL0028321
IPCB Order PCB 09-125
Interim Report

Dear Sir or Madam:

Enclosed is the Interim Report regarding compliance with nickel and zinc limits required by Special Condition 18 of the Sanitary District of Decatur's NPDES Permit and the Pollution Control Board Order in PCB 09-125.

Please contact me at 422-6931 ext. 214 or at timk@sdd.dst.il.us if you have any questions regarding this report.

Sincerely,



Timothy R. Kluge, P.E.
Technical Director

cc: Rick Pinneo, IEPA (via email)
Bob Mosher, IEPA (via email)

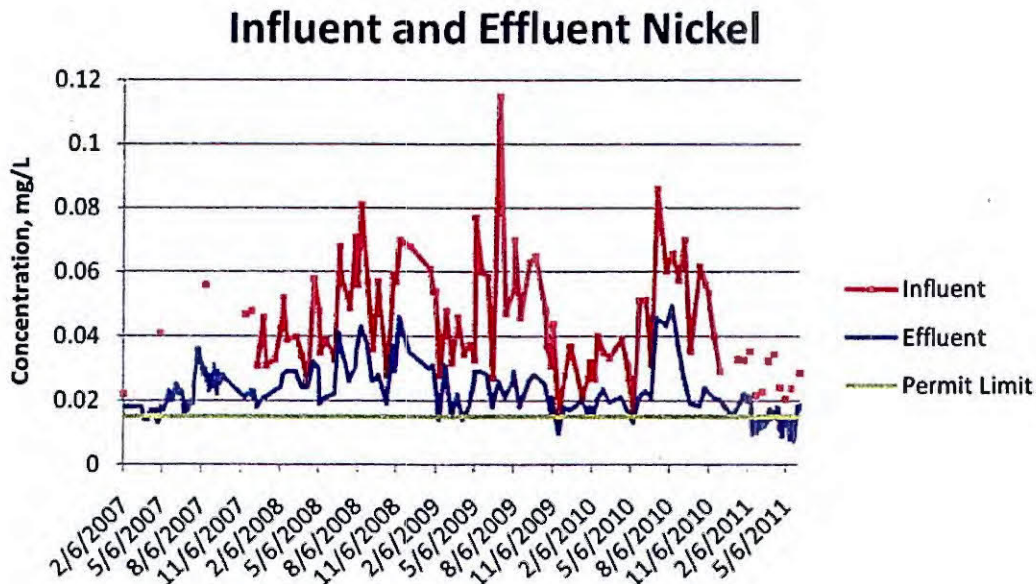
**Sanitary District of Decatur
Nickel and Zinc Limits
June 2011 Interim Report**

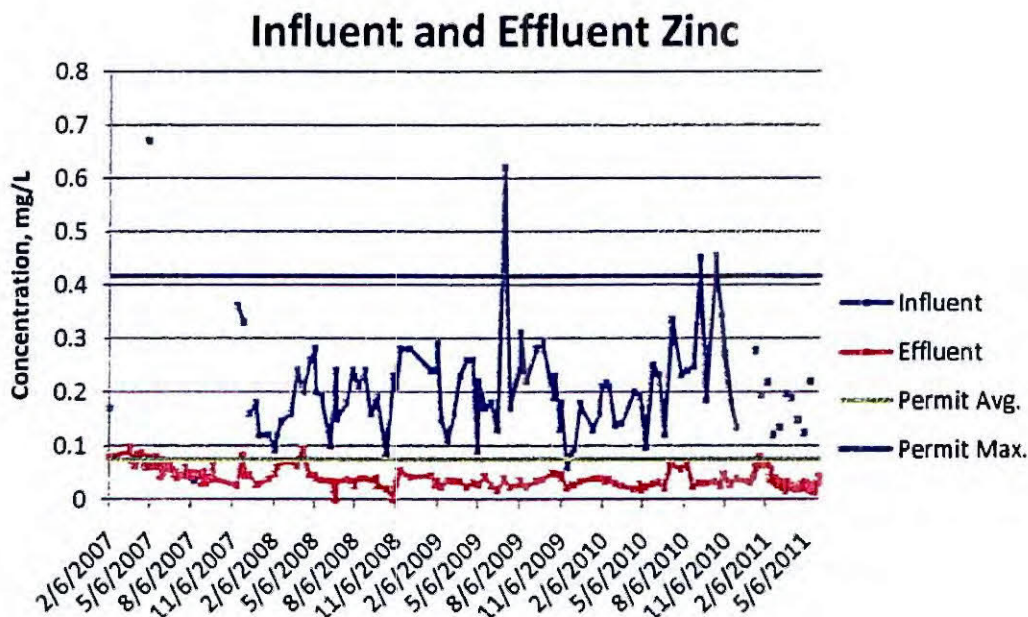
The modified NPDES permit for the Sanitary District of Decatur that became effective July 1, 2009 contains limits for nickel and zinc and a one-year compliance schedule extension for meeting the limits. Special Condition 17 requires that an interim progress report be submitted to Illinois EPA by July 1, 2011.

