ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 - ( 217) 782-2829
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 - (312) 814-6026

DOUGLAS P. SCOTT, DIRECTOR

217/782-0610

June 30, 2009

MAJOR

Sanitary District of Decatur
501 Dipper Lane
Decatur, Illinois 62522

Re: Sanitary District of Decatur Main STP
NPDES Permit No. IL0028321
Modification of NPDES Permit (After Public Notice)

Gentlemen:

The Illinois Environmental Protection Agency has reviewed the request for modification of the above-referenced NPDES Permit and issued a public notice based on that request. The final decision of the Agency is to modify the Permit as follows:

1. The extension from the existing compliance schedule for nickel and zinc from two years to three years. This extension is necessary because work performed to date has not allowed achievement of numeric limitations for nickel or zinc. Work performed includes a translator study, source investigation and source elimination or reduction including change of cooling water additives containing zinc, housekeeping practices, pH addition and other investigations. The additional time will be used to investigate other treatment techniques that would include electro-coagulation and methods to break the glutin nickel chealating bond.

2. To place outfall 006 back in the permit since it was inadvertently removed.

3. To add seven (7) existing stormwater discharges to the permit and place stormwater requirements as a Special Condition.

4. Removal of Special Condition 8 because a reasonable potential to exceed analysis was performed showing no potential existed to exceed water quality standards for fluoride and dischlorobromomethane.

5. To change nickel and zinc limits based on the metals translator.

Enclosed is a copy of the modified Permit. You have the right to appeal this modification to the Illinois Pollution Control Board within a 35 day period following the modification date shown on the first page of the permit.

Should you have any question or comments regarding the above, please contact Richard E. Pinneo of my staff.

Sincerely,

Alan Keller by REP

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:REP:06120503.bah

Attachment: Modified Permit

cc: Records
Compliance Assurance Section
Champaign Region
Billing
US EPA

NPDES Permit No. IL0028321

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

MAJOR

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Modified (NPDES) Permit

Expiration Date: June 30, 2012

Issue Date: April 20, 2007
Effective Date: July 1, 2007
Modification Date: July 1, 2009

Name and Address of Permittee:

Sanitary District of Decatur
501 Dipper Lane
Decatur, Illinois 62522

Facility Name and Address:

Sanitary District of Decatur Main STP
501 Dipper Lane
Decatur, Illinois
(Macon County)

Receiving Waters: Sangamon River

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of the Ill. Adm. Code, Subtitle C, Chapter I, and the C' n Water Act (CWA), the above-named Permittee is hereby authorized to discharge at the above location to the above-named i ing stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the Permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller by REP

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:REP:06120503.bah

NPDES Permit No. IL0028321

Effluent Limitations, Monitoring, and Reporting

FINAL

Discharge Number(s) and Name(s): 001 STP Outfall

Load limits computed based on a design average flow (DAF) of 41.0 MGD (design maximum flow (DMF) of 125.0 MGD).

Excess flow facilities (if applicable) shall not be utilized until the main treatment facility is receiving its maximum practical flow.

From the modification date of this Permit until the expiration date, the effluent of the above discharge(s) shall be monitored and limited at all times as follows:

| | LOAD LIMITS lbs/day DAF (DMF)* | | | CONCENTRATION LIMITS MG/L | | | | |
|---|---|---|---|---|---|---|---|---|
| Parameter | Monthly Average | Weekly Average | Daily Maximum | Monthly Average | Weekly Average | Daily Maximum | Sample Frequency | Sample Type |
| Flow (MGD) | | | | | | | Continuous | |
| $CBOD_5$** | 6,839 (20,850) | 13,678 (41,700) | | 20 | 40 | | 2 days/week | Composite |
| Suspended Solids | 8,549 (26,063) | 15, 387 (46,913) | | 25 | 45 | | 2 days/week | Composite |
| Dissolved Oxygen | Shall not be less than 6 mg/L | | | | | | 2 days/week | Grab |
| p | Shall be in the range of 6 to 9 Standard Units | | | | | | 2 days/week | Grab |
| Fecal Coliform*** | Daily Maximum shall not exceed 400 per 100 mL (May through October) | | | | | | 2 days/week | Grab |
| Chlorine Residual*** | | | | | | 0.05 | 2 days/week | Grab |
| Ammonia Nitrogen as (N) | | | | | | | | |
| March-May/Sept.-Oct. | 513 (1,564) | | 1,026 (3,128) | 1.5 | | 3.0 | 2 days/week | Composite |
| June-August | 445 (1,355) | | 1,026 (3,128) | 1.3 | | 3.0 | 2 days/week | Composite |
| Nov.-Feb. | 513 (1,564) | | 1,026 (3,128) | 1.5 | | 3.0 | 2 days/week | Composite |
| Zinc **** | 26 (78) | | 142 (434) | 0.075 | | 0.416 | 5 days/week | Composite |
| Nickel **** | 5.1 (16) | | | 0.015 | | | 5 days/week | Composite |

*Load limits based on design maximum flow shall apply only when flow exceeds design average flow.
**Carbonaceous $BOD_5$ ($CBOD_5$) testing shall be in accordance with 40 CFR 136.
***See Special Condition 7.
****See Special Condition 17.

Flow shall be reported on the Discharge Monitoring Report (DMR) as monthly average and daily maximum.

Fecal Coliform shall be reported on the DMR as daily maximum.

pH shall be reported on the DMR as a minimum and a maximum.

Chlorine Residual shall be reported on DMR as daily maximum.

D' lved oxygen shall be reported on DMR as minimum.

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Effluent Limitations, Monitoring, and Reporting

FINAL

Discharge Number(s) and Name(s): 003 Oakland Avenue Treated Combined Sewage Outfall
004 South Edward Street Treated Combined Sewage Outfall
007 McKinley Avenue Treated Combined Sewage Outfall
008 Seventh Ward Treated Combined Sewage Outfall

These flow facilities shall not be utilized until the main treatment facility is receiving its maximum practical flow.

From the modification date of this Permit until the expiration date, the effluent of the above discharge(s) shall be monitored and limited at all times as follows:

| Parameter | CONCENTRATION LIMITS mg/L Monthly Average | Sample Frequency | Sample Type |
|---|---|---|---|
| Total Flow (MG) | See Below | Daily When Discharging | Continuous |
| $BOD_5$ | | Daily When Discharging | Grab |
| Suspended Solids | | Daily When Discharging | Grab |
| pH | Shall be in the range of 6 to 9 Standard Units | Daily When Discharging | Grab |

Total flow in million gallons shall be reported on the Discharge Monitoring Report (DMR) in the quantity maximum column.

R the number of days of discharge in the comments section of the DMR.

pH shall be reported on the DMR as a minimum and a maximum.

$BOD_5$ and Suspended Solids shall be reported on the DMR as a monthly average concentration.

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Influent Monitoring, and Reporting

The influent to the plant shall be monitored as follows:

| Parameter | Sample Frequency | Sample Type |
|---|---|---|
| Flow (MGD) | Continuous | *RIT |
| $BOD_5$ | 2 days/week | Composite |
| Suspended Solids | 2 days/week | Composite |

Influent samples shall be taken at a point representative of the influent.

Flow (MGD) shall be reported on the Discharge Monitoring Report (DMR) as monthly average and daily maximum.

$BOD_5$ and Suspended Solids shall be reported on the DMR as a monthly average concentration.

*Recording, Indicating, Totalizing.

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Special Conditions

SPECIAL CONDITION 1. This Permit may be modified to include different final effluent limitations or requirements which are consistent with applicable laws, regulations, or judicial orders. The IEPA will public notice the permit modification.

SPECIAL CONDITION 2. The use or operation of this facility shall be by or under the supervision of a Certified Class 1 operator.

SPECIAL CONDITION 3. The IEPA may request in writing submittal of operational information in a specified form and at a required frequency at any time during the effective period of this Permit.

SPECIAL CONDITION 4. The IEPA may request more frequent monitoring by permit modification pursuant to 40 CFR § 122.63 and Without Public Notice in the event of operational, maintenance or other problems resulting in possible effluent deterioration.

SPECIAL CONDITION 5. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 6. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 7. Fecal Coliform limits for Discharge Number 001 are effective May thru October. Sampling of Fecal Coliform is only required during this time period.

The total residual chlorine limit is applicable at all times. If the Permittee is chlorinating for any purpose during the months of November through April, sampling is required on a daily grab basis. Sampling frequency for the months of May through October shall be as indicated on effluent limitations, monitoring and reporting page of this Permit.

SPECIAL CONDITION 8.

A. Publicly Owned Treatment Works (POTW) Pretreatment Program General Provisions

The Permittee shall implement and enforce its approved Pretreatment Program which was approved on September 3, 1985 and all approved subsequent modifications thereto. The Permittee shall maintain legal authority adequate to fully implement the Pretreatment Program in compliance with Federal (40 CFR 403), State, and local laws. The Permittee shall:

a. Carry out independent inspection and monitoring procedures at least once per year, which will determine whether each significant industrial user (SIU) is in compliance with applicable pretreatment standards;

b. Perform an evaluation, at least once every two (2) years, to determine whether each SIU needs a slug control plan. If needed, the SIU slug control plan shall include the items specified in 40 CFR § 403.8 (f)(2)(v);

c. Update its inventory of Industrial Users (IUs) at least annually and as needed to ensure that all SIUs are properly identified, characterized, and categorized;

d. Receive and review self monitoring and other IU reports to determine compliance with all pretreatment standards and requirements, and obtain appropriate remedies for noncompliance by any IU with any pretreatment standard and/or requirement;

e. Investigate instances of noncompliance, collect and analyze samples, and compile other information with sufficient care as to produce evidence admissible in enforcement proceedings, including judicial action;

f. Require development, as necessary, of compliance schedules by each industrial user for the installation of control technologies to meet applicable pretreatment standards; and,

g. Maintain an adequate revenue structure for continued operation of the Pretreatment Program.

2. The Permittee shall issue/reissue permits or equivalent control mechanisms to all SIUs prior to expiration of existing permits or prior to commencement of discharge in the case of new discharges. The permits at a minimum shall include the elements listed in 40 CFR § 403.8(f)(1)(iii).

3 The Permittee shall develop, maintain, and enforce, as necessary, local limits to implement the prohibitions in 40 CFR § 403.5 which rohibit the introduction of specific pollutants to the waste treatment system from any source of nondomestic discharge.

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4. In addition to the general limitations expressed in Paragraph 3 above, applicable pretreatment standards must be met by all industrial users of the POTW. These limitations include specific standards for certain industrial categories as determined by Section 307(b) and (c) of the Clean Water Act, State limits, or local limits, whichever are more stringent.

5. The USEPA and IEPA individually retain the right to take legal action against any industrial user and/or the POTW for those cases where an industrial user has failed to meet an applicable pretreatment standard by the deadline date regardless of whether or not such failure has resulted in a permit violation.

6. The Permittee shall establish agreements with all contributing jurisdictions, as necessary, to enable it to fulfill its requirements with respect to all IUs discharging to its system.

7. Unless already completed, the Permittee shall within six (6) months of the effective date of this Permit submit to USEPA and IEPA a proposal to modify and update its approved Pretreatment Program to incorporate Federal revisions to the general pretreatment regulations. The proposal shall include all changes to the approved program and the sewer use ordinance which are necessary to incorporate the regulations commonly referred to as PIRT and DSS, which were effective November 16, 1988 and August 23, 1990, respectively. This includes the development of an Enforcement Response Plan (ERP) and a technical re-evaluation of the Permittee's local limits.

8. The Permittee's Pretreatment Program has been modified to incorporate a Pretreatment Program Amendment approved on February 6, 1995. The amendment became effective on the date of approval and is a fully enforceable provision of your Pretreatment Program.

   Modifications of your Pretreatment Program shall be submitted in accordance with 40 CFR § 403.18, which established conditions for substantial and nonsubstantial modifications.

B. Reporting and Records Requirements

1. The Permittee shall provide an annual report briefly describing the permittee's pretreatment program activities over the previous calendar year. Permittees who operate multiple plants may provide a single report providing all plant-specific reporting requirements are met. Such report shall be submitted no later than April 28 of each year, and shall be in the format set forth in IEPA's POTW Pretreatment Report Package which contains information regarding:

   a. An updated listing of the Permittee's industrial users.

   b. A descriptive summary of the compliance activities including numbers of any major enforcement actions, (i.e., administrative orders, penalties, civil actions, etc.), and the outcome of those actions. This includes an assessment of the compliance status of the Permittee's industrial users and the effectiveness of the Permittee's Pretreatment Program in meeting its needs and objectives.

   c. A description of all substantive changes made to the Permittee's Pretreatment Program. Changes which are "substantial modifications" as described in 40 CFR § 403.18(c) must receive prior approval from the Approval Authority.

   d. Results of sampling and analysis of POTW influent, effluent, and sludge.

   e. A summary of the findings from the priority pollutants sampling. As sufficient data becomes available the IEPA may modify this Permit to incorporate additional requirements relating to the evaluation, establishment, and enforcement of local limits for organic pollutants. Any permit modification is subject to formal due process procedures pursuant to State and Federal law and regulation. Upon a determination that an organic pollutant is present that causes interference or pass through, the Permittee shall establish local limits as required by 40 CFR § 403.5(c).

2. The Permittee shall maintain all pretreatment data and records for a minimum of three (3) years. This period shall be extended during the course of unresolved litigation or when requested by the IEPA or the Regional Administrator of USEPA. Records shall be available to USEPA and the IEPA upon request.

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3. The Permittee shall establish public participation requirements of 40 CFR 25 in implementation of its Pretreatment Program. The Permittee shall at least annually, publish the names of all IU's which were in significant noncompliance (SNC), as defined by 40 CFR § 403.8(f)(2)(vii), in the largest daily paper in the municipality in which the POTW is located or based on any more restrictive definition of SNC that the POTW may be using.

4. The Permittee shall provide written notification to the Deputy Counsel for the Division of Water Pollution Control, IEPA, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 within five (5) days of receiving notice that any Industrial User of its sewage treatment plant is appealing to the Circuit Court any condition imposed by the Permittee in any permit issued to the Industrial User by Permittee. A copy of the Industrial User's appeal and all other pleadings filed by all parties shall be mailed to the Deputy Counsel within five (5) days of the pleadings being filed in Circuit Court.

C. Monitoring Requirements

1. The Permittee shall monitor its influent, effluent and sludge and report concentrations of the following parameters on monitoring report forms provided by the IEPA and include them in its annual report. Samples shall be taken at quarterly (four times per year) intervals at the indicated reporting limit or better and consist of a 24-hour composite unless otherwise specified below. Sludge samples shall be taken of final sludge and consist of a grab sample reported on a dry weight basis.

| STORET CODE | PARAMETER | Minimum reporting limit |
|---|---|---|
| 01097 | Antimony | 0.07 mg/L |
| 01002 | Arsenic | 0.05 mg/L |
| 01007 | Barium | 0.5 mg/L |
| 01012 | Beryllium | 0.005 mg/L |
| 01027 | Cadmium | 0.001 mg/L |
| 01032 | Chromium (hex - grab not to exceed 24 hours)* | 0.01 mg/L |
| 01034 | Chromium (total) | 0.05 mg/L |
| [illegible] | Copper | 0.005 mg/L |
| [illegible] | Cyanide (grab) (weak acid dissociable)* | 5.0 ug/L |
| 00720 | Cyanide (grab) (total) | 5.0 ug/L |
| 00951 | Fluoride* | 0.1 mg/L |
| 01045 | Iron (total) | 0.5 mg/L |
| 01046 | Iron (Dissolved)* | 0.5 mg/L |
| 01051 | Lead | 0.05 mg/L |
| 01055 | Manganese | 0.5 mg/L |
| 71900 | Mercury (effluent grab using USEPA Method 1631 or equivalent)*** | 1.0 ng/L** |
| 01067 | Nickel | 0.005 mg/L |
| 00556 | Oil (hexane soluble or equivalent) (Grab Sample only)* | 5.0 mg/L |
| 32730 | Phenols (grab) | 0.005 mg/L |
| 01147 | Selenium | 0.005 mg/L |
| 01077 | Silver (total) | 0.003 mg/L |
| 01059 | Thallium | 0.3 mg/L |
| 01092 | Zinc | 0.025 mg/L |

* Influent and effluent only
**1 ng/L = 1 part per trillion.
*** Other approved methods may be used for influent (composite) and sludge

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined including all oxidation states. Where constituents are commonly measured as other than total, the phase is so indicated.

2. The Permittee shall conduct an analysis for the one hundred and ten (110) organic priority pollutants identified in 40 CFR 122 Appendix D, Table II as amended. This monitoring shall be done once per year and reported on monitoring report forms provided by the IEPA and shall consist of the following:

   a. The influent and effluent shall be sampled and analyzed for the one hundred and ten (110) organic priority pollutants. The sampling shall be done during a day when industrial discharges are expected to be occurring at normal to maximum levels.

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Samples for the analysis of acid and base/neutral extractable compounds shall be 24-hour composites.

Five (5) grab samples shall be collected each monitoring day to be analyzed for volatile organic compounds. A single analysis for volatile pollutants (Method 624) may be run for each monitoring day by compositing equal volumes of each grab sample directly in the GC purge and trap apparatus in the laboratory, with no less than one (1) mL of each grab included in the composite.

Wastewater samples must be handled, prepared, and analyzed by GC/MS in accordance with USEPA Methods 624 and 625 of 40 CFR 136 as amended.

b. The sludge shall be sampled and analyzed for the one hundred and ten (110) organic priority pollutants. A sludge sample shall be collected concurrent with a wastewater sample and taken as final sludge.

Sampling and analysis shall conform to USEPA Methods 624 and 625 unless an alternate method has been approved by IEPA.

c. Sample collection, preservation and storage shall conform to approved USEPA procedures and requirements.

3. In addition, the Permittee shall monitor any new toxic substances as defined by the Clean Water Act, as amended, following notification by the IEPA.

4. Permittee shall report any noncompliance with effluent or water quality standards in accordance with Standard Condition 12(e) of this Permit.

5. Analytical detection limits shall be in accordance with 40 CFR 136. Minimum detection limits for sludge analyses shall be in accordance with 40 CFR 503.

SPECIAL CONDITION 9. The Permittee has undergone a Monitoring Reduction review and the influent and effluent sample frequency has been reduced for $CBOD_5$, $BOD_5$, suspended solids, dissolved oxygen, pH, fecal coliform, chlorine residual and ammonia nitrogen due to sustained compliance. The IEPA will require that the influent and effluent sampling frequency for these parameters be increased to 5 days/week if effluent deterioration occurs due to increased wasteload, operational, maintenance or other problems. The increased monitoring will be required Without Public Notice when a permit modification is received by the Permittee from the IEPA.

SPECIAL CONDITION 10. During January of each year the Permittee shall submit annual fiscal data regarding sewerage system operations to the Illinois Environmental Protection Agency/Division of Water Pollution Control/Compliance Assurance Section. The Permittee may use any fiscal year period provided the period ends within twelve (12) months of the submission date.

Submission shall be on forms provided by IEPA titled "Fiscal Report Form For NPDES Permittees".

SPECIAL CONDITION 11. The Permittee shall conduct biomonitoring of the effluent from Discharge Number(s) 001.

Biomonitoring

1. Acute Toxicity - Standard definitive acute toxicity tests shall be run on at least two trophic levels of aquatic species (fish, invertebrate) representative of the aquatic community of the receiving stream. Testing must be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fifth Ed.) EPA/821-R-02-012. Unless substitute tests are pre-approved; the following tests are required:

   a. Fish - 96 hour static $LC_{50}$ Bioassay using fathead minnows (Pimephales promelas).

   b. Invertebrate 48-hour static $LC_{50}$ Bioassay using Ceriodaphnia.

2. Testing Frequency - The above tests shall be conducted using 24-hour composite samples unless otherwise authorized by the IEPA. Samples must be collected in the 18th, 15th, 12th, and 9th month prior to the expiration date of this Permit.

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3. Reporting - Results shall be reported according to EPA/821-R-02-012, Section 12, Report Preparation, and shall be submitted to IEPA, Bureau of Water, Compliance Assurance Section within one week of receipt from the laboratory. Reports are due to the IEPA no later than the 16th, 13th, 10th, and 7th month prior to the expiration date of this Permit.

4. Toxicity Reduction Evaluation - Should the results of the biomonitoring program identify toxicity, the IEPA may require that the Permittee prepare a plan for toxicity reduction evaluation and identification. This plan shall be developed in accordance with Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833B-99/002, and shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate. The Permittee shall submit to the IEPA its plan for toxicity reduction evaluation within ninety (90) days following notification by the IEPA. The Permittee shall implement the plan within ninety (90) days or other such date as contained in a notification letter received from the IEPA.

The IEPA may modify this Permit during its term to incorporate additional requirements or limitations based on the results of the biomonitoring. In addition, after review of the monitoring results, the IEPA may modify this Permit to include numerical limitations for specific toxic pollutants. Modifications under this condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 12. Discharge Number 002 is an emergency high level bypass. Discharges from this overflow are subject to the following conditions:

(1) Definitions

(I) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(Ii) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(2) Bypass not exceeding limitations. The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (3) and (4) of this section.

(3) Notice

(I) Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(Ii) Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required in Standard Condition 12(e) of this Permit (24-hour notice).

(4) Prohibition of bypass. Bypass is prohibited, and the IEPA may take enforcement action against a Permittee for bypass, unless:

(I) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(Ii) There was no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(Iii) The Permittee submitted notices as required under Standard Condition 12(e) of this Permit.

(5) Emergency Bypass when discharging, shall be monitored daily by grab sample for $BOD_5$ and Suspended Solids. The Permittee shall submit the monitoring results on Discharge Monitoring Report forms using one such form for each month in which bypassing occurs. The Permittee shall specify the number of discharges per month that occur and shall report this number in the quantity daily maximum column. The Permittee shall report the highest concentration value of $BOD_5$ and Suspended Solids discharged in the concentration daily maximum column.

Modification Date: July 1, 2009

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SPECIAL CONDITION 13. For the duration of this Permit, the Permittee shall determine the quantity of sludge produced by the treatment facility in dry tons or gallons with average percent total solids analysis. The Permittee shall maintain adequate records of the quantities of sludge produced and have said records available for IEPA inspection. The Permittee shall submit to the IEPA, at a minimum, a semi-annual summary report of the quantities of sludge generated and disposed of, in units of dry tons or gallons (average total percent solids) by different disposal methods including but not limited to application on farmland, application on reclamation land, landfilling, public distribution, dedicated land disposal, sod farms, storage lagoons or any other specified disposal method. Said reports shall be submitted to the IEPA by January 31 and July 31 of each year reporting the preceding January thru June and July thru December interval of sludge disposal operations.

Duty to Mitigate. The Permittee shall take all reasonable steps to minimize any sludge use or disposal in violation of this Permit.

Sludge monitoring must be conducted according to test procedures approved under 40 CFR 136 unless otherwise specified in 40 CFR 503, unless other test procedures have been specified in this Permit.

Planned Changes. The Permittee shall give notice to the IEPA on the semi-annual report of any changes in sludge use and disposal.

The Permittee shall retain records of all sludge monitoring, and reports required by the Sludge Permit as referenced in Standard Condition 23 for a period of at least five (5) years from the date of this Permit.

If the Permittee monitors any pollutant more frequently than required by the Sludge Permit, the results of this monitoring shall be included in the reporting of data submitted to the IEPA.

Monitoring reports for sludge shall be reported on the form titled "Sludge Management Reports" to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Mail Code #19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 14.

AUTHORIZATION OF
COMBINED SEWER AND TREATMENT PLANT DISCHARGES

The IEPA has determined that at least a portion of the collection system consists of combined sewers. References to the collection system and the sewer system refer only to those parts of the system which are owned and operated by the Permittee unless otherwise indicated. The Permittee is authorized to discharge from the overflow(s)/bypass(es) listed below provided the diversion structure is located on a combined sewer and the following terms and conditions are met:

| Discharge Number | Location | Receiving Water |
|---|---|---|
| 003 | Oakland Avenue CSO Treatment Bypass | Sangamon River |
| 004 | South Edward Street CSO Treatment Bypass | Sangamon River |
| 006 | Fairview Park CSO | Stevens Creek |
| 007 | McKinley Avenue CSO Treatment Bypass | Unnamed tributary of Spring Creek |
| 008 | Seventh Ward CSO Treatment Bypass | Sangamon River |

Treatment Requirements

a. All combined sewer overflows and treatment plant bypasses shall be given sufficient treatment to prevent pollution and the violation of applicable water quality standards. Sufficient treatment shall consist of the following:

a. Treatment as described in PCB AS 91-7 and dated June 23, 1992 shall be provided. The terms and conditions of this Board Order are hereby incorporated by reference as if fully set forth herein; and,

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b. Any additional treatment, necessary to comply with applicable water quality standards and the federal Clean Water Act, including any amendments made by the Wet Weather Water Quality Act of 2000.

2. All CSO discharges authorized by this Permit shall be treated, in whole or in part, to the extent necessary to prevent accumulations of sludge deposits, floating debris and solids in accordance with 35 Ill. Adm. Code 302.203 and to prevent depression of oxygen levels below the applicable water quality standards.

3. Overflows during dry weather are prohibited. Dry weather overflows shall be reported to the IEPA pursuant to Standard Condition 12(e) of this Permit (24 hour notice).

4. The collection system shall be operated to optimize transport of wastewater flows and to minimize CSO discharges.

5. The treatment system shall be operated to maximize treatment of wastewater flows.

Nine Minimum Controls

6. The Permittee shall comply with the nine minimum controls contained in the National CSO Control Policy published in the Federal Register on April 19, 1994. The nine minimum controls are:

a. Proper operation and maintenance programs for the sewer system and the CSOs (Compliance with this Item shall be met through the requirements imposed by Paragraph 8 of this Special Condition);

b. Maximum use of the collection system for storage (Compliance with this Item shall be met through the requirements imposed by Paragraphs 1, 4, and 8 of this Special Condition);

c. Review and modification of pretreatment requirements to assure CSO impacts are minimized (Compliance with this Item shall be met through the requirements imposed by Paragraph 9 of this Special Condition);

d. Maximization of flow to the POTW for treatment (Compliance with this Item shall be met through the requirements imposed by Paragraphs 4, 5, and 8 of this Special Condition);

e. Prohibition of CSOs during dry weather (Compliance with this Item shall be met through the requirements imposed by Paragraph 3 of this Special Condition);

f. Control of solids and floatable materials in CSOs (Compliance with this Item shall be met through the requirements imposed by Paragraphs 2 and 8 of this Special Condition);

g. Pollution prevention programs which focus on source control activities (Compliance with this Item shall be met through the requirements imposed by Paragraph 6 of this Special Condition, **See Below**);

h. Public notification to ensure that citizens receive adequate information regarding CSO occurrences and CSO impacts (Compliance with this Item shall be met through the requirements imposed by Paragraph 12 of this Special Condition); and,

i. Monitoring to characterize impacts and efficiency of CSO controls (Compliance with this Item shall be met through the requirements imposed by Paragraphs 10 and 11 of this Special Condition).

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A pollution prevention plan (PPP) shall be developed by the Permittee unless one has already been prepared for this collection system. Any previously-prepared PPP shall be reviewed, and revised if necessary, by the Permittee to address the items contained in Chapter 8 of the U.S. EPA guidance document, Combined Sewer Overflows, Guidance For Nine Minimum Controls, and any items contained in previously-sent review documents from the IEPA concerning the PPP. Combined Sewer Overflows, Guidance For Nine Minimum Controls is available on line at http://www:epa.gov/NPDES/pubs/owm0030.pdf. The PPP (or revised PPP) shall be presented to the general public at a public information meeting conducted by the Permittee within nine (9) months of the effective date of this Permit. The Permittee shall submit documentation that the pollution prevention plan complies with the requirements of this Permit and that the public information meeting was held. Such documentation shall be submitted to the IEPA within twelve (12) months of the effective date of this Permit and shall include a summary of all significant issues raised by the public, the Permittee's response to each issue, and two (2) copies of the "CSO Pollution Prevention Plan Certification" one (1) with original signatures. This certification form is available online at http://www.epa.state.il.us/water/permits/waste-water/forms/cso-pol-prev.pdf. Following the public meeting, the Permittee shall implement the pollution prevention plan within one (1) year and shall maintain a current pollution prevention plan, updated to reflect system modifications, on file at the sewage treatment works or other acceptable location and made available to the public. The pollution prevention plan shall be submitted to the IEPA upon written request.

Sensitive Area Considerations

7. Pursuant to Section II.C.3 of the federal CSO Control Policy of 1994, sensitive areas are any water likely to be impacted by a CSO discharge which meet one or more of the following criteria: (1) designated as an Outstanding National Resource Water; (2) found to contain shellfish beds; (3) found to contain threatened or endangered aquatic species or their habitat; (4) used for primary contact recreation; or, (5) within the protection area for a drinking water intake structure.

The IEPA has tentatively determined that none of the outfalls listed in this Special Condition discharge to sensitive areas. However, if information becomes available that causes the IEPA to reverse this determination, the IEPA will notify the Permittee in writing. Within three (3) months of the date of notification, or such other date contained in the notification letter, the Permittee shall submit two (2) copies of either a schedule to relocate, control, or treat discharges from these outfalls. If none of these options are possible, the Permittee shall submit adequate justification at that time as to why these options are not possible. Such justification shall be in accordance with Section II.C.3 of the National CSO Control Policy.

Operational and Maintenance Plans

8. The IEPA reviewed and accepted a CSO operational and maintenance plan "CSO O&M plan" on February 1, 2000 prepared for this sewerage system. The Permittee shall review and revise, if needed, the CSO O&M plan to reflect system changes.

The CSO O&M plan shall be presented to the general public at a public information meeting conducted by the Permittee within nine (9) months of the effective date of this Permit. The Permittee shall submit documentation that the CSO O&M plan complies with the requirements of this Permit and that the public information meeting was held. Such documentation shall be submitted to the IEPA within twelve (12) months of the effective date of this Permit and shall include a summary of all significant issues raised by the public, the Permittee's response to each issue, and two (2) copies of the "CSO Operational Plan Checklist and Certification", one (1) with original signatures. Copies of the "CSO Operational Plan Checklist and Certification" are available online at http://www.epa.state.il.us/water/permits/waste-water/forms/cso-checklist.pdf. Following the public meeting, the Permittee shall implement the CSO O&M plan within one (1) year and shall maintain a current CSO O&M plan, updated to reflect system modifications, on file at the sewage treatment works or other acceptable location and made available to the public. The CSO O&M plan shall be submitted to the IEPA upon written request.
The objectives of the CSO O&M plan are to reduce the total loading of pollutants and floatables entering the receiving stream and to ensure that the Permittee ultimately achieves compliance with water quality standards. These plans, tailored to the local governments's collection and waste treatment systems, shall include mechanisms and specific procedures where applicable to ensure:

a. Collection system inspection on a scheduled basis;

b. Sewer, catch basin, and regulator cleaning and maintenance on a scheduled basis;

c. Inspections are made and preventive maintenance is performed on all pump/lift stations;

d. Collection system replacement, where necessary;

e. Detection and elimination of illegal connections;

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f. Detection, prevention, and elimination of dry weather overflows;

g. The collection system is operated to maximize storage capacity and the combined sewer portions of the collection system are operated to delay storm entry into the system; and,

h. The treatment and collection systems are operated to maximize treatment.

Sewer Use Ordinances

9. The Permittee, within six (6) months of the effective date of this Permit, shall review and where necessary, modify its existing sewer use ordinance to ensure it contains provisions addressing the conditions below. If no ordinance exists, such ordinance shall be developed and implemented within six (6) months from the effective date of this Permit. Upon completion of the review of the sewer use ordinance(s), the Permittee shall submit two (2) copies of a completed "Certification of Sewer Use Ordinance Review", one (1) with original signatures. Copies of the certification form can be obtained on line at http://www.epa.state.il.us/water/permits/waste-water/forms/sewer-use.pdf. The Permittee shall submit copies of the sewer use ordinance(s) to the IEPA upon written request. Sewer use ordinances are to contain specific provisions to:

a. prohibit introduction of new inflow sources to the sanitary sewer system;

b. require that new construction tributary to the combined sewer system be designed to minimize and/or delay inflow contribution to the combined sewer system;

c. require that inflow sources on the combined sewer system be connected to a storm sewer, within a reasonable period of time, if a storm sewer becomes available;

d. provide that any new building domestic waste connection shall be distinct from the building inflow connection, to facilitate disconnection if a storm sewer becomes available;

e. assure that CSO impacts from non-domestic sources are minimized by determining which non-domestic discharges, if any, are tributary to CSOs and reviewing, and, if necessary, modifying the sewer use ordinance to control pollutants in these discharges; and,

f. notify the owners of all publicly owned systems with combined sewers tributary to the Permittee's collection system of their obligations to have procedures in place adequate to ensure that the objectives, mechanisms, and specific procedures given in Paragraph 8 of this Special Condition are achieved.

The Permittee shall enforce the applicable sewer use ordinances.

Long-Term Control Planning and Compliance with Water Quality Standards

10. a. Pursuant to Section 301 of the federal Clean Water Act, 33 U.S.C. § 1311 and 40 CFR § 122.4, discharges from the CSOs, including the outfalls listed in this Special Condition and any other outfall listed as a "Treated Combined Sewage Outfall", shall not cause or contribute to violations of applicable water quality standards or cause use impairment in the receiving waters. In addition, discharges from CSOs shall comply with all applicable parts of 35 Ill. Adm. Code 306.305(a), (b), (c), and (d).

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b. Based on available information, it appears that the CSOs authorized in this Permit meet the criteria of Section II.C.4.a.i of the federal CSO Control Policy of 1994 (Policy), not more than four overflow events per year, and are presumed to meet the water quality-based requirements of the federal Clean Water Act. Pursuant to Section I.C.1 and Section II.C.9 of the Policy, the Permittee shall develop a post-construction water quality monitoring program adequate to verify compliance with water quality standards and to verify protection of designated uses in the receiving water(s) and to ascertain the effectness of CSO controls. This program shall contain a plan that details the monitoring protocols to be followed, including any necessary effluent and ambient monitoring, and if appropriate, other monitoring protocols such as biological assessments, whole effluent toxicity testing, and sediment sampling. This plan shall be presented to the public at an informational meeting within nine (9) months of the effective date of this Permit. Within twelve (12) months of the effective date of this Permit, the Permittee shall submit a summary of all significant issues raised by the public, the Permittee's response to each issue, and two (2) copies of the final plan (revised following the public meeting, if necessary) implementing the post-construction monitoring program. The post-construction monitoring plan shall be implemented within six (6) months of the date of IEPA approval. The Permittee shall respond to an IEPA review letter in writing within ninety (90) days of the date of such an initial review letter and within thirty (30) days of any subsequent review letter(s), if any. Within thirty (30) months of the approval of the plan, the results shall be submitted to the IEPA along with recommendations and conclusions as to whether or not the discharges from any of the CSOs (treated or untreated) authorized by this Permit are causing or contributing to violations of applicable water quality standards or causing use impairment in the receiving water(s).

c. Should the results of the post-construction water quality monitoring plan or if information becomes available that causes IEPA to conclude that the discharges from any of the CSOs (treated or untreated) authorized to discharge under this Permit are causing or contributing to violations of water quality standards or are causing use impairment in the receiving water(s), the IEPA will notify the Permittee in writing. Upon receiving such notification, the Permittee shall develop and implement a CSO Long-Term Control Plan (LTCP) for assuring that the discharges from the CSOs (treated or untreated) authorized in this Permit comply with the provisions of Paragraph 10.a above. The LTCP shall contain all applicable elements of Paragraph 10.d below including a schedule for implementation and provisions for re-evaluating compliance with applicable standards and regulations after complete implementation. Two (2) copies of the LTCP shall be submitted to the IEPA within twelve (12) months of receiving the IEPA written notice. The LTCP shall be:

1. Consistent with Section II.C.4.a.i of the Policy; or,
2. Consistent with either Section II.C.4.a.ii, Section II.C.4.a.iii, or Section II.C.4.b of the Policy and be accompanied by data sufficient to demonstrate that the LTCP, when completely implemented, will be sufficient to meet water quality standards.

d. Pursuant to the Policy, the required components of the LTCP include the following:

1. Characterization, monitoring, and modeling of the Combined Sewer System (CSS);
2. Consideration of Sensitive Areas;
3. Evaluation of alternatives;
4. Cost/Performance considerations;
5. Revised CSO Operational Plan;
6. Maximizing treatment at the treatment plant;
7. Implementation schedule;
8. Post-Construction compliance monitoring program; and
9. Public participation.

Following submittal of the LTCP, the Permittee shall respond to any initial IEPA review letter in writing within ninety (90) days of the date of such a review letter, and within thirty (30) days of any subsequent review letter(s), if any. Implementation of the LTCP shall be as indicated by IEPA in writing or other enforceable mechanism.

Monitoring, Reporting and Notification Requirements

11. The Permittee shall monitor the frequency of discharge (number of discharges per month) and estimate the duration (in hours) of each discharge from each outfall listed in this Special Condition. Estimates of storm duration and total rainfall shall be provided for each storm event.

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For frequency reporting, all discharges from the same storm, or occurring within 24 hours, shall be reported as one. The date that a discharge commences shall be recorded for each outfall. Reports shall be in the form specified by the IEPA and on forms provided by the IEPA. These forms shall be submitted to the IEPA monthly with the DMRs and covering the same reporting period as the DMRs. Parameters (other than flow frequency), if required in this Permit, shall be sampled and reported as indicated in the transmittal letter for such report forms.

12. A public notification program in accordance with Section II.B.8 of the federal CSO Control Policy of 1994 shall be developed employing a process that actively informs the affected public. The program shall include at a minimum public notification of CSO occurrences and CSO impacts, with consideration given to including mass media and/or Internet notification. The Permittee shall also consider posting signs in waters likely to be impacted by CSO discharges at the point of discharge and at points where these waters are used for primary contact recreation. Provisions shall be made to include modifications of the program when necessary and notification to any additional member of the affected public. The program shall be presented to the general public at a public information meeting conducted by the Permittee. The Permittee shall conduct the public information meeting within nine (9) months of the effective date of this Permit. The Permittee shall submit documentation that the public information meeting was held, shall submit a summary of all significant issues raised by the public and the Permittee's response to each issue and shall identify any modifications to the program as a result of the public information meeting. The Permittee shall submit the public information meeting documentation to the IEPA and implement the public notification program within twelve (12) months of the effective date of this Permit. The Permittee shall submit copies of the public notification program to the IEPA upon written request.

13. If any of the CSO discharge points listed in this Special Condition are eliminated, or if additional CSO discharge points, not listed in this Special Condition, are discovered, the Permittee shall notify the IEPA in writing within one (1) month of the respective outfall elimination or discovery. Such notification shall be in the form of a request for the appropriate modification of this NPDES Permit.