On January 7, 2010 the Illinois Pollution Control Board granted a variance to the District allowing additional time to comply with final permit limits (PCB 09-125). The final compliance date contained in the Board Order is July 1, 2014. The District's NPDES Permit has not yet been modified to incorporate the variance although Illinois EPA issued a Public Notice and draft modified permit on May 26, 2011. The Board Order also requires that an interim progress report be submitted by July 1, 2011 and lists a number of other activities and investigations that are to be completed. This report is submitted to meet both the permit and variance requirements.

Plant Influent and Effluent Sampling

Ongoing influent and effluent sampling for nickel and zinc continues at a frequency of twice monthly. An updated summary of influent and effluent values is shown below. Past data shows that the plant effluent is not able to consistently meet the current nickel permit limit. Influent and effluent nickel concentrations in the first half of 2011 have been lower than in previous years, due to reduced loadings from ADM. According to ADM personnel, variations in product mix or in year-to-year differences in grain may be a factor in the reduction. Zinc concentrations remain below the permit limit.





Receiving Stream Sampling

Upstream and downstream sampling continues at a twice monthly frequency to provide a more complete picture of nickel and zinc in the Sangamon River. One upstream and four downstream sampling sites are being monitored. A summary of 2010-2011 river monitoring data is attached. All upstream and downstream zinc results during 2011 have been below the Illinois water quality standard.

Pretreatment Ordinance Limits

The District's pretreatment ordinance was amended in October 2009 as noted in previous reports.

Stream Flow-Based Compliance Options

The District continues investigation of flow-based permit limits, to take advantage of upstream flow for mixing when it is available. This concept could potentially allow a savings in treatment facility operating costs when the upstream flow is sufficient to meet water quality standards after mixing with treatment plant effluent. A USGS flow gauging station is located about two miles upstream of the District's discharge point, and provides near- real time flow information. We are continuing to develop a proposal that would establish limits based on upstream flow, with a goal of providing an administratively straightforward way to define and evaluate permit compliance. Informal discussions with Illinois EPA personnel have indicated that the concept of flow-based limits could be

considered. We expect to have a proposal for presentation to Illinois EPA in the second half of 2011, for consideration during renewal of our NPDES permit in 2012.

Water Quality Standard Investigations

The District is continuing to investigate approaches to a water quality standard adjustment including prediction of a water effect ratio using the biotic ligand model (BLM). On December 9, 2010 discussions were initiated with U.S. EPA and Illinois EPA on the reaction to a bioavailability approach. Personnel from U.S. EPA indicated that they would like to review published information on the nickel BLM and also requested information on how variability in discharge parameters would affect the predicted toxicity. Variability information was compiled and reviewed prior to discussion in a follow-up call on June 6. The District anticipates a petition for a site-specific nickel standard will be filed with the Pollution Control Board in the second half of 2011.

We are also following the Pollution Control Board rulemaking currently underway to correct an error found in the existing zinc water quality standard.

Industrial Source Sampling and Investigations

Sampling of the major industries (ADM and Tate & Lyle) for metals continues at a frequency of twice monthly and other industries discharging metals are sampled quarterly. Sample results obtained from the major industries within the past year are attached.

The District's operating permit issued to ADM was modified on November 18, 2009 and again on June 17, 2010 to reflect the new limits and provide a compliance schedule for meeting the limits. Final local limits will be effective upon expiration of the District's variance.

Both major industries formerly utilized zinc as part of their cooling tower treatment programs, and both have eliminated or greatly reduced zinc in their towers. At this time, both industries are meeting the zinc pretreatment limit. ADM is continuing to investigate the possible impact of the zinc limit on their planned wasting of solids from their pretreatment system to the District's collection system.