Summary of Compliance Dates in this CSO Special Condition

14. The following summarizes the dates that submittals contained in this Special Condition are due at the IEPA (unless otherwise indicated):

| | |
|---|---|
| Submission of CSO Monitoring Data (Paragraph 11) | 15th of every month |
| Elimination of a CSO or Discovery of Additional CSO Locations (Paragraph 13) | 1 month from discovery or elimination |
| Control (or Justification for No Control) of CSOs to Sensitive Areas (Paragraph 7) | 3 months from IEPA notification |
| Certification of Sewer Use Ordinance Review (Paragraph 9) | 6 months from the effective date of this Permit |
| Implement Post-Construction Monitoring Plan (Paragraph 10) **No Submittal Due with this Milestone** | 6 months from the date of IEPA plan approval |
| Conduct Pollution Prevention, OMP, Post-Construction Monitoring Plan and PN Public Information Meeting (Paragraphs, 6, 8, 10 and 12) **No Submittal Due with this Milestone** | 9 months from the effective date of this Permit |
| Submit Pollution Prevention Certification, OMP Certification, Post-Construction Monitoring Plan and PN Information Meeting Summary (Paragraphs, 6, 8, 10 and 12) | 12 months from the effective date of this Permit |
| Submit CSO Long-Term Control Plan (Paragraph 10) | 12 months from the date of IEPA notification |
| Submit Results of Post-Construction Monitoring Plan (Paragraph 10) | 30 months from the date of IEPA plan approval |

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All submittals listed in this Special Condition can be mailed to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: CSO Coordinator, Compliance Assurance Section

All submittals hand carried shall be delivered to 1021 North Grand Avenue East.

Reopening and Modifying this Permit

15. The IEPA may initiate a modification for this Permit at any time to include requirements and compliance dates which have been submitted in writing by the Permittee and approved by the IEPA, or other requirements and dates which are necessary to carry out the provisions of the Illinois Environmental Protection Act, the Clean Water Act, or regulations promulgated under those Acts. Public Notice of such modifications and opportunity for public hearing shall be provided.

SPECIAL CONDITION 15. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

ompleted Discharge Monitoring Report forms shall be submitted to IEPA no later than the 15th day of the following month, unless otherwise specified by the permitting authority.

Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 16. The Permittee has collected data in support of developing a site-specific metals translator for nickel and zinc. The IEPA has reviewed the sample data and has revised effluent limitations for these parameters based on the metal translator determined from the collected data.

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SPECIAL CONDITION 17.

Project Description: Compliance with Nickel and Zinc Water Quality Standards

Thirty-six (36) months from the effective date of this Permit the following nickel and zinc limits and monitoring requirements found on page two of this permit shall become effective:

| | Load Limits lbs/day DAF (DMF)* | | Concentration Limits mg/L | |
|---|---|---|---|---|
| | Monthly Avg. | Daily Max. | Monthly Avg. | Daily Max. |
| Zinc | 26 (78) | 142 (434) | 0.075 | 0.416 |
| Nickel | 5.1 (16) | | 0.015 | |

*Load limits based on design maximum flow shall apply only when flow exceeds the design average flow.

The Permittee shall complete the project described above in accordance with the following schedule:

| | | |
|---|---|---|
| (1) | Interim Report on effluent and stream sampling to date and what measures are necessary to comply with Final Nickel and Zinc Limitations | 6 months from the effective date of this Permit |
| (2) | Interim Report | 12 months from the effective date of this Permit |
| (3) | Interim Report | 18 months from the effective date of this Permit |
| (4) | Interim Report | 24 months from the effective date of this Permit |
| (5) | Interim Report | 30 months from the effective date of this Permit |
| (6) | Permittee Achieves Compliance with Final Nickel and Zinc Effluent Limitations | 36 months from the effective date of this Permit |

This Permit may be modified, with Public Notice, to include revised compliance dates set out in this Permit that are superseded or supplemented by compliance dates in judicial orders, Pollution Control Board orders or grant agreements. Prior to such permit modification, the revised dates in the appropriate orders or grant agreements shall govern the Permittee's compliance.

In addition, the IEPA may initiate a modification of the construction schedule set forth in this Permit at any time, to include other dates which are necessary to carry out the provisions of the Illinois Environmental Protection Act, the Federal Clean Water Act or regulations promulgated under those Acts or compliance dates which have been submitted in writing by the Permittee and approved by the IEPA. Public Notice of such modifications and opportunity for public hearing shall be provided consistent with 40 CFR § 122.63.

REPORTING

The Permittee shall submit a report no later than fourteen (14) days following the completion dates indicated for each numbered item in the compliance schedule, indicating, a) the date the item was completed, or b) that the item was not completed. All reports shall be submitted to IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

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SPECIAL CONDITION 18.

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)**

1. A storm water pollution prevention plan shall be developed by the permittee and submitted to the Agency for each facility covered by this permit. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. An electronic copy of the plan shall be submitted to the Agency at the following email address: epa.indilr00swppp@illinois.gov. The permittee shall submit any modified plan to the Agency, when such modification includes substantive changes to the plan or modification is made to the plan for compliance with this permit.

   a. Waters not classified as Impaired pursuant to Section 303(d) of the Clean Water Act

      Unless otherwise specified by federal regulation, the storm water pollution prevention plan shall be designed for a storm event equal to or greater than a 25-year 24-hour rainfall event.

   b. Waters classified as Impaired pursuant to Section 303(d) of the Clean Water Act

      For any site which discharges directly to an impaired water identified in the Agency's 303(d) listing, and if any parameter in the subject discharge has been identified as the cause of impairment, the storm water pollution prevention plan shall be designed for a storm event equal to or greater than a 25-year 24-hour rainfall event. If required by federal regulations, the storm water pollution prevention plan shall adhere to a more restrictive design criteria.

2 Plans for new facilities shall be completed prior to submitting an NOI to be covered under this permit. An electronic copy of the storm water pollution prevention plan shall be submitted to the Agency at the following email address: epa.indilr00swppp@illinois.gov. Plans shall provide for compliance with the terms of this permit prior to operation of any industrial activity to be covered under this permit. [Note: If the plan has already been required to be developed under a previous permit it shall be maintained in accordance with all requirements of this special condition.]. The owner or operator of an existing facility with storm water discharges covered by his permit shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

3. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a revised plan to the Agency, with the requested changes that have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

4. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph E.8.of this permit indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within 30 days of any proposed construction or operational changes at the facility, and shall be submitted to the Agency.

5. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:

   a. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate. Any map or portion of map may be withheld for security reasons.

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b. A site map showing:

i. The storm water conveyance and discharge structures;

ii. An outline of the storm water drainage areas for each storm water discharge point;

iii. Paved areas and buildings;

iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates;

v. Location of existing or future storm water structural control measures/practices (dikes, coverings, detention facilities, etc.);

vi. Surface water locations and/or municipal storm drain locations;

vii. Areas of existing and potential soil erosion;

viii. Vehicle service areas;

ix. Material loading, unloading, and access areas;

x. Areas under Items iv and ix above may be withheld from the site map for security reasons.

c. A narrative description of the following:

i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

iii. Existing or future structural and non-structural control measures/practices to reduce pollutants in storm water discharges;

iv. Industrial storm water discharge treatment facilities;

v. Methods of onsite storage and disposal of significant materials.

d. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities. Also provide a list of any pollutant that is listed as impaired in the most recent 303(d) report.

e. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

f. A summary of existing sampling data describing pollutants in storm water discharges.

6. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

a. Storm Water Pollution Prevention Personnel - Identification by job titles, direct telephone numbers and email addresses of the individuals who are responsible for developing, implementing, and revising the plan.

b. Preventive Maintenance - Procedures and frequencies for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

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c. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

d. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill cleanup equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

e. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff. To the maximum extent practicable, storm water discharged from any area where material handling equipment
or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water should not enter vegetated areas or surface waters or infiltrate into the soil unless adequate treatment is provided.

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges.

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges.

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination. Minimize the quantity of storm water entering areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water using green infrastructure techniques where practicable in the areas outside the exposure area, and otherwise divert storm water away from the exposure area.

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

vii. Mercury Switch Removal and Recycling – Mercury-containing convenience lighting switches and anti-lock brake assemblies shall be removed from vehicles, and recycled in an approved manner, in a way which prevents mercury from entering the storm water discharges.

viii. Storm Water Reduction – Install vegetation on roofs of buildings within and adjacent to the exposure area to detain and evapotranspirate runoff where the precipitation falling on the roof is not exposed to contaminants, to minimize storm water runoff; capture storm water in devices that minimize the amount of storm water runoff and use this water as appropriate based on quality.

f. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion. The plan shall describe measures to limit erosion.

g. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

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.. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

7. Non-Storm water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Except as provided in C.1. b., discharges not comprised entirely of storm water are not authorized by this permit.

8. Quarterly Visual Observation of Discharges – The requirements and procedures for quarterly visual observations are applicable to all facilities covered under this permit, regardless of your sector of industrial activity.

   a. You must perform and document a quarterly visual observation of a storm water discharge associated with industrial activity from each outfall. The visual observation must be made during daylight hours. If no storm event resulted in runoff during daylight hours from the facility during a monitoring quarter, you are excused from the visual observation requirement for that quarter, provided you document in your records that no runoff occurred. You must sign and certify the documentation.

   b. Your visual observation must be made on samples collected as soon as practical, but not to exceed 1 hour of when the runoff or snowmelt begins discharging from your facility. All samples must be collected from a storm event discharge that is greater than 0.1 inch in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The observation must document: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. If visual observations indicate any unnatural color, odor, turbidity, floatable material, oil sheen or other indicators of storm water pollution, the permittee shall obtain a sample and monitor for the parameter or the list of pollutants in Part E.5.d.

      You must maintain your visual observation reports onsite with the SWPPP. The report must include the observation date and time, inspection personnel, nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

   d. You may exercise a waiver of the visual observation requirement at a facility that is inactive and unstaffed, as long as there are no industrial materials or activities exposed to storm water. If you exercise this waiver, you must maintain a certification with your SWPPP stating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to storm water.

   e. Representative Outfalls – If your facility has two or more outfalls that you believe discharge substantially identical effluents, based on similarities of the industrial activities, significant materials, size of drainage areas, and storm water management practices occurring within the drainage areas of the outfalls, you may conduct visual observation of the discharge at just one of the outfalls and report that the results also apply to the substantially identical outfall(s).

   f. The visual observation documentation shall be made available to the Agency and general public upon written request.

9. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

10. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

11. The plan is considered a report that shall be available to the public at any reasonable time upon request.

Special Conditions

12. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

13. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirements imposed by the operator of the municipal system.

## REPORTING

1. The facility shall submit an electronic copy of the annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part 9 of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s). The annual inspection report is considered a public document that shall be available to the public at any reasonable time upon request.

2. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

3. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

4. The permittee shall retain the annual inspection report on file at least 3 years. This period may be extended by request of the Illinois Environmental Protection Agency at any time.

Annual inspection reports shall be submitted to the following email and office addresses: epa.indannualinsp@illinois.gov

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section #19
Annual Inspection Report
P.O. Box 19276
Springfield, Illinois 62794-9276

5. Any permittee shall notify any regulated small municipal separate storm water system owner (MS4 Community) that they have received coverage of a general ILR00 permit. The permittee shall submit any SWPPP or any annual inspection to the MS4 community upon request by the MS4 community.

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24 Hour Composite Sample means a combination of at least 8 sample aliquots of at least 200 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 200 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.



(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. This period may be extended by request of the Agency at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.

(a) **Application.** All permit applications shall be signed as follows:

(1) **For a corporation:** by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;

(2) **For a partnership or sole proprietorship:** by a general partner or the proprietor, respectively; or

(3) **For a municipality, State, Federal, or other public agency:** by either a principal executive officer or ranking elected official.

(b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – ( 217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

**Memorandum**



**DATE:** **9 November 2006**

**TO:** **Ralph Hahn**

**FROM:** **Scott Twait** ST

**SUBJECT:** **Water Quality Based Effluent Limits**
**Decatur Sanitary District NPDES #IL0028321 (Macon County)**

The subject facility discharges to the Sangamon River at a point where 0 cfs of flow exists upstream of the outfall during critical 7Q10 low-flow conditions. The Sangamon River is classified as a General Use Water and is rated a "C" stream under the Agency's Biological Stream Characterization (BSC) program. The Sangamon River, Waterbody Segment, E-09, is found on the 2006 Illinois 303(d) List. The uses impaired for this segment were aquatic life, fish consumption, and primary contact recreation. The potential causes of impairment given for the segment at that time were manganese, nitrogen (total), dissolved oxygen, PCBs, and fecal coliform. The potential sources associated with the impairment are crop production (crop land or dry land), industrial point source discharges, urban runoff/storm sewers, agriculture, combined sewer overflows, highway/road/bridge runoff (non-construction related), and source unknown.

Cadmium, Chromium (Trivalent), Copper, Lead, Nickel, and Zinc standards are based on hardness data collected at AWQMN station E-05, Sangamon River, SE of Niantic, with a critical hardness value of 242 mg/L as $CaCO_3$. Water quality standards identified in the table are expressed in units of mg/L. Dissolved metals standards have been converted to total metal except where noted. All data was provided by the discharger.

| Substance | Max. Eff. Conc. | No. of Samples | Multiply by | 95% Potential | Acute Standard | Chronic Standard | 302.208(g) standard | Further Analysis? |
|---|---|---|---|---|---|---|---|---|
| Arsenic | < 0.005 | 20 | 1.4 | 0.007 | 0.3600 | 0.1900 | - | No RP* |
| Barium | 0.064 | 20 | 1.4 | 0.0896 | - | - | 5.0 | No RP* |
| Cadmium | < 0.002 | 20 | 1.4 | 0.0028 | 0.0264 | 0.0023 | - | Yes |
| Chromium (Hex) | 0.039 | 20 | 1.4 | 0.0546 | 0.0160 | 0.0110 | - | Yes |
| Chromium (Total) | 0.026 | 20 | 1.4 | 0.0364 | 3.5812 | 0.4269 | - | No RP* |
| Cyanide (WAD) | 0.015 | 20 | 1.4 | 0.021 | 0.0220 | 0.0052 | - | Yes |
| Copper | 0.024 | 20 | 1.4 | 0.0336 | 0.0408 | 0.0252 | - | Yes |
| Fluoride | 1.83 | 20 | 1.4 | 2.562 | - | - | 1.4 | Yes |
| Iron (Dissolved) | 0.332 | 20 | 1.4 | 0.4648 | - | - | 1.0 | No RP* |
| Lead | 0.011 | 20 | 1.4 | 0.0154 | 0.2948 | 0.0618 | - | No RP* |
| Manganese | 0.039 | 20 | 1.4 | 0.0546 | - | - | 1.0 | No RP* |
| Mercury | < 0.0002 | 20 | 1.4 | 0.0003 | 0.0026 | 0.0013 | - | No RP* |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nickel | 0.028 | 20 | 1.4 | 0.0392 | 0.1743 | 0.0106 | - | Yes |
| Phenols | 0.005 | 20 | 1.4 | 0.007 | - | - | 0.1 | No RP* |
| Silver | 0.002 | 20 | 1.4 | 0.0028 | - | - | 0.005 | No RP* |
| Zinc | 0.418 | 20 | 1.4 | 0.5852 | 0.2583 | 0.0463 | - | Yes |
| Selenium | < 0.002 | 20 | 1.4 | 0.0028 | - | - | 1.0 | No RP* |
| Bis(2-ethylhexyl)phthalate | 0.036 | 5 | 2.3 | 0.0828 | 0.4 | 0.38 | - | No RP* |
| Bromoform | 0.076 | 5 | 2.3 | 0.1748 | - | - | - | No RP* |
| Chlorodibromomethane | 0.064 | 5 | 2.3 | 0.1472 | - | - | - | No RP* |
| Chloroform | 0.031 | 5 | 2.3 | 0.0713 | 1.9 | 0.15 | - | No RP* |
| Dichlorobromomethane | 0.026 | 5 | 2.3 | 0.0598 | 0.01 | 0.001 | - | Yes |
| Methylene chloride | 0.038 | 5 | 2.3 | 0.0874 | 17 | 1.4 | - | No RP* |

* No RP = no reasonable potential to exceed water quality standards.

** derived water quality criteria.

**Further Analysis:**

The Decatur Sanitary District met the permit required minimum detection level (MDL) for Cadmium, with no detections reported in twenty effluent samples. My conclusion is that no regulation of Cadmium is necessary and that no monitoring beyond the routine requirements is needed.

Chromium (Hex) was not detected in 19 of the twenty samples. The one sample that it was detected was greater than the Chromium total result. This was most likely a laboratory error. My conclusion is that no regulation of Chromium (Hex) is necessary and that no monitoring beyond the routine requirements is needed.

Cyanide (WAD) was not detected in 19 of the twenty samples. The one sample that it was detected was greater than the Cyanide total result. This was most likely a laboratory error. My conclusion is that no regulation of Cyanide (WAD) is necessary and that no monitoring beyond the routine requirements is needed.

There is no reasonable potential to exceed the acute water quality standard for Copper. The average of the Copper samples times the multiplier (0.0092 mg/L x 1.4 = 0.01288 mg/L) was less than the chronic water quality standard. My conclusion is that no regulation of Copper is necessary and that no monitoring beyond the routine requirements is needed.

The Decatur SD had a detection for Fluoride above the water quality standard in 2001 and has not had a detection above the water quality since. My conclusion is that 6 months of monitoring for Fluoride is necessary to determine if the Fluoride detection was representative of the discharge or if there was a lab or sampling error.

There is no reasonable potential to exceed the acute water quality standard for Nickel. The average of the Nickel samples times the multiplier (0.01652 mg/L x 1.4 = 0.02313 mg/L) was greater than the chronic water quality standard. Nickel should be regulated as a monthly average in the NPDES permit at the chronic water quality standard using the default metals translator.

Zinc has exceeded the acute and chronic water quality standards. Zinc should be regulated as a daily maximum and monthly average in the NPDES permit at the acute and chronic water quality standards respectively using the default metals translator.

The Decatur SD had a detection for Dichlorobromomethane above the water quality criteria. My conclusion is that 6 months of monitoring for Dichlorobromomethane is necessary to determine if the Dichlorobromomethane detection was representative of the discharge or if there was a lab or sampling error.

**Recommendations:**

Attached is a copy of the Ammonia Worksheet used to derive the appropriate water quality based effluent limits based on 35 IAC Part 355.

Given the predicted ambient conditions of the Sangamon River near the outfall, as determined using data collected at AWQMN station E-05, Sangamon River, SE of Niantic, monthly average limits of 1.6 mg/L (spring/fall), 1.3 mg/L (summer), and 4.0 mg/L (winter) are appropriate. The spring/fall limit is based on 75$^{th}$ percentile pH and the summer and winter limits are based on median pH.

Daily maximum limits of 8.1 mg/L (spring/fall), 8.6 mg/L (summer) and 9.6 mg/L (winter) are recommended. These limits reflect the seasonal acute water quality standards with no mixing allowance since the stream has no flow during 7Q10 conditions.

If applicable, weekly average limits of 3.9 mg/L (spring/fall) and 3.3 mg/L (summer) are appropriate. These values are based on 2.5 times the chronic limit. No weekly average limit for winter is recommended because the value would be higher than the daily maximum permit limit.

All available data collected by the discharger and the Agency has been evaluated. Because of the number of parameters that were sampled for in the routine monitoring of the permit, those parameters that were not detected were not included in this memorandum.

My evaluation of the metals and other substances given in the first table finds that water quality based permit limits are necessary for Nickel and Zinc at the limits below. To correctly evaluate potential to exceed water quality standards, a six-month monitoring condition is needed for Fluoride and Dichlorobromomethane. Permit limits identified in the table are expressed in units of mg/L.

| Substance | Daily Maximum | Monthly Average |
|---|---|---|
| Nickel | | 0.011 |
| Zinc | 0.258 | 0.046 |

The permittee should be informed that it is possible to use a site-specific metals translator for Nickel and Zinc in order to increase or eliminate any potential permit limit for these substances. Total and dissolved metal would need to be collected from the effluent and a downstream location once a week for twelve weeks to determine a metal translator for these substances. The availability of metals translators could demonstrate that no reasonable potential exists to exceed standards. The permittee should be encouraged to submit a study plan to the Standards Unit if they desire to pursue this course. A compliance schedule may be appropriate, allowing for time to perform the metals translator study.

According to Alyson Grady's September 15, 2006 memorandum, no biomonitoring is recommended as a permit condition other than the routine acute definitive testing with *Ceriodaphnia* and fathead minnow.

These recommendations reflect a water quality standards perspective only and should not be construed as being inclusive of all factors that must be taken into consideration by the permit writer.

Attachment

cc: Bob Mosher
Joe Koronkowski
Bill Ettinger
Chron

Exhibit 3


# Sanitary District of Decatur

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


December 20, 2007

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.

We appreciate the input received from Agency personnel at our meeting on October 30, 2007.

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

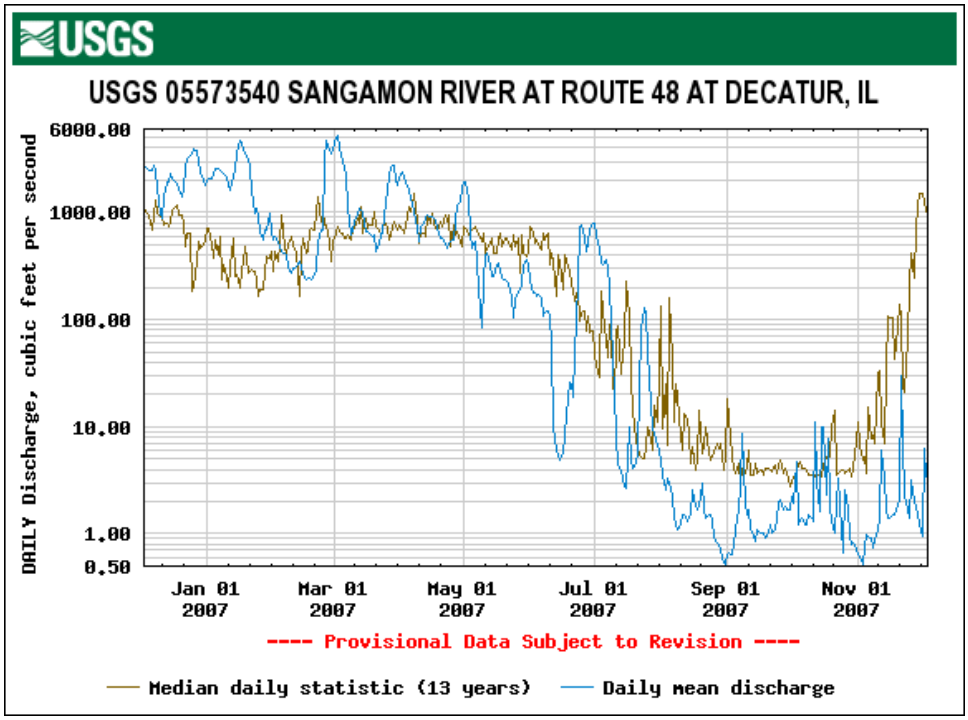
cc: Toby Frevert, DWPC Manager
Bob Mosher, DWPC Standards
Rick Pinneo, DWPC Permits

**Sanitary District of Decatur**
**Nickel and Zinc Limits**
**Interim Report on Effluent and Stream Sampling**
**December 2007**

The reissued NPDES permit for the Sanitary District of Decatur effective July 1, 2007 contains new limits for nickel and zinc and a two-year compliance schedule for meeting the limits. Special Condition 18 requires that an interim report covering "effluent and stream sampling to date, and what measures are necessary to comply with final nickel and zinc limitations" be submitted to Illinois EPA by January 1, 2008. A summary of information gathered and activities to date is provided below.

## Translator Study

A twelve-week translator study was completed between August and October 2007 as outlined in Special Condition 17 of the NPDES permit. This period of time coincided with seasonal low flows, and 2007 Sangamon River flows (especially August – October) were generally below historical averages based on USGS data.




A complete report of the translator study is attached.

## Hardness Sampling

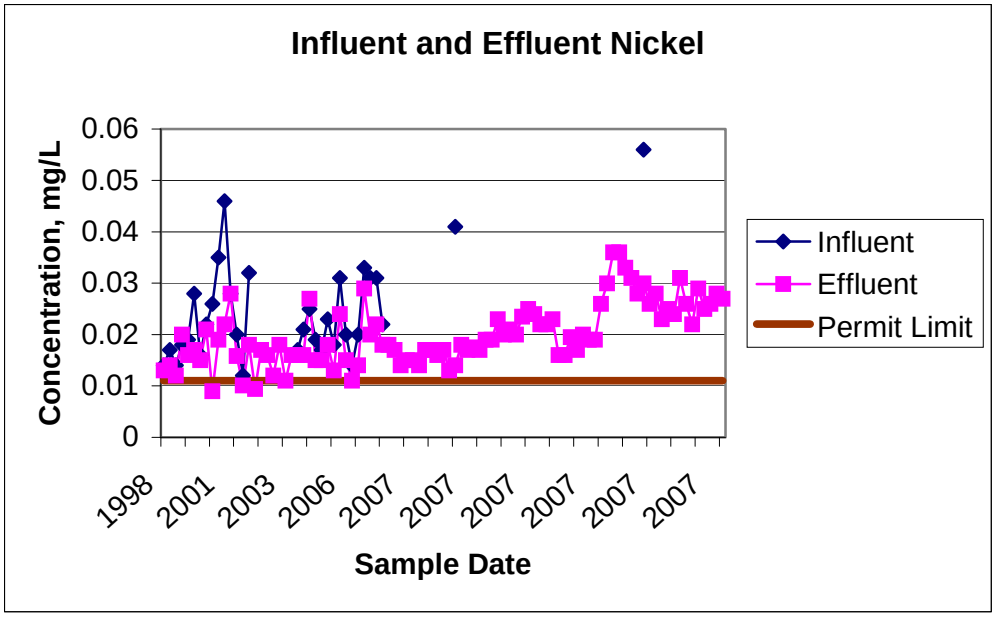
The hardness used by Illinois EPA for calculating the nickel and zinc limits was 242 mg/L according to the permit engineer's review notes. A summary of hardness data from

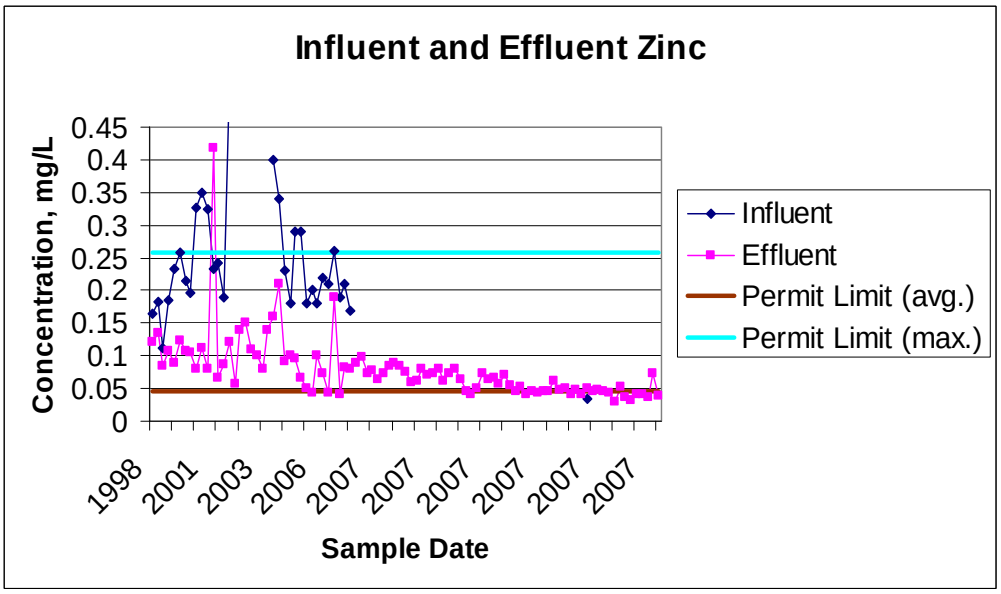
Sangamon River sampling between March and October 2007 is included in the translator study report.

**Plant Influent and Effluent Sampling**

Nickel and zinc have been included in quarterly plant influent and effluent sampling for many years. During 2007, effluent sampling frequency increased to twice weekly as part of the translator study. Ongoing influent and effluent sampling for nickel and zinc is planned to continue at a frequency of twice monthly.

A summary of influent and effluent values is shown below. Review of past data shows that the plant discharge would not be able to consistently meet the limits currently contained in the District's permit.



**Industrial Source Sampling**

Analyses for metals including nickel and zinc have been performed semi-annually as part of the District's industrial pretreatment program. Sampling of the major industries and other industries discharging metals will be increased to at least quarterly in 2008.

**Receiving Stream Sampling**

Upstream and downstream sampling at the locations described in the translator study will be continued at a twice monthly frequency to provide a more complete picture of nickel and zinc in the Sangamon River.

**Chronic WET Testing**

Chronic toxicity tests were conducted in July and September 2007. An additional chronic toxicity test using EDTA to chelate metals in the samples is planned for December 2007.

**Planned Activities**

Continuing meetings are planned with industrial users regarding potential reduction of metals in their discharges. As part of these discussions, an analysis is being conducted of local pretreatment limits that would be required to comply with nickel and zinc permit limits. Preliminary discussions have been held with our two largest industrial users, and meetings with their management personnel are being scheduled to occur in early January 2008. District personnel will continue to work closely with both of these users as well as smaller dischargers of nickel and zinc tributary to the treatment plant to determine what reductions are possible.

In addition, review of information that could potentially support a site-specific standard is ongoing. At the suggestion of Illinois EPA 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. District personnel intend to work closely with Illinois EPA and U.S. EPA Region 5 if the decision is made decide to pursue either of these options.

**Compliance Plan**

Based on current information, the measures necessary to comply with final nickel and zinc limitations will include a combination of the following:

1. Recalculation of NPDES permit limits based on the results of the translator study and low flow hardness analyses. The following limits are proposed calculated as shown in the study report:

| | Current Limit | Proposed Limit |
|---|---|---|
| Ni monthly average, mg/L | 0.011 | 0.019 |
| Zn monthly average, mg/L | 0.046 | 0.092 |
| Zn daily maximum, mg/L | 0.258 | 0.510 |

2. Recalculation of local pretreatment limits for nickel and zinc, and analysis of industrial discharge changes that would be needed to meet the limits.

3. Ongoing review and analysis of technical information that would be needed to support a site-specific water quality standard.

The next interim report will be submitted by July 1, 2008 as required by our NPDES permit.

# Sanitary District of Decatur Translator Study

## Objective:

To determine acute and chronic metals translators for Nickel and Zinc in the discharge from the Sanitary District of Decatur (SDD) main treatment plant final effluent. Our main reference for conduction of this study was "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion", US EPA, EPA823-B-96-007, June 1996.

## Approach:

We collected samples from the Sangamon River at the St. Louis Bridge (Upstream), the plant's final effluent (FE), Steven's Creek at West Main Street Bridge (creek that empties into Sangamon River just downstream of the plant final effluent) and the Sangamon River at the Wyckles Road Bridge (Downstream). (River flow will be taken from the United States Geological Survey (USGS) location at St. Louis Bridge). These samples were analyzed for temperature, hardness, pH, total suspended solids (TSS), total non purgeable organic carbon (NPTOC), total recoverable Nickel and Zinc, and dissolved Nickel and Zinc. Translators were calculated as the geometric mean of the ratios of dissolved metal to total recoverable metal for all usable data pairs for both the final effluent and downstream river sampling sites using data from August 1 to November 1, 2007 which was the period of sustained low flow for the Sangamon River upstream from the plant. Equipment and field blanks and duplicates were used to document data quality.

## Sample Types:

We sampled the SDD final effluent as it leaves the west end of the chlorine contact tank by using a continuous 24-hour automated sampler. We collected grab samples from the stream sites.

**Parameters :** **All metals analyses performed by TestAmerica (Chicago)**
**All other analyses performed in house**

| Parameter: | Analytical Method: | Sample Practice: | QA Requirements |
|---|---|---|---|
| Total Recoverable Nickel | 200.7 | Standard | Once weekly trip blanks & duplicates, lab. method blanks for batches, MS/MSD on some batches of samples. |
| Dissolved Nickel | 200.7 | Standard | Same as above |
| Total Recoverable Zinc | 200.7 | Standard | Same as above |
| Dissolved Zinc | 200.7 | Standard | Same as above |
| Volume of Flow in MGD | Metered | | Periodic meter calibration & manual measurements |
| Hardness | 130.1 | Standard | Once weekly trip blanks & duplicates, lab. method blanks for batches, MS/MSD on some batches of samples. |
| pH | 150.1 or 4500-H+ B | On site & lab. | Daily standardization of meters |
| TSS | 160.2 or 2540D | Standard | Standard lab. QA/QC |
| NPTOC | 5310C | Standard | Standard lab. QA/QC |

## Sampling Procedure

1. Given the low metals concentrations expected, extreme care was taken to ensure that samples were not contaminated during sample collection. *Neither smoking nor eating was permitted while on station, at any time when sample bottles were being handled, or during filtration.*
2. Each person on the field crew wore clean clothing, i.e., free of dirt, grease, etc. that could contaminate sampling apparatus or sample bottles.
3. An equipment blank was done periodically with the actual equipment used for the environmental samples. The field blank described in this section was performed with the sampling equipment BEFORE the environmental samples were collected. This blank served to verify equipment and sampling protocol cleanliness.
4. Each person handling sampling apparatus or sample bottles wore new disposable sampling gloves at each location. In the field, only one person handled sample bottles, and that person touched nothing else while collecting or transferring samples.
5. For a composite at the SDD FE, the sampler placed a specially cleaned sample bottle into the automatic sampler's refrigerator and started the sampler on Tuesday and Thursday mornings. A chain of custody form was started at that time, to be completed the following morning at the time of sample collection. On Wednesday and Friday mornings, the sampler capped the bottles and took them to the laboratory. Laboratory personnel filtered a portion of the sample for dissolved metals, and poured off a portion of the composite for total recoverable metals and hardness. Laboratory personnel also cleaned the composite sample bottles to prepare them for the next sample day. Laboratory personnel also took portions of the FE composite samples for TSS and TOC analyses.
6. The grab samples collected from the SDD's FE shall be analyzed just as they have for the river runs we have done in the past.
7. To collect the samples from the stream sites, two people were involved, both wearing clean clothing. The team gathered-up the coolers and sampling equipment and then oriented themselves with respect to the wind and current to minimize contamination. The non-sampling member of the team started a river run log sheet and collected temperature and appearance data.
8. The sampler held a metals-cleaned plastic pitcher and attached the rope to the pitcher. He lowered the pitcher into the water of the stream at a spot deep enough to allow the bottle to submerge completely without reaching the bottom. Care was taken not to disturb sediment on the bottom of the river. The sampler then pulled up the sample and took the pitcher and discarded the water off to the side where it would not contaminate or roil the water in the river. He then filled the sample bottle for transportation to the laboratory. When filling the sample bottles, ½ to 1 inch of air space was left at the top.
9. The sampler placed the capped sample bottle into a clean cooler.
10. A duplicate sample was collected in the same way as the original sample at either SDD FE or a stream site at least once per week. All bottles were properly marked with the locations they came from.
11. A field blank was collected by filling the sample jug with DI clean water and then pouring off the DI water as if it was a stream or effluent sample. A field blank was taken at a random location and day of the week once per week.
12. Samplers filled out a river run form while collecting samples and returned all samples to the SDD laboratory as soon as possible after collection. Samples were logged in at the

laboratory and custody was transferred to laboratory personnel. Lab personnel then filtered a portion of the sample for dissolved metals analyses and preserved the total recoverable and dissolved metals samples appropriately. Lab personnel completed the rest of the analytical and cleaning procedures.

13. Samples for metals and hardness analyses were held in the sample refrigerator in the SDD W. D. Hatfield Laboratory until Friday morning each week. Each Friday morning, samples were packed up in a cooler and covered with ice and sent to the appropriate contract laboratory for the metals analyses.
14. After analyses and cleaning procedures were complete in the laboratory, clean dry bottles and sampling apparatuses used for the metals samples were stored in a manner to prevent contamination prior to the next usage.

## Laboratory Equipment:

- Gelman filtering apparatus
- 1 L filter flasks (metals cleaned) for filtering samples for soluble metals
- Pall 0.45 um certified sterilized membrane filters for metals filtering
- Whatman 934-AH glass fiber filters for total suspended solids analysis
- Orion 520 pH meter
- Mettler AE200 analytical balance
- Star Model 100 Total Organic Carbon Analyzer
- TestAmerica used an inductively coupled plasma – optical emission spectrophotometer for all metals analyses
- Barnstead Nanopure II Type 1 grade water system (resistivity > 16.7 megohm-cm)
- VWR 1370-FM Laboratory Oven
- Assorted appropriately cleaned laboratory glassware

## Laboratory Reagents:

- Type 1 reagent grade water
- Mallinckrodt AR Nitric Acid
- VWR pH Buffers 4.0, 7.0, 10.0
- NPTOC calibration standards prepared from potassium acid pthalate
- NPTOC control standard prepared from sucrose
- Ricca ACS grade Sulfuric Acid

## Laboratory Analyses:

All laboratory analysis performed in house (pH, Total Suspended Solids, and Non Purgeable Total Organic Carbon) utilized district laboratory standard operating procedures which are in accordance with 40 CFR Part 136. All metals analyses performed by TestAmerica (Chicago) in accordance with 40 CFR Part 136.

## Data Analysis

The district's latest NPDES permit (issued in July 2007) included water quality based standards for Nickel and Zinc. This is due to the sanitary district discharging to the Sangamon River downstream from the Lake Decatur dam. This segment of the river has 0 cfs flow at critical 7Q10 low-flow conditions. The permit required a minimum 12 week study of dissolved and total metals concentration for samples taken of the district effluent and the Sangamon River downstream of the plant after complete mixing. We decided to perform a longer study during both high flow and low flow conditions. We also sampled from the Sangamon River upstream of the plant and Steven's Creek which empties into the Sangamon River just downstream of the plant discharge. This would help increase our understanding of the overall situation. Metals results during high flow conditions would enable us to see if any water quality standards were being violated downstream during this period. Metals results for low flow conditions would be used to calculate the translator and evaluate the hardness value used for the water quality standards calculation for the district effluent since this is the period of maximum concern. All data obtained during this study is attached as an appendix in an excel spreadsheet format.

Study results indicated essentially no Nickel and Zinc contribution from the Sangamon River upstream of the plant or Steven's Creek which means that the district's effluent is responsible for the levels of these metals in the river downstream of the plant. A summary of effluent and downstream river data follows :

| Month | Upstream Flow, cfs | Effluent Zn Dissolved, mg/l | Effluent Zn Total, mg/l | Downstream Zn Dissolved, mg/l | Downstream Zn Total, mg/l | Effluent Ni Dissolved, mg/l | Effluent Ni Total, mg/l | Downstream Ni Dissolved, mg/l | Downstream Ni Total, mg/l |
|---|---|---|---|---|---|---|---|---|---|
| March 2007 | 1304 | 0.083 | 0.085 | <0.012 | <0.011 | 0.016 | 0.016 | <0.0050 | <0.0050 |
| April 2007 | 1196 | 0.072 | 0.076 | <0.010 | <0.010 | 0.015 | 0.016 | <0.0050 | <0.0050 |
| May 2007 | 488 | 0.058 | 0.065 | <0.010 | <0.011 | 0.018 | 0.019 | <0.0050 | <0.0050 |
| June 2007 | 255 | 0.051 | 0.061 | <0.017 | 0.021 | 0.020 | 0.022 | 0.0081 | 0.0086 |
| July 2007 | 152 | 0.038 | 0.048 | <0.016 | <0.020 | 0.025 | 0.025 | 0.011 | 0.011 |
| August 2007 | 1.75 | 0.034 | 0.044 | 0.030 | 0.034 | 0.027 | 0.028 | 0.025 | 0.026 |
| September 2007 | 1.55 | 0.035 | 0.044 | 0.024 | 0.038 | 0.026 | 0.027 | 0.024 | 0.025 |
| October 2007 | 2.63 | 0.042 | 0.051 | 0.041 | 0.044 | 0.022 | 0.023 | 0.020 | 0.020 |

As can be seen, Nickel and Zinc levels in the downstream Sangamon River did not exhibit a discernable increase until June when river flow dropped to around 250 cfs. No chronic water quality based standard violations would have occurred in the river downstream until August of 2007 and this was for Nickel only. This would support the assertion that the low-flow period is the most critical in regard to these limits and therefore, data generated during this period would be most applicable to generation of the district water quality based effluent standards for these metals.