The discharge from ADM is by far the most significant industrial source of nickel. ADM has been very active in seeking treatment technology for nickel removal, involving plant management and research department personnel in addition to environmental compliance and legal staff. District staff met with ADM personnel several times during the first half of 2011, most recently on May 31. The District's pretreatment permit requires semi-annual reports of ADM's investigations, and a report will be provided to Illinois EPA during our meeting scheduled for July 7. Work during the past six months has included pilot testing for several nickel removal technologies, toxicity testing to determine

potential impacts of the District's nitrification process, and ongoing research into alternative technologies.

Additional Pretreatment Limit Investigations

Pretreatment ordinance limits adopted in 2009 were adopted as total (rather than soluble) limits based on review of soluble/insoluble data. Refinement of pretreatment limits is an ongoing process and will depend on final permit limits as well as treatment technologies that might be employed by industrial users. The required determination of soluble/insoluble vs. total limits will be updated as part of the final compliance plan submitted to the Agency.

Chronic Toxicity Testing

Chronic whole effluent toxicity testing was performed on the District's discharge in July, September, and December 2007. The test results were forwarded to Illinois EPA and reviewed in 2008. A number of inconsistencies were found in the test results and in the interpretation of the results by the laboratory. Because of the inconsistencies and to obtain current data, a new round of chronic toxicity testing will be performed in the second half of 2011.

Compliance Plan

In summary, the District's proposed compliance plan includes ongoing work as required by the Board Order granting the District's variance. The District will continue to proceed in accordance with the schedule in the Order with efforts in three areas:

1. Continuing to work with ADM to investigate nickel removal technologies, and to determine a sludge wasting plan that will minimize zinc discharges. The Order lists ten technologies that were to be investigated by December 31, 2010, the the investigations were done as required. Additional investigations continue and a summary will be provided to Illinois EPA.
2. Conducting additional discussions with Illinois EPA permit personnel regarding variable permit limits based on the amount of flow available in the Sangamon River. As noted above, Illinois EPA has been receptive to this concept. The District plans to submit a comprehensive proposal to Illinois EPA during the second half of 2011.
3. Conducting additional discussions with Illinois EPA and U.S. EPA standards personnel regarding justification for a site-specific water quality standard for nickel, based on bioavailability. As noted above, development of a petition for the Pollution Control Board is planned in the first half of 2011.

SDD Major Industrial Nickel and Zinc Results				
	ADM Point A	ADM Point A	ADM Point D	ADM Point D
Sample	Nickel, Tot	Zinc, Tot	Nickel, Tot	Zinc, Tot
Date	mg/L	mg/L	mg/L	mg/L
6/1/2010	0.0813	0.488	0.12	0.441
6/14/2010	0.0826	0.453	0.104	0.345
7/8/2010	0.148	0.54	0.283	1.07
7/12/2010	0.144	0.528	0.193	0.514
8/2/2010	0.125	0.457	0.172	0.446
8/9/2010	0.126	0.44	0.184	0.474
9/1/2010	0.0766	0.465	0.122	0.469
9/20/2010	0.0744	0.442	0.121	0.649
10/4/2010	0.0781	0.461	0.0938	0.369
10/14/2010	0.162	1.18	0.179	1.18
11/8/2010	0.0524	0.24	0.0646	0.208
11/23/2010	0.13	0.665	0.122	0.413
12/6/2010	0.0715	0.53	0.131	0.581
12/13/2010	0.0649	0.498	0.0774	0.219
1/5/2011	0.0629	0.53	0.0669	0.204
1/10/2011	0.0577	0.495	0.0666	0.188
2/7/2011	0.0836	0.756	0.0892	0.329
2/14/2011	0.0589	0.472	0.0598	0.18
3/7/2011	0.0773	0.447	0.0627	0.128
3/14/2011	0.086	0.51	0.1	0.449
4/4/2011	0.07	0.428	0.0841	0.387
4/20/2011	0.0687	0.33	0.0861	0.347
5/2/2011	0.0712	0.304	0.0809	0.302
5/9/2011	0.06	0.301	0.0712	0.3
SDD Ordinance Limit (Avg.)	0.0365	0.45		
SDD Ordinance Limit (Max.)	0.15	1.7		