During this period, the most significant thing noted in addition to the dissolved to total metal ratios was that the river downstream hardness was significantly different from that used by the IEPA for the permit limit calculations. A critical hardness value of 242 mg/L as CaCO3 from a sample collected at AWQMN station E-05, Sangamon River, SE of Niantic. Our study indicated the hardness value at this critical period is significantly higher than that which would affect the

water quality based standard concentration. A summary of hardness data is as follows :

| Month | Upstream Flow, cfs | Effluent Hardness as $CaCO_3$, mg/L | Downstream Hardness as $CaCO_3$, mg/L |
|---|---|---|---|
| March 2007 | 1304 | 548 | 292 |
| April 2007 | 1196 | 540 | 308 |
| May 2007 | 488 | 505 | 304 |
| June 2007 | 255 | 497 | 346 |
| July 2007 | 152 | 544 | 373 |
| August 2007 | 1.75 | 518 | 521 |
| September 2007 | 1.55 | 488 | 473 |
| October 2007 | 2.63 | 445 | 414 |

As can be seen by the preceding tables, upstream river flow was at it's lowest from August to October 2007. Therefore, the twelve week period from August 2 to November 1 was used to calculate the nickel and zinc translators and mean downstream hardness. Summary data is included in the following tables :

| Sample Date | Plant Effluent Total Hardness mg/L | River Downstream Total Hardness mg/L |
|---|---|---|
| 8/2/2007 | 523 | 509 |
| 8/7/2007 | 552 | 544 |
| 8/9/2007 | 557 | 540 |
| 8/14/2007 | 542 | 546 |
| 8/16/2007 | 507 | 585 |
| 8/21/2007 | 503 | 480 |
| 8/23/2007 | 489 | 483 |
| 8/28/2007 | 499 | 479 |
| 8/30/2007 | 489 | 524 |
| 9/4/2007 | 547 | 543 |
| 9/6/2007 | 496 | 554 |
| 9/11/2007 | 428 | 369 |
| 9/13/2007 | 465 | 429 |
| 9/18/2007 | 457 | 446 |
| 9/20/2007 | 489 | 454 |
| 9/25/2007 | 518 | 512 |
| 9/27/2007 | 501 | 480 |
| 10/2/2007 | 471 | 462 |
| 10/4/2007 | 428 | 344 |
| 10/9/2007 | 485 | 462 |
| 10/11/2007 | 502 | 521 |
| 10/16/2007 | 321 | 167 |
| 10/18/2007 | 301 | 314 |
| 10/23/2007 | 408 | 412 |
| 10/25/2007 | 481 | 429 |
| 10/30/2007 | 527 | 495 |
| 11/1/2007 | 526 | 534 |
| **Geometric Mean :** | **477** | **456** |

| Sample Date | Plant Effluent Dissolved Zinc mg/L | Plant Effluent Total Zinc mg/L | Plant Effluent Dissolved/ Total Ratio | River Downstream Dissolved Zinc mg/L | River Downstream Total Zinc mg/L | River Downstream Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|
| 8/2/2007 | 0.032 | 0.042 | 0.762 | 0.027 | 0.021 | 1.000 |
| 8/7/2007 | 0.036 | 0.048 | 0.750 | 0.015 | 0.023 | 0.652 |
| 8/9/2007 | 0.029 | 0.041 | 0.707 | 0.020 | 0.025 | 0.800 |
| 8/14/2007 | 0.044 | 0.050 | 0.880 | 0.036 | 0.044 | 0.818 |
| 8/16/2007 | 0.038 | 0.045 | 0.844 | 0.043 | 0.044 | 0.977 |
| 8/21/2007 | ND1 | 0.049 | | 0.032 | 0.034 | 0.941 |
| 8/23/2007 | ND1 | 0.046 | | 0.035 | 0.038 | 0.921 |
| 8/28/2007 | 0.036 | 0.0425 | 0.847 | 0.046 | 0.050 | 0.920 |
| 8/30/2007 | 0.026 | 0.030 | 0.867 | 0.019 | 0.028 | 0.679 |
| 9/4/2007 | 0.037 | 0.053 | 0.698 | 0.053 | 0.061 | 0.869 |
| 9/6/2007 | 0.030 | 0.037 | 0.811 | 0.024 | 0.030 | 0.800 |
| 9/11/2007 | 0.027 | 0.031 | 0.871 | 0.022 | 0.0245 | 0.898 |
| 9/13/2007 | 0.031 | 0.042 | 0.738 | 0.018 | 0.024 | 0.750 |
| 9/18/2007 | 0.037 | 0.042 | 0.881 | 0.049 | 0.055 | 0.891 |
| 9/20/2007 | 0.031 | 0.037 | 0.838 | 0.024 | 0.027 | 0.889 |
| 9/25/2007 | 0.059 | 0.0725 | 0.814 | 0.020 | 0.026 | 0.769 |
| 9/27/2007 | 0.030 | 0.038 | 0.789 | 0.048 | 0.054 | 0.889 |
| 10/2/2007 | 0.044 | 0.049 | 0.898 | 0.019 | 0.024 | 0.792 |
| 10/4/2007 | 0.031 | 0.033 | 0.939 | 0.017 | 0.021 | 0.810 |
| 10/9/2007 | 0.031 | 0.038 | 0.816 | 0.058 | 0.063 | 0.921 |
| 10/11/2007 | 0.036 | 0.043 | 0.837 | 0.023 | 0.030 | 0.767 |
| 10/16/2007 | 0.028 | 0.049 | 0.571 | 0.073 | 0.044 | 1.000 |
| 10/18/2007 | 0.037 | 0.062 | 0.597 | 0.047 | 0.060 | 0.783 |
| 10/23/2007 | 0.054 | 0.0655 | 0.824 | 0.075 | 0.087 | 0.862 |
| 10/25/2007 | 0.089 | 0.096 | 0.927 | 0.033 | 0.041 | 0.805 |
| 10/30/2007 | 0.037 | 0.039 | 0.949 | 0.031 | 0.035 | 0.886 |
| 11/1/2007 | 0.036 | 0.038 | 0.947 | 0.032 | 0.035 | 0.914 |
| **Geometric Mean :** | | | **0.810** | | | **0.847** |

indicates Cd/Ct set to 1 since dissolved result was higher than the total as per US EPA The Metals Translator : Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criterion, Appendix C, p.48.

ND1 = matrix interference(Na)

| Sample Date | Plant Effluent Dissolved Nickel mg/L | Plant Effluent Total Nickel mg/L | Plant Effluent Dissolved/ Total Ratio | River Downstream Dissolved Nickel mg/L | River Downstream Total Nickel mg/L | River Downstream Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|
| 8/2/2007 | 0.033 | 0.033 | 1.000 | 0.027 | 0.027 | 1.000 |
| 8/7/2007 | 0.029 | 0.031 | 0.935 | 0.024 | 0.027 | 0.889 |
| 8/9/2007 | 0.027 | 0.028 | 0.964 | 0.026 | 0.026 | 1.000 |
| 8/14/2007 | 0.029 | 0.030 | 0.967 | 0.030 | 0.0295 | 1.000 |
| 8/16/2007 | 0.025 | 0.026 | 0.962 | 0.027 | 0.029 | 0.931 |
| 8/21/2007 | 0.028 | 0.027 | 1.000 | 0.021 | 0.021 | 1.000 |
| 8/23/2007 | ND1 | 0.023 | | 0.022 | 0.022 | 1.000 |
| 8/28/2007 | 0.023 | 0.025 | 0.920 | 0.025 | 0.024 | 1.000 |
| 8/30/2007 | 0.025 | 0.024 | 1.000 | 0.023 | 0.024 | 0.958 |
| 9/4/2007 | 0.029 | 0.031 | 0.935 | 0.029 | 0.030 | 0.967 |
| 9/6/2007 | 0.027 | 0.026 | 1.000 | 0.028 | 0.029 | 0.966 |
| 9/11/2007 | 0.022 | 0.022 | 1.000 | 0.018 | 0.0175 | 1.000 |
| 9/13/2007 | 0.027 | 0.029 | 0.931 | 0.021 | 0.022 | 0.955 |
| 9/18/2007 | 0.025 | 0.025 | 1.000 | 0.026 | 0.026 | 1.000 |
| 9/20/2007 | 0.025 | 0.026 | 0.962 | 0.023 | 0.024 | 0.958 |
| 9/25/2007 | 0.026 | 0.028 | 0.929 | 0.025 | 0.026 | 0.962 |
| 9/27/2007 | 0.025 | 0.027 | 0.926 | 0.026 | 0.027 | 0.963 |
| 10/2/2007 | 0.027 | 0.026 | 1.000 | 0.023 | 0.023 | 1.000 |
| 10/4/2007 | 0.024 | 0.024 | 1.000 | 0.018 | 0.018 | 1.000 |
| 10/9/2007 | 0.022 | 0.026 | 0.846 | 0.023 | 0.024 | 0.958 |
| 10/11/2007 | 0.022 | 0.024 | 0.917 | 0.023 | 0.024 | 0.958 |
| 10/16/2007 | 0.017 | 0.018 | 0.944 | 0.011 | 0.0088 | 1.000 |
| 10/18/2007 | 0.014 | 0.015 | 0.933 | 0.015 | 0.016 | 0.938 |
| 10/23/2007 | 0.020 | 0.0205 | 0.976 | 0.020 | 0.021 | 0.952 |
| 10/25/2007 | 0.026 | 0.027 | 0.963 | 0.019 | 0.020 | 0.950 |
| 10/30/2007 | 0.024 | 0.024 | 1.000 | 0.022 | 0.022 | 1.000 |
| 11/1/2007 | 0.023 | 0.023 | 1.000 | 0.022 | 0.023 | 0.957 |
| **Geometric Mean :** | | | **0.961** | | | **0.972** |

indicates Cd/Ct set to 1 since dissolved result was higher than the total as per US EPA The Metals Translator : Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criterion, Appendix C, p.48.

ND1 = matrix interference(Na)

An attempt was also made to calculate the translators using an alternative method involving the levels of TSS. This was found to be of very poor correlation.

Using the experimental data obtained during low flow conditions, we made these calculations of Zinc and Nickel water quality standards for our effluent.

Table Excerpt from Title 35; Subtitle C; Chapter I; Part 302 Water Quality Standards (IPCB)

| Constituent | STORET Number | AS (µg/L) | CS (µg/L) |
|---|---|---|---|
| Zinc (dissolved) | 01090 | *exp[A+Bln(H)] X 0.978**, where A=0.9035 and B=0.8473 | *Exp[A+Bln(H)] X 0.986**, where A=-0.8165 and B=0.8473 |
| | | ACUTE | CHRONIC |
| Nickel (dissolved) | 01065 | *exp[A+Bln(H)] X 0.998**, where A=0.5173 and B=0.8460 | *exp[A+Bln(H)] X 0.997**, where A=-2.286 and B=0.8460 |
| | | ACUTE | CHRONIC |

Zinc (dissolved) chronic = Exp[(-.8165)+0.8473(ln(Hardness mg/L)] X 0.986
= (Exp[(-.8165)+0.8473(ln(456 mg/L)] X 0.986) ÷ (1000 ug/mg)
= 0.078 mg/L x (1/Zn translator) to convert to total metal
= 0.078 mg/L x (1/0.847)
= 0.092 mg/L for Total Zinc

Zinc (dissolved) acute = Exp[(0.9035)+0.8473(ln(Hardness mg/L)] X 0.978
= (Exp[(0.9035)+0.8473(ln(456 mg/L)] X 0.978) ÷ (1000 ug/mg)
= 0.432 mg/L
= 0.432 mg/L x (1/Zn translator) to convert to total metal
= 0.432 mg/L x (1/0.847)
= 0.510 mg/L for Total Zinc

Nickel (dissolved) chronic = Exp[(-2.286)+0.8460(ln(Hardness mg/L)] X 0.997
= (Exp[(-2.286)+0.8460(ln(456 mg/L)] X 0.997) ÷ (1000 ug/mg)
= 0.018 mg/L
= 0.018 mg/L x (1/Ni translator) to convert to total metal
= 0.018 mg/L x (1/0.972)
= 0.019 mg/L for Total Nickel

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Study Advisors: Gary Hornickel, Technical Director
Tim Kluge, Technical Director

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River

Supplementary Analytical data



| Sample Date | River Upstream pH, S.U. | Plant Effluent pH, S.U. | Steven's Creek pH, S.U. | River Downstream pH, S.U. | River Upstream T.S.S. mg/L | Plant Effluent T.S.S. mg/L | Steven's Creek T.S.S. mg/L | River Downstream T.S.S. mg/L | River Upstream P.O.C. mg/L | Plant Effluent P.O.C. mg/L | Steven's Creek P.O.C. mg/L | River Downstream P.O.C. mg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/20/2007 | 8.31 | 8.01 | 8.11 | 8.21 | 25 | 6.8 | 99 | 25 | 9.8 | 19 | 13 | 11 |
| 3/22/2007 | 8.36 | 8.03 | 8.13 | 8.21 | 23 | 4.0 | 10 | 22 | 12 | 18 | 13 | 12 |
| 3/27/2007 | 8.61 | 8.09 | 8.09 | 8.54 | 24 | 4.4 | 21 | 31 | 8.3 | 16 | 8.9 | 9.1 |
| 3/29/2007 | 8.37 | 8.01 | 8.11 | 8.37 | 33 | 4.6 | 38 | 35 | 9.6 | 19 | 9.3 | 9.5 |
| 4/3/2007 | 8.21 | 7.92 | 8.03 | 8.16 | 25 | 7.6 | 58 | 33 | 13 | 16 | 11 | 11 |
| 4/5/2007 | 8.33 | 7.98 | 8.17 | 8.28 | 26 | 6.2 | 19 | 25 | 10 | 17 | 10 | 11 |
| 4/10/2007 | 8.42 | 7.91 | 8.17 | 8.30 | 9.0 | 6.4 | 7.0 | 9.0 | 8.7 | 15 | 8.9 | 9.2 |
| 4/17/2007 | 8.62 | 7.93 | 8.13 | 8.52 | 13 | 3.8 | 11 | 15 | 8.7 | 15 | 9.6 | 9.9 |
| 4/19/2007 | 8.52 | 8.03 | 8.19 | 8.45 | 17 | 3.6 | 7.5 | 20 | 10 | 20 | 9.0 | 9.9 |
| 4/24/2007 | 8.41 | 8.05 | 8.08 | 8.30 | 30 | 5.2 | 13 | 28 | 8.3 | 16 | 8.2 | 8.5 |
| 4/26/2007 | 8.43 | 7.96 | 8.00 | 8.22 | 26 | 4.4 | 36 | 33 | 7.9 | 17 | 9.0 | 8.9 |
| 5/1/2007 | 8.38 | 7.98 | 8.11 | 8.34 | 21 | 6.0 | 17 | 25 | 10 | 20 | 13 | 13 |
| 5/3/2007 | 8.25 | 7.99 | 8.04 | 8.26 | 28 | 6.6 | 16 | 26 | 13 | 23 | 14 | 15 |
| 5/8/2007 | 8.39 | 7.91 | 8.07 | 8.21 | 17 | 9.0 | 17 | 27 | 7.9 | 13 | 7.9 | 8.3 |
| 5/10/2007 | 8.33 | 8.05 | 8.06 | 8.10 | 19 | 7.0 | 23 | 29 | 8.9 | 14 | 8.4 | 9.0 |
| 5/15/2007 | 8.60 | 7.85 | 8.05 | 8.39 | 19 | 8.4 | 22 | 21 | 9.4 | 19 | 10 | 11 |
| 5/17/2007 | 8.57 | 7.99 | 8.17 | 8.35 | 21 | 6.6 | 44 | 30 | 11 | 17 | 10 | 11 |
| 5/22/2007 | 8.47 | 7.93 | 8.14 | 8.26 | 25 | 8.8 | 32 | 29 | 12 | 13 | 11 | 11 |
| 5/24/2007 | 8.44 | 7.98 | 8.20 | 8.22 | 28 | 5.8 | 33 | 29 | 12 | 17 | 9.5 | 9.7 |
| 5/29/2007 | 8.57 | 7.95 | 8.18 | 8.38 | 22 | 4.6 | 35 | 25 | 13 | 21 | 14 | 15 |
| 5/31/2007 | 8.39 | 7.89 | 8.24 | 7.96 | 17 | 4.2 | 34 | 25 | 16 | 22 | 15 | 15 |
| 6/5/2007 | 8.25 | 8.03 | 8.12 | 8.10 | 23 | 5.6 | 35 | 27 | 14 | 20 | 12 | 13 |
| 6/7/2007 | 8.40 | 7.98 | 8.19 | 8.17 | 25 | 7.2 | 30 | 29 | 12 | 27 | 9.7 | 12 |
| 6/12/2007 | 8.42 | 8.04 | 8.21 | 8.08 | 21 | 7.8 | 20 | 24 | 13 | 27 | 14 | 17 |
| 6/14/2007 | 8.20 | 7.97 | 8.25 | 8.11 | 23 | 7.0 | 23 | 23 | 15 | 22 | 14 | 19 |
| 6/19/2007 | 7.74 | 7.95 | 7.89 | 7.95 | 28 | 8.4 | 23 | 20 | 15 | 21 | 19 | 21 |
| 6/21/2007 | 8.21 | 8.05 | 8.01 | 7.99 | 32 | 9.6 | 18 | 20 | 15 | 25 | 16 | 19 |
| 6/26/2007 | 8.39 | 7.95 | 7.97 | 8.17 | 19 | 4.6 | 93 | 6.0 | 11 | 22 | 13 | 12 |
| 6/28/2007 | 8.15 | 7.92 | 7.92 | 8.02 | 29 | 7.4 | 120 | 66 | 9.4 | 19 | 12 | 11 |
| 7/3/2007 | 8.57 | 8.02 | 8.16 | 8.46 | 27 | 6.2 | 44 | 34 | 13 | 26 | 14 | 14 |
| 7/5/2007 | 8.39 | 7.94 | 8.05 | 8.21 | 26 | 7.8 | 35 | 38 | 12 | 26 | 12 | 14 |
| 7/10/2007 | 8.39 | 8.01 | 8.16 | 8.08 | 26 | 5.8 | 20 | 27 | 14 | 22 | 13 | 15 |
| 7/12/2007 | 8.24 | 8.03 | 8.14 | 8.05 | 31 | 5.8 | 15 | 21 | 14 | 24 | 14 | 16 |
| 7/17/2007 | 7.87 | 7.94 | 8.12 | 8.02 | 22 | 7.6 | 11 | 15 | 15 | 16 | 16 | 18 |
| 7/19/2007 | 7.60 | 8.01 | 7.95 | 7.95 | 10 | 6.8 | 8.0 | 13 | 24 | 27 | 20 | 22 |
| 7/24/2007 | 8.80 | 8.05 | 8.15 | 8.40 | 29 | 6.2 | 6.0 | 24 | 13 | 21 | 14 | 15 |
| 7/26/2007 | 8.69 | 8.04 | 8.11 | 8.45 | 24 | 7.0 | 8.0 | 26 | 13 | 22 | 13 | 15 |

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River

Supplementary Analytical data



| Sample Date | River Upstream pH, S.U. | Plant Effluent pH, S.U. | Steven's Creek pH, S.U. | River Downstream pH, S.U. | River Upstream T.S.S. mg/L | Plant Effluent T.S.S. mg/L | Steven's Creek T.S.S. mg/L | River Downstream T.S.S. mg/L | River Upstream P.O.C. mg/L | Plant Effluent P.O.C. mg/L | Steven's Creek P.O.C. mg/L | River Downstream P.O.C. mg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/31/2007 | 8.47 | 8.01 | 7.99 | 7.99 | 17 | 9.8 | 6.0 | 18 | 13 | 17 | 14 | 14 |
| 8/2/2007 | 8.34 | 8.03 | 7.93 | 7.96 | 22 | 5.2 | 4.5 | 14 | 14 | 17 | 13 | 16 |
| 8/7/2007 | 7.98 | 8.08 | 7.94 | 8.01 | 21 | 10 | 3.5 | 11 | 12 | 22 | 14 | 18 |
| 8/9/2007 | 8.06 | 8.08 | 7.94 | 8.01 | 17 | 12 | 4.0 | 14 | 15 | 21 | 15 | 20 |
| 8/14/2007 | 8.03 | 8.16 | 7.93 | 8.07 | 24 | 3.4 | 5.5 | 14 | 13 | 18 | 13 | 17 |
| 8/16/2007 | 8.01 | 8.17 | 7.97 | 8.15 | 13 | 7.2 | 3.5 | 17 | 14 | 20 | 14 | 20 |
| 8/21/2007 | 7.81 | 8.14 | 7.88 | 8.07 | 18 | 9.0 | 7.0 | 10 | 16 | 24 | 16 | 18 |
| 8/23/2007 | 8.13 | 8.11 | 7.95 | 8.09 | 18 | 2.0 | 4.5 | 8.0 | 16 | 26 | 16 | 21 |
| 8/28/2007 | 8.16 | 8.16 | 7.94 | 8.14 | 26 | 3.6 | 4.0 | 13 | 12 | 20 | 11 | 14 |
| 8/30/2007 | 8.16 | 8.18 | 7.96 | 8.09 | 23 | 4.0 | 5.0 | 11 | 14 | 24 | 12 | 15 |
| 9/4/2007 | 8.25 | 8.19 | 8.02 | 8.17 | 19 | 8.4 | 5.5 | 11 | 11 | 18 | 12 | 15 |
| 9/6/2007 | 8.11 | 8.20 | 8.00 | 8.09 | 28 | 4.4 | 4.0 | 11 | 14 | 18 | 13 | 17 |
| 9/11/2007 | 7.62 | 8.22 | 7.72 | 8.10 | 12 | 1.2 | 15 | 6.0 | 12 | 21 | 16 | 19 |
| 9/13/2007 | 7.77 | 7.77 | 7.85 | 8.10 | 14 | 4.2 | 4.5 | 12 | 13 | 23 | 15 | 18 |
| 9/18/2007 | 7.96 | 8.36 | 8.02 | 8.14 | 12 | 2.8 | 4.0 | 10 | 14 | 20 | 13 | 17 |
| 9/20/2007 | 7.97 | 8.26 | 7.97 | 8.15 | 18 | 3.4 | 4.0 | 15 | 14 | 23 | 14 | 19 |
| 9/25/2007 | 7.90 | 8.32 | 7.93 | 8.15 | 17 | 2.2 | 3.0 | 13 | NR | NR | NR | NR |
| 9/27/2007 | 8.01 | 8.26 | 7.95 | 8.19 | 20 | 3.0 | 5.0 | 11 | NR | NR | NR | NR |
| 10/2/2007 | 8.16 | 8.30 | 8.07 | 8.14 | 18 | 4.2 | 8.0 | 14 | 24 | 58 | 36 | 50 |
| 10/4/2007 | 7.73 | 8.29 | 7.63 | 8.01 | 22 | 3.2 | 12 | 15 | 23 | 58 | 20 | 46 |
| 10/9/2007 | 7.61 | 8.17 | 7.65 | 8.13 | 16 | 3.2 | 7.0 | 16 | 19 | 53 | 24 | 51 |
| 10/11/2007 | 7.69 | 8.04 | 7.85 | 8.11 | 13 | 2.8 | 3.0 | 9.0 | 23 | 48 | 28 | 47 |
| 10/16/2007 | 7.67 | 7.99 | 7.76 | 7.89 | 34 | 6.2 | 160 | 71 | 14 | 40 | 18 | 24 |
| 10/18/2007 | 7.65 | 8.08 | 7.74 | 7.96 | 34 | 21 | 58 | 37 | 18 | 41 | 18 | 41 |
| 10/23/2007 | 7.79 | 8.13 | 7.90 | 8.07 | 26 | 5.2 | 10 | 17 | 20 | 47 | 27 | 47 |
| 10/25/2007 | 7.72 | 8.05 | 7.79 | 8.11 | 12 | 5.0 | 4.0 | 12 | 23 | 57 | 22 | 46 |
| 10/30/2007 | 7.59 | 8.09 | 7.83 | 8.06 | 7.0 | 2.8 | 2.0 | 6.0 | 25 | 59 | 27 | 59 |
| 11/1/2007 | 7.65 | 8.04 | 7.84 | 8.02 | 8.0 | 2.0 | 1.0 | 5.0 | 27 | 61 | 32 | 58 |

NR = no results due to TOC unit being down

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River

Nickel Analytical data



| Sample Date | River Upstream Dissolved Nickel mg/L | Plant Effluent Dissolved Nickel mg/L | Steven's Creek Dissolved Nickel mg/L | River Downstream Dissolved Nickel mg/L | River Upstream Total Nickel mg/L | Plant Effluent Total Nickel mg/L | Steven's Creek Total Nickel mg/L | River Downstream Total Nickel mg/L | Plant Effluent Dissolved/ Total Ratio | River Downstream Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/20/2007 | <0.0050 | 0.018 | <0.0050 | <0.0050 | <0.0050 | 0.018 | <0.0050 | <0.0050 | 1.000 | |
| 3/22/2007 | <0.0050 | 0.017 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 1.000 | |
| 3/27/2007 | <0.0050 | 0.014 | <0.0050 | <0.0050 | <0.0050 | 0.014 | <0.0050 | <0.0050 | 1.000 | |
| 3/29/2007 | <0.0050 | 0.014 | <0.0050 | <0.0050 | <0.0050 | 0.015 | <0.0050 | <0.0050 | 0.933 | |
| 4/3/2007 | <0.0050 | 0.015 | <0.0050 | <0.0050 | <0.0050 | 0.015 | <0.0050 | <0.0050 | 1.000 | |
| 4/5/2007 | <0.0050 | 0.014 | <0.0050 | <0.0050 | <0.0050 | 0.014 | <0.0050 | <0.0050 | 1.000 | |
| 4/10/2007 | <0.0050 | 0.017 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 1.000 | |
| 4/17/2007 | <0.0050 | 0.016 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 0.941 | |
| 4/19/2007 | <0.0050 | 0.016 | <0.0050 | <0.0050 | <0.0050 | 0.016 | <0.0050 | <0.0050 | 1.000 | |
| 4/24/2007 | <0.0050 | 0.016 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 0.941 | |
| 4/26/2007 | <0.0050 | 0.012 | <0.0050 | <0.0050 | <0.0050 | 0.013 | <0.0050 | <0.0050 | 0.923 | |
| 5/1/2007 | <0.0050 | 0.014 | <0.0050 | <0.0050 | 0.0051 | 0.014 | <0.0050 | <0.0050 | 1.000 | |
| 5/3/2007 | <0.0050 | 0.016 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 0.941 | |
| 5/8/2007 | <0.0050 | 0.017 | <0.0050 | <0.0050 | <0.0050 | 0.0175 | <0.0050 | <0.0050 | 0.971 | |
| 5/10/2007 | <0.0050 | 0.014 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 0.824 | |
| 5/15/2007 | <0.0050 | 0.018 | <0.0050 | <0.0050 | <0.0050 | 0.019 | <0.0050 | <0.0050 | 0.947 | |
| 5/17/2007 | <0.0050 | 0.019 | <0.0050 | <0.0050 | <0.0050 | 0.019 | <0.0050 | <0.0050 | 1.000 | |
| 5/22/2007 | <0.0050 | 0.022 | <0.0050 | <0.0050 | <0.0050 | 0.023 | <0.0050 | <0.0050 | 0.957 | |
| 5/24/2007 | <0.0050 | 0.021 | <0.0050 | <0.0050 | <0.0050 | 0.020 | <0.0050 | <0.0050 | 1.000 | |
| 5/29/2007 | <0.0050 | 0.021 | <0.0050 | <0.0050 | <0.0050 | 0.021 | <0.0050 | <0.0050 | 1.000 | |
| 5/31/2007 | <0.0050 | 0.020 | <0.0050 | <0.0050 | <0.0050 | 0.020 | <0.0050 | <0.0050 | 1.000 | |
| 6/5/2007 | <0.0050 | 0.022 | <0.0050 | <0.0050 | <0.0050 | 0.0235 | <0.0050 | <0.0050 | 0.936 | |
| 6/7/2007 | <0.0050 | 0.024 | <0.0050 | <0.0050 | <0.0050 | 0.025 | <0.0050 | 0.0051 | 0.960 | |
| 6/12/2007 | <0.0050 | 0.023 | <0.0050 | 0.0085 | <0.0050 | 0.024 | <0.0050 | 0.010 | 0.958 | |
| 6/14/2007 | <0.0050 | 0.021 | <0.0050 | 0.012 | <0.0050 | 0.022 | <0.0050 | 0.013 | 0.955 | |
| 6/19/2007 | <0.0050 | 0.021 | <0.0050 | 0.011 | <0.0050 | 0.022 | <0.0050 | 0.012 | 0.955 | |
| 6/21/2007 | <0.0050 | 0.022 | <0.0050 | 0.013 | <0.0050 | 0.023 | <0.0050 | 0.014 | 0.957 | |
| 6/26/2007 | <0.0050 | 0.015 | <0.0050 | <0.0050 | <0.0050 | 0.016 | <0.0050 | <0.0050 | 0.938 | |
| 6/28/2007 | <0.0050 | 0.016 | <0.0050 | <0.0050 | <0.0050 | 0.016 | <0.0050 | <0.0050 | 1.000 | |
| 7/3/2007 | <0.0050 | 0.018 | <0.0050 | <0.0050 | <0.0050 | 0.0195 | <0.0050 | <0.0050 | 0.923 | |
| 7/5/2007 | <0.0050 | 0.017 | <0.0050 | <0.0050 | <0.0050 | 0.017 | <0.0050 | <0.0050 | 1.000 | |
| 7/10/2007 | <0.0050 | 0.020 | <0.0050 | 0.0061 | <0.0050 | 0.020 | <0.0050 | 0.0071 | 1.000 | |
| 7/12/2007 | <0.0050 | 0.020 | <0.0050 | 0.010 | <0.0050 | 0.019 | <0.0050 | 0.011 | 1.000 | |
| 7/17/2007 | <0.0050 | 0.018 | <0.0050 | 0.015 | <0.0050 | 0.019 | <0.0050 | 0.016 | 0.947 | |
| 7/19/2007 | <0.0050 | 0.026 | <0.0050 | 0.015 | <0.0050 | 0.026 | <0.0050 | 0.016 | 1.000 | |
| 7/24/2007 | <0.0050 | 0.033 | <0.0050 | 0.0058 | <0.0050 | 0.030 | <0.0050 | 0.0067 | 1.000 | |

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River

Nickel Analytical data

| Sample Date | River Upstream Dissolved Nickel mg/L | Plant Effluent Dissolved Nickel mg/L | Steven's Creek Dissolved Nickel mg/L | River Downstream Dissolved Nickel mg/L | River Upstream Total Nickel mg/L | Plant Effluent Total Nickel mg/L | Steven's Creek Total Nickel mg/L | River Downstream Total Nickel mg/L | Plant Effluent Dissolved/ Total Ratio | River Downstream Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/26/2007 | <0.0050 | 0.035 | <0.0050 | 0.0068 | <0.0050 | 0.036 | <0.0050 | 0.0079 | 0.972 | |
| 7/31/2007 | <0.0050 | 0.035 | <0.0050 | 0.027 | <0.0050 | 0.036 | <0.0050 | 0.027 | 0.972 | |
| 8/2/2007 | <0.0050 | 0.033 | <0.0050 | 0.027 | <0.0050 | 0.033 | <0.0050 | 0.027 | 1.000 | 1.000 |
| 8/7/2007 | <0.0050 | 0.029 | <0.0050 | 0.024 | <0.0050 | 0.031 | <0.0050 | 0.027 | 0.935 | 0.889 |
| 8/9/2007 | <0.0050 | 0.027 | <0.0050 | 0.026 | <0.0050 | 0.028 | <0.0050 | 0.026 | 0.964 | 1.000 |
| 8/14/2007 | <0.0050 | 0.029 | <0.0050 | 0.030 | <0.0050 | 0.030 | <0.0050 | 0.0295 | 0.967 | 1.000 |
| 8/16/2007 | <0.0050 | 0.025 | <0.0050 | 0.027 | <0.0050 | 0.026 | <0.0050 | 0.029 | 0.962 | 0.931 |
| 8/21/2007 | <0.0050 | 0.028 | <0.0050 | 0.021 | <0.0050 | 0.027 | <0.0050 | 0.021 | 1.000 | 1.000 |
| 8/23/2007 | <0.0050 | ND1 | <0.0050 | 0.022 | <0.0050 | 0.023 | <0.0050 | 0.022 | [redacted] | 1.000 |
| 8/28/2007 | <0.0050 | 0.023 | <0.0050 | 0.025 | <0.0050 | 0.025 | <0.0050 | 0.024 | 0.920 | 1.000 |
| 8/30/2007 | <0.0050 | 0.025 | <0.0050 | 0.023 | <0.0050 | 0.024 | <0.0050 | 0.024 | 1.000 | 0.958 |
| 9/4/2007 | <0.0050 | 0.029 | <0.0050 | 0.029 | <0.0050 | 0.031 | <0.0050 | 0.030 | 0.935 | 0.967 |
| 9/6/2007 | <0.0050 | 0.027 | <0.0050 | 0.028 | <0.0050 | 0.026 | <0.0050 | 0.029 | 1.000 | 0.966 |
| 9/11/2007 | <0.0050 | 0.022 | <0.0050 | 0.018 | <0.0050 | 0.022 | <0.0050 | 0.0175 | 1.000 | 1.000 |
| 9/13/2007 | <0.0050 | 0.027 | <0.0050 | 0.021 | <0.0050 | 0.029 | <0.0050 | 0.022 | 0.931 | 0.955 |
| 9/18/2007 | <0.0050 | 0.025 | <0.0050 | 0.026 | <0.0050 | 0.025 | <0.0050 | 0.026 | 1.000 | 1.000 |
| 9/20/2007 | <0.0050 | 0.025 | <0.0050 | 0.023 | <0.0050 | 0.026 | <0.0050 | 0.024 | 0.962 | 0.958 |
| 9/25/2007 | <0.0050 | 0.026 | <0.0050 | 0.025 | <0.0050 | 0.028 | <0.0050 | 0.026 | 0.929 | 0.962 |
| 9/27/2007 | <0.0050 | 0.025 | <0.0050 | 0.026 | <0.0050 | 0.027 | <0.0050 | 0.027 | 0.926 | 0.963 |
| 10/2/2007 | <0.0050 | 0.027 | <0.0050 | 0.023 | <0.0050 | 0.026 | <0.0050 | 0.023 | 1.000 | 1.000 |
| 10/4/2007 | <0.0050 | 0.024 | <0.0050 | 0.018 | <0.0050 | 0.024 | 0.011 | 0.018 | 1.000 | 1.000 |
| 10/9/2007 | <0.0050 | 0.022 | <0.0050 | 0.023 | <0.0050 | 0.026 | <0.0050 | 0.024 | 0.846 | 0.958 |
| 10/11/2007 | <0.0050 | 0.022 | <0.0050 | 0.023 | <0.0050 | 0.024 | <0.0050 | 0.024 | 0.917 | 0.958 |
| 10/16/2007 | <0.0050 | 0.017 | <0.0050 | 0.011 | <0.0050 | 0.018 | 0.0055 | 0.0088 | 0.944 | 1.000 |
| 10/18/2007 | <0.0050 | 0.014 | <0.0050 | 0.015 | <0.0050 | 0.015 | <0.0050 | 0.016 | 0.933 | 0.938 |
| 10/23/2007 | <0.0050 | 0.020 | <0.0050 | 0.020 | <0.0050 | 0.0205 | <0.0050 | 0.021 | 0.976 | 0.952 |
| 10/25/2007 | <0.0050 | 0.026 | <0.0050 | 0.019 | <0.0050 | 0.027 | <0.0050 | 0.020 | 0.963 | 0.950 |
| 10/30/2007 | <0.0050 | 0.024 | <0.0050 | 0.022 | <0.0050 | 0.024 | <0.0050 | 0.022 | 1.000 | 1.000 |
| 11/1/2007 | <0.0050 | 0.023 | <0.0050 | 0.022 | <0.0050 | 0.023 | <0.0050 | 0.023 | 1.000 | 0.957 |

ND1 = matrix interference(Na)

| | |
|---|---|
| Effluent Ni trans Aug 2 to Nov 1 (geo mean) | 0.961 |
| Downstream Ni trans Aug 2 to Nov 1 (geo mean) | 0.972 |

indicates Cd/Ct set to 1 since dissolved result was higher than the total as per US EPA The Metals Translator : Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criterion, Appendix C, p.48.