Sanitary District of Decatur
Nickel and Zinc River Data 2010-2011

Sample Date	Plant Final Effluent Nickel mg/L	River Up-stream Nickel mg/L	River 100 yds Down-stream Nickel mg/L	River 600 yds Down-stream Nickel mg/L	Steven's Creek Nickel mg/L	River Rock Springs Bridge Nickel mg/L	River Wyckle's Road Nickel mg/L	River Lincoln H'stead Nickel mg/L	Plant Final Effluent Zinc mg/L	River Up-stream Zinc mg/L	River 100 yds Down-stream Zinc mg/L	River 600 yds Down-stream Zinc mg/L	Steven's Creek Zinc mg/L	River Rock Springs Bridge Zinc mg/L	River Wyckle's Road Zinc mg/L	River Lincoln H'stead Nickel mg/L	Plant Final Effluent Flow mgd	River Up-stream Flow ft ³ /sec
1/14/10	0.0202	<0.00131	0.00374	0.00407	<0.00131	0.00331		0.00318	0.0393	<0.00660	0.0102	0.0108	<0.00660	0.00839		0.0112	30.29	208
1/28/10	0.0160	0.00205	0.00253	0.00240	<0.00131	0.00209		0.00237	0.0399	0.0129	0.0130	0.0121	0.00773	0.0135		0.0138	42.87	3470
2/11/10	0.0204	<0.00131	0.00462	0.00357	<0.00131	0.00277		0.00253	0.0344	<0.00660	0.0119	0.00980	0.00789	0.0108		0.00710	31.39	517
2/18/10	0.0304	<0.00131	0.00527	0.00468	<0.00131	0.00398		0.00351	0.0377	0.00696	0.0103	0.0103	0.00790	0.00777		0.00819	33.12	436
3/4/10	0.0235	<0.00131	0.00376	0.00332	<0.00131	0.00242		0.00240	0.0304	0.00667	0.00918	0.00851	<0.00660	0.00746		0.00895	37.82	755
3/18/10	0.0194	0.00133	0.00232	0.00199	<0.00131	0.00165		0.00200	0.0260	0.00781	0.00966	0.00953	0.00739	0.00801		0.0107	39.45	2160
4/15/10	0.0208	<0.00131	0.00290	0.00279	<0.00131	0.00237		0.00281	0.0204	<0.00660	0.00758	0.00867	<0.00660	<0.00660		0.00761	35.69	482
4/29/10	0.0173	<0.00131	0.00186	0.00201	<0.00131	0.00175		0.00222	0.0290	0.00776	0.00676	0.00833	0.0136	<0.00660		0.00902	31.86	728
5/13/10	0.0127	0.00137	0.00195	0.00244	0.00176	0.00174		0.00229	0.0244	0.00762	0.00767	0.00791	0.0121	0.00821		0.0112	38.27	1440
5/27/10	0.0211	<0.00131	0.00388	0.00284	0.00158	0.00226		0.00259	0.0293	0.00765	0.00875	0.00763	0.00872	0.00697		0.00982	37.01	948
6/10/10	0.0229	0.00205	0.00298	0.00241	0.00325	0.00217		0.00291	0.0328	0.0108	0.0106	0.00988	0.0183	0.0105		0.0145	38.57	1820
6/24/10	0.0205	0.00262	0.00620	0.00386	0.00332	0.00311		0.00345	0.0212	0.0144	0.0137	0.0125	0.0174	0.0142		0.0148	72.13	6120
7/8/10	0.0458	<0.00131	0.00637	0.00713	<0.00131	0.00540		0.00571	0.0662	<0.00660	0.0148	0.0175	<0.00660	0.0155		0.0121	34.86	348
7/29/10	0.0433	0.00190	0.00744	0.00600	0.00151	0.00580		0.00600	0.0564	0.00909	0.0132	0.0122	<0.00660	0.0123		0.0248	38.86	285
8/12/10	0.0493	0.00157	0.0367	0.0353	<0.00131	0.0327		0.0338	0.0681	0.0130	0.0578	0.0529	<0.00660	0.0480		0.0601	31.89	24
8/26/10	0.0370	0.0025	0.0319	0.0320	0.00177	0.0294		0.0211	0.0253	0.0130	0.0255	0.0246	<0.00660	0.0221		0.0121	30.59	4.7