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River

Zinc Analytical data

| Sample Date | River Upstream Dissolved Zinc mg/L | Plant Effluent Dissolved Zinc mg/L | Steven's Creek Dissolved Zinc mg/L | River Downstream Dissolved Zinc mg/L | River Upstream Total Zinc mg/L | Plant Effluent Total Zinc mg/L | Steven's Creek Total Zinc mg/L | River Downstream Total Zinc mg/L | Plant Effluent Dissolved/ Total Ratio | River Downstream Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/20/2007 | <0.010 | 0.087 | <0.010 | <0.010 | <0.010 | 0.090 | 0.027 | 0.011 | 0.967 | |
| 3/22/2007 | <0.010 | 0.10 | <0.010 | 0.016 | <0.010 | 0.099 | <0.010 | 0.011 | 1.000 | |
| 3/27/2007 | <0.010 | 0.072 | <0.010 | <0.010 | <0.010 | 0.074 | <0.010 | 0.0125 | 0.973 | |
| 3/29/2007 | <0.010 | 0.074 | <0.010 | <0.010 | <0.010 | 0.078 | 0.010 | <0.010 | 0.949 | |
| 4/3/2007 | <0.010 | 0.063 | <0.010 | <0.010 | <0.010 | 0.063 | <0.010 | <0.010 | 1.000 | |
| 4/5/2007 | <0.010 | 0.067 | <0.010 | <0.010 | <0.010 | 0.072 | <0.010 | <0.010 | 0.931 | |
| 4/10/2007 | <0.010 | 0.084 | <0.010 | <0.010 | 0.039 | 0.0855 | <0.010 | <0.010 | 0.982 | |
| 4/17/2007 | <0.010 | 0.079 | <0.010 | <0.010 | <0.010 | 0.088 | <0.010 | <0.010 | 0.898 | |
| 4/19/2007 | <0.010 | 0.078 | <0.010 | <0.010 | <0.010 | 0.085 | <0.010 | <0.010 | 0.918 | |
| 4/24/2007 | <0.010 | 0.066 | <0.010 | <0.010 | <0.010 | 0.076 | <0.010 | <0.010 | 0.868 | |
| 4/26/2007 | <0.010 | 0.066 | <0.010 | <0.010 | <0.010 | 0.060 | <0.010 | <0.010 | 1.000 | |
| 5/1/2007 | <0.010 | 0.058 | <0.010 | <0.010 | <0.010 | 0.061 | <0.010 | <0.010 | 0.951 | |
| 5/3/2007 | <0.010 | 0.067 | <0.010 | <0.010 | <0.010 | 0.071 | <0.010 | <0.010 | 0.944 | |
| 5/8/2007 | <0.010 | 0.072 | <0.010 | <0.010 | <0.010 | 0.074 | <0.010 | <0.010 | 0.973 | |
| 5/10/2007 | <0.010 | 0.058 | <0.010 | <0.010 | <0.010 | 0.080 | <0.010 | 0.012 | 0.725 | |
| 5/15/2007 | <0.010 | 0.054 | <0.010 | <0.010 | <0.010 | 0.061 | <0.010 | <0.010 | 0.885 | |
| 5/17/2007 | <0.010 | 0.066 | <0.010 | <0.010 | <0.010 | 0.072 | <0.010 | <0.010 | 0.917 | |
| 5/22/2007 | <0.010 | 0.068 | <0.010 | <0.010 | <0.010 | 0.081 | <0.010 | 0.012 | 0.840 | |
| 5/24/2007 | <0.010 | 0.062 | <0.010 | <0.010 | <0.010 | 0.065 | 0.011 | 0.015 | 0.954 | |
| 5/29/2007 | <0.010 | 0.040 | <0.010 | <0.010 | <0.010 | 0.045 | <0.010 | 0.011 | 0.889 | |
| 5/31/2007 | <0.010 | 0.037 | <0.010 | <0.010 | <0.010 | 0.042 | <0.010 | <0.010 | 0.881 | |
| 6/5/2007 | <0.010 | 0.041 | <0.010 | <0.010 | <0.010 | 0.0495 | <0.010 | 0.011 | 0.828 | |
| 6/7/2007 | <0.010 | 0.063 | <0.010 | 0.012 | <0.010 | 0.074 | <0.010 | 0.018 | 0.851 | |
| 6/12/2007 | <0.010 | 0.059 | <0.010 | 0.018 | <0.010 | 0.065 | <0.010 | 0.024 | 0.908 | |
| 6/14/2007 | <0.010 | 0.058 | <0.010 | 0.025 | <0.010 | 0.066 | <0.010 | 0.032 | 0.879 | |
| 6/19/2007 | <0.010 | 0.051 | <0.010 | 0.019 | 0.012 | 0.058 | <0.010 | 0.0235 | 0.879 | |
| 6/21/2007 | <0.010 | 0.060 | <0.010 | 0.029 | 0.087 | 0.071 | <0.010 | 0.034 | 0.845 | |
| 6/26/2007 | <0.010 | 0.040 | <0.010 | <0.010 | <0.010 | 0.055 | 0.0145 | 0.014 | 0.727 | |
| 6/28/2007 | <0.010 | 0.037 | <0.010 | <0.010 | <0.010 | 0.046 | 0.021 | 0.014 | 0.804 | |
| 7/3/2007 | <0.010 | 0.036 | 0.016 | <0.010 | <0.010 | 0.0515 | <0.010 | <0.010 | 0.699 | |
| 7/5/2007 | <0.010 | 0.030 | <0.010 | <0.010 | <0.010 | 0.040 | <0.010 | <0.010 | 0.750 | |
| 7/10/2007 | <0.010 | 0.038 | 0.066 | 0.010 | <0.010 | 0.046 | <0.010 | 0.022 | 0.826 | |
| 7/12/2007 | <0.010 | 0.038 | <0.010 | 0.019 | <0.010 | 0.044 | <0.010 | 0.031 | 0.864 | |
| 7/17/2007 | <0.010 | 0.035 | <0.010 | 0.022 | <0.010 | 0.045 | <0.010 | 0.0295 | 0.778 | |
| 7/19/2007 | <0.010 | 0.038 | <0.010 | 0.022 | <0.010 | 0.045 | <0.010 | 0.026 | 0.844 | |
| 7/24/2007 | <0.010 | 0.050 | <0.010 | <0.010 | <0.010 | 0.061 | <0.010 | 0.014 | 0.820 | |

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River
Zinc Analytical data

| Sample Date | River Upstream Dissolved Zinc mg/L | Plant Effluent Dissolved Zinc mg/L | Steven's Creek Dissolved Zinc mg/L | River Downstream Dissolved Zinc mg/L | River Upstream Total Zinc mg/L | Plant Effluent Total Zinc mg/L | Steven's Creek Total Zinc mg/L | River Downstream Total Zinc mg/L | Plant Effluent Dissolved/ Total Ratio | River Downstream Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/26/2007 | <0.010 | 0.038 | <0.010 | <0.010 | <0.010 | 0.049 | <0.010 | 0.014 | 0.776 | |
| 7/31/2007 | <0.010 | 0.042 | <0.010 | 0.017 | <0.010 | 0.0505 | <0.010 | 0.022 | 0.832 | |
| 8/2/2007 | <0.010 | 0.032 | <0.010 | 0.027 | <0.010 | 0.042 | <0.010 | 0.021 | 0.762 | 1.000 |
| 8/7/2007 | <0.010 | 0.036 | <0.010 | 0.015 | <0.010 | 0.048 | <0.010 | 0.023 | 0.750 | 0.652 |
| 8/9/2007 | <0.010 | 0.029 | <0.010 | 0.020 | <0.010 | 0.041 | <0.010 | 0.025 | 0.707 | 0.800 |
| 8/14/2007 | <0.010 | 0.044 | <0.010 | 0.036 | <0.010 | 0.050 | <0.010 | 0.044 | 0.880 | 0.818 |
| 8/16/2007 | <0.010 | 0.038 | <0.010 | 0.043 | <0.010 | 0.045 | <0.010 | 0.044 | 0.844 | 0.977 |
| 8/21/2007 | <0.010 | ND1 | 0.011 | 0.032 | <0.010 | 0.049 | QC1 | 0.034 | | 0.941 |
| 8/23/2007 | <0.010 | ND1 | <0.010 | 0.035 | <0.010 | 0.046 | <0.010 | 0.038 | | 0.921 |
| 8/28/2007 | <0.010 | 0.036 | <0.010 | 0.046 | <0.010 | 0.0425 | <0.010 | 0.050 | 0.847 | 0.920 |
| 8/30/2007 | <0.010 | 0.026 | <0.010 | 0.019 | <0.010 | 0.030 | <0.010 | 0.028 | 0.867 | 0.679 |
| 9/4/2007 | <0.010 | 0.037 | <0.010 | 0.053 | <0.010 | 0.053 | <0.010 | 0.061 | 0.698 | 0.869 |
| 9/6/2007 | <0.010 | 0.030 | <0.010 | 0.024 | <0.010 | 0.037 | <0.010 | 0.030 | 0.811 | 0.800 |
| 9/11/2007 | <0.010 | 0.027 | <0.010 | 0.022 | <0.010 | 0.031 | <0.010 | 0.0245 | 0.871 | 0.898 |
| 9/13/2007 | <0.010 | 0.031 | <0.010 | 0.018 | <0.010 | 0.042 | <0.010 | 0.024 | 0.738 | 0.750 |
| 9/18/2007 | <0.010 | 0.037 | <0.010 | 0.049 | <0.010 | 0.042 | <0.010 | 0.055 | 0.881 | 0.891 |
| 9/20/2007 | <0.010 | 0.031 | <0.010 | 0.024 | <0.010 | 0.037 | <0.010 | 0.027 | 0.838 | 0.889 |
| 9/25/2007 | <0.010 | 0.059 | <0.010 | 0.020 | <0.010 | 0.0725 | <0.010 | 0.026 | 0.814 | 0.769 |
| 9/27/2007 | <0.010 | 0.030 | <0.010 | 0.048 | <0.010 | 0.038 | <0.010 | 0.054 | 0.789 | 0.889 |
| 10/2/2007 | <0.010 | 0.044 | <0.010 | 0.019 | 0.0175 | 0.049 | <0.010 | 0.024 | 0.898 | 0.792 |
| 10/4/2007 | <0.010 | 0.031 | <0.010 | 0.017 | 0.010 | 0.033 | 0.064 | 0.021 | 0.939 | 0.810 |
| 10/9/2007 | <0.010 | 0.031 | <0.010 | 0.058 | <0.010 | 0.038 | <0.010 | 0.063 | 0.816 | 0.921 |
| 10/11/2007 | <0.010 | 0.036 | <0.010 | 0.023 | <0.010 | 0.043 | <0.010 | 0.030 | 0.837 | 0.767 |
| 10/16/2007 | <0.010 | 0.028 | <0.010 | 0.073 | 0.033 | 0.049 | 0.050 | 0.044 | 0.571 | 1.000 |
| 10/18/2007 | <0.010 | 0.037 | <0.010 | 0.047 | 0.022 | 0.062 | 0.016 | 0.060 | 0.597 | 0.783 |
| 10/23/2007 | <0.010 | 0.054 | <0.010 | 0.075 | <0.010 | 0.0655 | <0.010 | 0.087 | 0.824 | 0.862 |
| 10/25/2007 | <0.010 | 0.089 | <0.010 | 0.033 | <0.010 | 0.096 | <0.010 | 0.041 | 0.927 | 0.805 |
| 10/30/2007 | <0.010 | 0.037 | <0.010 | 0.031 | <0.010 | 0.039 | <0.010 | 0.035 | 0.949 | 0.886 |
| 11/1/2007 | <0.010 | 0.036 | <0.010 | 0.032 | <0.010 | 0.038 | <0.010 | 0.035 | 0.947 | 0.914 |

QC1 = QC problem (see QC worksheet)
ND1 = matrix interference(Na)

Effluent Zn trans Aug 2 to Nov 1 (geo mean) 0.810

Downstream Zn trans Aug 2 to Nov 1 (geo mean) 0.847

indicates Cd/Ct set to 1 since dissolved result was higher than the total as per US EPA The Metals Translator : Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criterion, Appendix C, p.48.

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River
Hardness Analytical data



| Sample Date | River Upstream Total Hardness mg/L | Plant Effluent Total Hardness mg/L | Steven's Creek Total Hardness mg/L | River Downstream Total Hardness mg/L |
|---|---|---|---|---|
| 3/20/2007 | 248 | 526 | 341 | 265 |
| 3/22/2007 | 259 | 589 | 341 | 298 |
| 3/27/2007 | 296 | 567 | 353 | 309 |
| 3/29/2007 | 302 | 509 | 351 | 297 |
| 4/3/2007 | 255 | 501 | 340 | 273 |
| 4/5/2007 | 275 | 537 | 355 | 288 |
| 4/10/2007 | 296 | 561 | 380 | 306 |
| 4/17/2007 | 310 | 580 | 375 | 336 |
| 4/19/2007 | 308 | 563 | 364 | 328 |
| 4/24/2007 | 311 | 579 | 384 | 318 |
| 4/26/2007 | 282 | 459 | 290 | 306 |
| 5/1/2007 | 287 | 534 | 365 | 294 |
| 5/3/2007 | 307 | 599 | 394 | 311 |
| 5/8/2007 | 294 | 528 | 360 | 299 |
| 5/10/2007 | 281 | 530 | 363 | 321 |
| 5/15/2007 | 282 | 452 | 365 | 306 |
| 5/17/2007 | 278 | 455 | 346 | 302 |
| 5/22/2007 | 255 | 521 | 399 | 303 |
| 5/24/2007 | 259 | 474 | 384 | 334 |
| 5/29/2007 | 259 | 500 | 365 | 294 |
| 5/31/2007 | 256 | 452 | 277 | 276 |
| 6/5/2007 | 274 | 516 | 364 | 310 |
| 6/7/2007 | 271 | 535 | 364 | 322 |
| 6/12/2007 | 303 | 509 | 365 | 386 |
| 6/14/2007 | 310 | 508 | 379 | 441 |
| 6/19/2007 | 227 | 497 | 303 | 405 |
| 6/21/2007 | 247 | 572 | 306 | 418 |
| 6/26/2007 | 227 | 428 | 267 | 248 |
| 6/28/2007 | 229 | 409 | 236 | 235 |
| 7/3/2007 | 244 | 517 | 381 | 253 |
| 7/5/2007 | 249 | 469 | 310 | 266 |
| 7/10/2007 | 225 | 564 | 384 | 346 |
| 7/12/2007 | 255 | 552 | 374 | 446 |
| 7/17/2007 | 293 | 471 | 340 | 500 |
| 7/19/2007 | 194 | 555 | 254 | 433 |
| 7/24/2007 | 223 | 608 | 361 | 322 |

| Sample Date | River Upstream Total Hardness mg/L | Plant Effluent Total Hardness mg/L | Steven's Creek Total Hardness mg/L | River Downstream Total Hardness mg/L |
|---|---|---|---|---|
| 7/26/2007 | 213 | 613 | 361 | 309 |
| 7/31/2007 | 244 | 550 | 305 | 486 |
| 8/2/2007 | 256 | 523 | 323 | 509 |
| 8/7/2007 | 301 | 552 | 389 | 544 |
| 8/9/2007 | 308 | 557 | 403 | 540 |
| 8/14/2007 | 326 | 542 | 413 | 546 |
| 8/16/2007 | 333 | 507 | 440 | 585 |
| 8/21/2007 | 266 | 503 | 298 | 480 |
| 8/23/2007 | 277 | 489 | 350 | 483 |
| 8/28/2007 | 307 | 499 | 351 | 479 |
| 8/30/2007 | 318 | 489 | 388 | 524 |
| 9/4/2007 | 335 | 547 | 422 | 543 |
| 9/6/2007 | 338 | 496 | 403 | 554 |
| 9/11/2007 | 148 | 428 | 210 | 369 |
| 9/13/2007 | 191 | 465 | 237 | 429 |
| 9/18/2007 | 276 | 457 | 337 | 446 |
| 9/20/2007 | 267 | 489 | 341 | 454 |
| 9/25/2007 | 316 | 518 | 366 | 512 |
| 9/27/2007 | 287 | 501 | 387 | 480 |
| 10/2/2007 | 278 | 471 | 424 | 462 |
| 10/4/2007 | 238 | 428 | 129 | 344 |
| 10/9/2007 | 200 | 485 | 249 | 462 |
| 10/11/2007 | 230 | 502 | 273 | 521 |
| 10/16/2007 | 67 | 321 | 94 | 167 |
| 10/18/2007 | 126 | 301 | 142 | 314 |
| 10/23/2007 | 177 | 408 | 260 | 412 |
| 10/25/2007 | 226 | 481 | 196 | 429 |
| 10/30/2007 | 222 | 527 | 255 | 495 |
| 11/1/2007 | 234 | 526 | 267 | 534 |

| | |
|---|---|
| DS Hard Aug 2 to Nov 1 (geo mean) | 456 |

| | |
|---|---|
| Eff Hard Aug 2 to Nov 1 (geo mean) | 477 |

**Sanitary District of Decatur**

Study of Nickel and Zinc in plant final effluent and Sangamon River

Upstream River Flow at Rt.48

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 3/15/2007 | 1,180 | 762.60 |
| 3/16/2007 | 802 | 518.31 |
| 3/17/2007 | 793 | 512.49 |
| 3/18/2007 | 753 | 486.64 |
| 3/19/2007 | 710 | 458.85 |
| 3/20/2007 | 739 | 477.60 |
| 3/21/2007 | 521 | 336.71 |
| 3/22/2007 | 587 | 379.36 |
| 3/23/2007 | 773 | 499.57 |
| 3/24/2007 | 770 | 497.63 |
| 3/25/2007 | 1,110 | 717.36 |
| 3/26/2007 | 1,870 | 1208.53 |
| 3/27/2007 | 2,220 | 1434.72 |
| 3/28/2007 | 2,610 | 1686.77 |
| 3/29/2007 | 2,670 | 1725.55 |
| 3/30/2007 | 2,100 | 1357.17 |
| 3/31/2007 | 1,960 | 1266.69 |
| 4/1/2007 | 2,260 | 1460.57 |
| 4/2/2007 | 2,430 | 1570.44 |
| 4/3/2007 | 2,250 | 1454.11 |
| 4/4/2007 | 2,080 | 1344.25 |
| 4/5/2007 | 1,820 | 1176.22 |
| 4/6/2007 | 1,630 | 1053.42 |
| 4/7/2007 | 1,400 | 904.78 |
| 4/8/2007 | 1,210 | 781.99 |
| 4/9/2007 | 856 | 553.21 |
| 4/10/2007 | 629 | 406.51 |
| 4/11/2007 | 880 | 568.72 |
| 4/12/2007 | 938 | 606.20 |
| 4/13/2007 | 1,050 | 678.59 |
| 4/14/2007 | 1,130 | 730.29 |
| 4/15/2007 | 1,120 | 723.82 |

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 4/16/2007 | 1,110 | 717.4 |
| 4/17/2007 | 1,050 | 678.6 |
| 4/18/2007 | 1,010 | 652.7 |
| 4/19/2007 | 769 | 497.0 |
| 4/20/2007 | 684 | 442.1 |
| 4/21/2007 | 680 | 439.5 |
| 4/22/2007 | 608 | 392.9 |
| 4/23/2007 | 554 | 358.0 |
| 4/24/2007 | 602 | 389.1 |
| 4/25/2007 | 634 | 409.7 |
| 4/26/2007 | 666 | 430.4 |
| 4/27/2007 | 994 | 642.4 |
| 4/28/2007 | 1,440 | 930.6 |
| 4/29/2007 | 1,530 | 988.8 |
| 4/30/2007 | 1,860 | 1202.1 |
| 5/1/2007 | 2,060 | 1331.3 |
| 5/2/2007 | 2,070 | 1337.8 |
| 5/3/2007 | 1,590 | 1027.6 |
| 5/4/2007 | 741 | 478.9 |
| 5/5/2007 | 546 | 352.9 |
| 5/6/2007 | 642 | 414.9 |
| 5/7/2007 | 414 | 268 |
| 5/8/2007 | 219 | 142 |
| 5/9/2007 | 95 | 61 |
| 5/10/2007 | 278 | 180 |
| 5/11/2007 | 465 | 301 |
| 5/12/2007 | 494 | 319 |
| 5/13/2007 | 390 | 252 |
| 5/14/2007 | 291 | 188 |
| 5/15/2007 | 299 | 193 |
| 5/16/2007 | 388 | 251 |
| 5/17/2007 | 402 | 260 |

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 5/18/2007 | 335 | 217 |
| 5/19/2007 | 284 | 184 |
| 5/20/2007 | 279 | 180 |
| 5/21/2007 | 264 | 171 |
| 5/22/2007 | 247 | 160 |
| 5/23/2007 | 186 | 120 |
| 5/24/2007 | 117 | 76 |
| 5/25/2007 | 176 | 114 |
| 5/26/2007 | 205 | 132 |
| 5/27/2007 | 218 | 141 |
| 5/28/2007 | 245 | 158 |
| 5/29/2007 | 385 | 249 |
| 5/30/2007 | 432 | 279 |
| 5/31/2007 | 380 | 246 |
| 6/1/2007 | 265 | 171 |
| 6/2/2007 | 206 | 133 |
| 6/3/2007 | 201 | 130 |
| 6/4/2007 | 194 | 125 |
| 6/5/2007 | 196 | 127 |
| 6/6/2007 | 181 | 117 |
| 6/7/2007 | 122 | 78.8 |
| 6/8/2007 | 130 | 84.0 |
| 6/9/2007 | 139 | 89.8 |
| 6/10/2007 | 122 | 78.8 |
| 6/11/2007 | 62 | 40.1 |
| 6/12/2007 | 9 | 5.82 |
| 6/13/2007 | 5 | 3.23 |
| 6/14/2007 | 4 | 2.71 |
| 6/15/2007 | 4 | 2.52 |
| 6/16/2007 | 5 | 3.04 |
| 6/17/2007 | 7 | 4.59 |
| 6/18/2007 | 13 | 8.40 |