9/9/10	0.0269	<0.00131	0.0203	0.0197	0.00135	0.0186		0.0119	0.0314	<0.00660	0.0219	0.0209	0.0113	0.0257		0.0218	32.10	11
9/23/10	0.0192	0.00186	0.0136	0.0132	0.00188	0.00915		0.0108	0.0309	0.0119	0.0590	0.0249	0.0105	0.0188		0.0182	34.19	2.0
10/14/10	0.0182	0.00251	0.0176	0.0182	0.00143	0.0149	0.0152		0.0335	0.00827	0.0335	0.0317	0.00693	0.0259	0.0303		25.66	1.9
10/28/10	0.0238	0.00135	0.0209	0.0212	<0.00131	0.0158	0.0157		0.0261	<0.00660	0.0316	0.0232	<0.00660	0.0179	0.0190		28.28	1.9
11/04/10	0.0227	0.00146	0.0222	0.0223	<0.00131	0.0193	0.0193		0.0474	<0.00660	0.0440	0.0421	<0.00660	0.0367	0.0354		31.01	2.7
11/18/10	0.0207	0.00131	0.0191	0.0189	<0.00131	0.0184	0.0170		0.0287	<0.00660	0.0271	0.0274	<0.00660	0.0245	0.0238		29.94	4.5
12/02/10	0.0203	0.00180	0.00269	0.00217	<0.00131	0.00217	0.00186		0.0396	<0.00660	0.00702	0.00745	<0.00660	0.00779	<0.00660		33.60	1480
12/16/10	0.0199	<0.00131	0.00311	0.00210	<0.00131	0.0017	0.00156		0.0356	<0.00660	0.00672	0.00859	<0.00660	<0.00660	<0.00660		28.51	694
01/13/11	0.0181	<0.00131	0.00519	0.00495	<0.00131	0.00426	0.00504		0.0503	<0.00660	0.0157	0.0152	<0.00660	0.0133	0.0149		29.48	121
01/27/11	0.0218	<0.00131	0.0144	0.0138	<0.00131	0.0113	0.0102		0.0773	<0.00660	0.0504	0.0481	<0.00660	0.0394	0.0350		30.71	3.9
02/10/11	0.0214	<0.00131	0.0141	0.0128	<0.00131	0.0112	0.00971		0.0701	<0.00660	0.0460	0.0413	0.00761	0.0364	0.0313		27.94	5.4
02/24/11	0.0132	0.00160	0.00242	0.00252	0.00150	0.00214	0.00205		0.0406	0.00841	0.0106	0.0108	0.0138	0.0114	0.00992		44.38	1970
3/10/11	0.0123	0.00169	0.00194	0.00198	0.00153	0.00184	0.00208		0.0321	0.00972	0.00978	0.00992	0.0103	0.00974	0.0100		47.51	2900
3/24/11	0.0132	<0.00131	0.00133	0.00133	<0.00131	<0.00131	<0.00131		0.0161	<0.00660	<0.00660	<0.00660	<0.00660	<0.00660	<0.00660		33.28	667
4/7/11	0.0163	<0.00131	0.00343	0.00252	<0.00131	0.00241	0.00237		0.0246	<0.00660	0.00884	0.00689	<0.00660	0.00732	0.00691		30.62	326
4/21/11	0.0118	<0.00131	0.00236	0.00195	0.00254	0.00157	0.00188		0.0215	0.00729	0.00878	0.00822	0.0170	0.00939	0.00934		52.22	2540
5/5/11	0.0147	0.00177	0.00279	0.00238	0.00137	0.00218	0.00223		0.0295	<0.00660	0.00932	0.00862	<0.00660	0.00760	0.00898		41.88	1670
5/19/11	0.0125	<0.00131	0.00211	0.00186	<0.00131	0.00153	0.00150		0.0213	<0.00660	<0.00660	<0.00660	<0.00660	<0.00660	0.00777		32.29	1290
6/9/11	0.0187	<0.00131	0.00143	0.00194	0.00183	0.00162	0.00177		0.0434	<0.00660	<0.00660	0.00672	<0.00660	<0.00660	0.0124			1540

Bridge at Wyckle's Road closed for repair August 2009.

Indicates that effluent or river/creek sample concentration exceeds chronic water quality value