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Study of Nickel and Zinc in plant final effluent and Sangamon River

Upstream River Flow at Rt.48

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 6/19/2007 | 28 | 18.1 |
| 6/20/2007 | 26 | 16.8 |
| 6/21/2007 | 20 | 12.9 |
| 6/22/2007 | 52 | 33.6 |
| 6/23/2007 | 254 | 164 |
| 6/24/2007 | 859 | 555 |
| 6/25/2007 | 904 | 584 |
| 6/26/2007 | 705 | 455.6 |
| 6/27/2007 | 508 | 328.3 |
| 6/28/2007 | 623 | 402.6 |
| 6/29/2007 | 854 | 551.9 |
| 6/30/2007 | 944 | 610.1 |
| 7/1/2007 | 961 | 621.1 |
| 7/2/2007 | 749 | 484.1 |
| 7/3/2007 | 526 | 339.9 |
| 7/4/2007 | 403 | 260.4 |
| 7/5/2007 | 390 | 252.0 |
| 7/6/2007 | 435 | 281.1 |
| 7/7/2007 | 353 | 228.1 |
| 7/8/2007 | 226 | 146.1 |
| 7/9/2007 | 106 | 68.50 |
| 7/10/2007 | 21 | 13.57 |
| 7/11/2007 | 7 | 4.524 |
| 7/12/2007 | 3.3 | 2.133 |
| 7/13/2007 | 2.9 | 1.874 |
| 7/14/2007 | 2.3 | 1.486 |
| 7/15/2007 | 1.9 | 1.228 |
| 7/16/2007 | 1.9 | 1.228 |
| 7/17/2007 | 9.7 | 6.269 |
| 7/18/2007 | 3.7 | 2.391 |
| 7/19/2007 | 3.1 | 2.003 |
| 7/20/2007 | 3.5 | 2.262 |

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 7/21/2007 | 4.8 | 3.102 |
| 7/22/2007 | 24 | 15.51 |
| 7/23/2007 | 89 | 57.52 |
| 7/24/2007 | 148 | 96 |
| 7/25/2007 | 131 | 85 |
| 7/26/2007 | 56 | 36 |
| 7/27/2007 | 16 | 10 |
| 7/28/2007 | 8.6 | 5.6 |
| 7/29/2007 | 7.6 | 4.9 |
| 7/30/2007 | 5.7 | 3.7 |
| 7/31/2007 | 4.9 | 3.2 |
| 8/1/2007 | 4.80 | 3.10 |
| 8/2/2007 | 3.40 | 2.20 |
| 8/3/2007 | 2.60 | 1.68 |
| 8/4/2007 | 3.30 | 2.13 |
| 8/5/2007 | 3.00 | 1.94 |
| 8/6/2007 | 2.20 | 1.42 |
| 8/7/2007 | | 0.00 |
| 8/8/2007 | 1.20 | 0.78 |
| 8/9/2007 | 1.10 | 0.71 |
| 8/10/2007 | 1.20 | 0.78 |
| 8/11/2007 | 1.50 | 0.97 |
| 8/12/2007 | 1.50 | 0.97 |
| 8/13/2007 | 1.30 | 0.84 |
| 8/14/2007 | 1.40 | 0.90 |
| 8/15/2007 | 1.50 | 0.97 |
| 8/16/2007 | 2.60 | 1.68 |
| 8/17/2007 | 1.80 | 1.16 |
| 8/18/2007 | 1.70 | 1.10 |
| 8/19/2007 | 1.80 | 1.16 |
| 8/20/2007 | 3.00 | 1.94 |
| 8/21/2007 | 1.70 | 1.10 |

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 8/22/2007 | 1.40 | 0.90 |
| 8/23/2007 | 1.50 | 0.97 |
| 8/24/2007 | 1.50 | 0.97 |
| 8/25/2007 | 1.30 | 0.84 |
| 8/26/2007 | 0.93 | 0.60 |
| 8/27/2007 | 0.83 | 0.54 |
| 8/28/2007 | 0.78 | 0.50 |
| 8/29/2007 | 0.69 | 0.45 |
| 8/30/2007 | 0.53 | 0.34 |
| 8/31/2007 | 0.52 | 0.34 |
| 9/1/2007 | 0.63 | 0.41 |
| 9/2/2007 | 0.67 | 0.43 |
| 9/3/2007 | 0.63 | 0.41 |
| 9/4/2007 | 0.79 | 0.51 |
| 9/5/2007 | 1.1 | 0.71 |
| 9/6/2007 | 1.7 | 1.10 |
| 9/7/2007 | 2.9 | 1.87 |
| 9/8/2007 | 8.5 | 5.49 |
| 9/9/2007 | 1.9 | 1.23 |
| 9/10/2007 | 1.5 | 0.97 |
| 9/11/2007 | 1.7 | 1.10 |
| 9/12/2007 | 1.1 | 0.71 |
| 9/13/2007 | 0.94 | 0.61 |
| 9/14/2007 | 0.86 | 0.56 |
| 9/15/2007 | 1.1 | 0.71 |
| 9/16/2007 | 1 | 0.65 |
| 9/17/2007 | 1 | 0.65 |
| 9/18/2007 | 1 | 0.65 |
| 9/19/2007 | 0.93 | 0.60 |
| 9/20/2007 | 1 | 0.65 |
| 9/21/2007 | 1.2 | 0.78 |
| 9/22/2007 | 1 | 0.65 |

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Study of Nickel and Zinc in plant final effluent and Sangamon River

Upstream River Flow at Rt.48

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 9/23/2007 | 1.1 | 0.71 |
| 9/24/2007 | 1.4 | 0.90 |
| 9/25/2007 | 1.9 | 1.23 |
| 9/26/2007 | 2.1 | 1.36 |
| 9/27/2007 | 1.7 | 1.10 |
| 9/28/2007 | 1.8 | 1.16 |
| 9/29/2007 | 1.7 | 1.10 |
| 9/30/2007 | 1.7 | 1.10 |
| 10/1/2007 | 2.2 | 1.42 |
| 10/2/2007 | 1.9 | 1.23 |
| 10/3/2007 | 4.7 | 3.04 |
| 10/4/2007 | 1.2 | 0.78 |
| 10/5/2007 | 1.3 | 0.84 |
| 10/6/2007 | 1.4 | 0.90 |
| 10/7/2007 | 1.2 | 0.78 |
| 10/8/2007 | 1.2 | 0.78 |
| 10/9/2007 | 1.5 | 0.97 |
| 10/10/2007 | 1.4 | 0.90 |
| 10/11/2007 | 1.3 | 0.84 |
| 10/12/2007 | 11.0 | 7.11 |
| 10/13/2007 | 3.1 | 2.00 |
| 10/14/2007 | 1.6 | 1.03 |
| 10/15/2007 | 10.0 | 6.46 |
| 10/16/2007 | 10.0 | 6.46 |
| 10/17/2007 | 2.3 | 1.49 |
| 10/18/2007 | 7.7 | 4.98 |
| 10/19/2007 | 1.8 | 1.16 |
| 10/20/2007 | 1.3 | 0.84 |
| 10/21/2007 | 1 | 0.65 |
| 10/22/2007 | 1.9 | 1.23 |
| 10/23/2007 | 3.3 | 2.13 |
| 10/24/2007 | 1.1 | 0.71 |

| Date | River Upstream Flow cfs | River Upstream Flow mgd |
|---|---|---|
| 10/25/2007 | 0.67 | 0.43 |
| 10/26/2007 | 2.6 | 1.68 |
| 10/27/2007 | 1.7 | 1.10 |
| 10/28/2007 | 0.94 | 0.61 |
| 10/29/2007 | 0.79 | 0.51 |
| 10/30/2007 | 0.81 | 0.52 |
| 10/31/2007 | 0.71 | 0.46 |
| 11/1/2007 | 0.65 | 0.42 |

## Quality Control Data

| | | Duplicate Data | | | | | | | | Field Blank Data | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample date | Source | Replicate 1 Ca, mg/L | Replicate 2 Ca, mg/L | Replicate 1 Mg, mg/L | Replicate 2 Mg, mg/L | Replicate 1 Zn T, mg/L | Replicate 2 Zn T, mg/L | Replicate 1 Ni T, mg/L | Replicate 2 Ni T, mg/L | Hardness, mg/L | Zn T, mg/L | Ni T, mg/L |
| 3/20/2007 | RT 48 | 60 | 56 | 26 | 24 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 3/22/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 3/27/2007 | Wyckle's | 71 | 69 | 33 | 32 | <0.010 | 0.015 | <0.0050 | <0.0050 | | | |
| 3/29/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 4/3/2007 | WMS | 80 | 80 | 34 | 34 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 4/3/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 4/10/2007 | FE | 65 | 66 | 96 | 97 | 0.086 | 0.085 | 0.017 | 0.017 | | | |
| 4/10/2007 | WMS | | | | | | | | | 1.3 | <0.010 | <0.0050 |
| 4/17/2007 | RT 48 | 71 | 73 | 31 | 32 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 4/17/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 4/24/2007 | Wyckle's | 66 | 60 | 40 | 38 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 4/24/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 4/24/2007 | Lab | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 5/1/2007 | WMS | 83 | 82 | 39 | 38 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 5/1/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 5/8/2007 | FE | 69 | 70 | 80 | 92 | 0.066 | 0.082 | 0.015 | 0.018 | | | |
| 5/8/2007 | WMS | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 5/15/2007 | R48 | 62 | 63 | 30 | 31 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 5/15/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 5/22/2007 | Wyckle's | 59 | 58 | 38 | 38 | 0.012 | 0.012 | <0.0050 | <0.0050 | | | |
| 5/22/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 5/29/2007 | WMS | 82 | 83 | 38 | 39 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 5/29/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 6/7/2007 | WMS | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 6/7/2007 | FE | 56 | 54 | 94 | 90 | 0.050 | 0.049 | 0.024 | 0.023 | | | |
| 6/12/2007 | R48 | | | | | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 6/14/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 6/19/2007 | Wyckle's | 64 | 64 | 60 | 59 | 0.024 | 0.023 | 0.012 | 0.012 | | | |
| 6/19/2007 | RT 48 | | | | | | | | | 2.3 | <0.010 | <0.0050 |
| 6/26/2007 | WMS | 70 | 42 | 30 | 32 | 0.015 | 0.014 | <0.0050 | <0.0050 | | | |
| 6/26/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 7/3/2007 | FE | 55 | 59 | 88 | 94 | 0.050 | 0.053 | 0.019 | 0.020 | <0.66 | <0.010 | <0.0050 |
| 7/3/2007 | WMS | | | | | | | | | | | |
| 7/10/2007 | RT 48 | 38 | 38 | 31 | 32 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 7/12/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 7/17/2007 | Wyckle's | 66 | 66 | 82 | 81 | 0.029 | 0.030 | 0.016 | 0.016 | | | |
| 7/17/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 7/24/2007 | WMS | 77 | 80 | 39 | 41 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 7/24/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 7/31/2007 | FE | 58 | 56 | 100 | 98 | 0.050 | 0.051 | 0.036 | 0.036 | | | |

## Quality Control Data

| | | Duplicate Data | | | | | | | | Field Blank Data | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample date | Source | Replicate 1 Ca, mg/L | Replicate 2 Ca, mg/L | Replicate 1 Mg, mg/L | Replicate 2 Mg, mg/L | Replicate 1 Zn T, mg/L | Replicate 2 Zn T, mg/L | Replicate 1 Ni T, mg/L | Replicate 2 Ni T, mg/L | Hardness, mg/L | Zn T, mg/L | Ni T, mg/L |
| 7/31/2007 | WMS | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 8/7/2007 | RT 48 | 60 | 62 | 35 | 37 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 8/7/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 8/14/2007 | Wyckle's | 57 | 54 | 100 | 98 | 0.045 | 0.043 | 0.030 | 0.029 | | | |
| 8/14/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 8/21/2007 | WMS | 66 | 67 | 32 | 32 | 0.098 | <0.010 | <0.0050 | <0.0050 | | | |
| 8/21/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 8/28/2007 | FE | 49 | 49 | 91 | 92 | 0.042 | 0.043 | 0.025 | 0.025 | | | |
| 8/28/2007 | WMS | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 9/4/2007 | RT 48 | 72 | 69 | 39 | 38 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 9/4/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 9/11/2007 | Wyckle's | 47 | 47 | 61 | 61 | 0.025 | 0.024 | 0.018 | 0.017 | | | |
| 9/11/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 9/18/2007 | WMS | 79 | 77 | 35 | 34 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 9/18/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 9/25/2007 | FE | 44 | 43 | 100 | 99 | 0.066 | 0.079 | 0.028 | 0.028 | | | |
| 9/25/2007 | WMS | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 10/2/2007 | RT 48 | 55 | 54 | 35 | 34 | 0.015 | 0.020 | <0.0050 | <0.0050 | | | |
| 10/2/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 10/9/2007 | Wyckle's | 46 | 45 | 85 | 84 | 0.064 | 0.062 | 0.025 | 0.023 | | | |
| 10/9/2007 | RT 48 | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 10/16/2007 | WMS | 25 | 24 | 8.0 | 7.7 | 0.046 | 0.054 | 0.0056 | 0.0054 | | | |
| 10/16/2007 | Wyckle's | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 10/23/2007 | FE | 43 | 43 | 73 | 73 | 0.067 | 0.064 | 0.021 | 0.020 | | | |
| 10/23/2007 | WMS | | | | | | | | | <0.66 | <0.010 | <0.0050 |
| 10/30/2007 | RT 48 | 51 | 53 | 22 | 23 | <0.010 | <0.010 | <0.0050 | <0.0050 | | | |
| 10/30/2007 | FE | | | | | | | | | <0.66 | <0.010 | <0.0050 |

**Sanitary District of Decatur**

Study of Nickel and Zinc in Plant Final Effluent and Sangamon River

Metals Analytical Data Monthly Averages

| Month | River Upstream Dissolved Nickel mg/L | Plant Effluent Dissolved Nickel mg/L | Steven's Creek Dissolved Nickel mg/L | River Downstream Dissolved Nickel mg/L | River Upstream Total Nickel mg/L | Plant Effluent Total Nickel mg/L | Steven's Creek Total Nickel mg/L | River Downstream Total Nickel mg/L | Plant Effluent Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|---|---|---|
| March-07 | <0.0050 | 0.016 | <0.0050 | <0.0050 | <0.0050 | 0.016 | <0.0050 | <0.0050 | 1.000 |
| April-07 | <0.0050 | 0.015 | <0.0050 | <0.0050 | <0.0050 | 0.016 | <0.0050 | <0.0050 | 0.938 |
| May-07 | <0.0050 | 0.018 | <0.0050 | <0.0050 | <0.00501 | 0.019 | <0.0050 | <0.0050 | 0.947 |
| June-07 | <0.0050 | 0.020 | <0.0050 | 0.0081 | <0.0050 | 0.022 | <0.0050 | 0.0086 | 0.909 |
| July-07 | <0.0050 | 0.025 | <0.0050 | 0.011 | <0.0050 | 0.025 | <0.0050 | 0.011 | 1.000 |
| August-07 | <0.0050 | 0.027 | <0.0050 | 0.025 | <0.0050 | 0.028 | <0.0050 | 0.026 | 0.964 |
| September-07 | <0.0050 | 0.026 | <0.0050 | 0.024 | <0.0050 | 0.027 | <0.0050 | 0.025 | 0.963 |
| October-07 * | <0.0050 | 0.022 | <0.0050 | 0.020 | <0.0050 | 0.023 | <0.0056 | 0.020 | 0.957 |

Proposed Ni Effluent standard = 0.011 mg/L monthly average

[redacted] indicates exceeds proposed standard

| Month | River Upstream Dissolved Zinc mg/L | Plant Effluent Dissolved Zinc mg/L | Steven's Creek Dissolved Zinc mg/L | River Downstream Dissolved Zinc mg/L | River Upstream Total Zinc mg/L | Plant Effluent Total Zinc mg/L | Steven's Creek Total Zinc mg/L | River Downstream Total Zinc mg/L | Plant Effluent Dissolved/ Total Ratio |
|---|---|---|---|---|---|---|---|---|---|
| March-07 | <0.010 | 0.083 | <0.010 | <0.012 | <0.010 | 0.085 | <0.014 | <0.011 | 0.976 |
| April-07 | <0.010 | 0.072 | <0.010 | <0.010 | <0.014 | 0.076 | <0.010 | <0.010 | 0.947 |
| May-07 | <0.010 | 0.058 | <0.010 | <0.010 | <0.010 | 0.065 | <0.0101 | <0.011 | 0.892 |
| June-07 | <0.010 | 0.051 | <0.010 | <0.017 | <0.020 | 0.061 | <0.012 | 0.021 | 0.836 |
| July-07 | <0.010 | 0.038 | <0.017 | <0.016 | <0.010 | 0.048 | <0.010 | <0.020 | 0.792 |
| August-07 | <0.010 | 0.034 | <0.0101 | 0.030 | <0.010 | 0.044 | <0.010 | 0.034 | 0.773 |
| September-07 | <0.010 | 0.035 | <0.010 | 0.024 | <0.010 | 0.044 | <0.010 | 0.038 | 0.795 |
| October-07 * | <0.010 | 0.042 | <0.010 | 0.041 | <0.014 | 0.051 | <0.020 | 0.044 | 0.824 |

Proposed Zn Effluent standard = 0.046 mg/L monthly average

River Upstream Flow Data

| Month | Mean Flow, cfs | Min Flow, cfs | Max Flow, cfs |
|---|---|---|---|
| March-07 (3/15 to 3/31) | 1304 | 521 | 2670 |
| April-07 | 1196 | 554 | 2430 |
| May-07 | 488 | 95 | 2070 |
| June-07 | 255 | 3.90 | 944 |
| July-07 | 152 | 1.90 | 961 |
| August-07 | 1.75 | 0.520 | 4.80 |
| September-07 | 1.55 | 0.630 | 8.50 |
| October-07 * | 2.63 | 0.670 | 11.0 |

* includes 11/1/07 sampling

**Sangamon River Downstream - Zinc TSS Partition Coefficient**



Variables :

Cd = Concentration Disolved
Cp = Concentration Particulate
Ct = Concentration Total
Kp = Partition Coefficient (=Cp/(Cd x TSS)
TSS = Total Suspended Solids

| Sample Date | Cd | Cp | Ct | TSS | Kp | (Ct/Cd)-1 |
|---|---|---|---|---|---|---|
| 3/20/2007 | <0.010 | #VALUE! | 0.011 | 25 | #VALUE! | #VALUE! |
| 3/22/2007 | 0.016 | -0.005 | 0.011 | 22 | -0.014205 | -0.3125 |
| 3/27/2007 | <0.010 | #VALUE! | 0.012 | 31 | #VALUE! | #VALUE! |
| 3/29/2007 | <0.010 | #VALUE! | <0.010 | 35 | #VALUE! | #VALUE! |
| 4/3/2007 | <0.010 | #VALUE! | <0.010 | 33 | #VALUE! | #VALUE! |
| 4/5/2007 | <0.010 | #VALUE! | <0.010 | 25 | #VALUE! | #VALUE! |
| 4/10/2007 | <0.010 | #VALUE! | <0.010 | 9.0 | #VALUE! | #VALUE! |
| 4/17/2007 | <0.010 | #VALUE! | <0.010 | 15 | #VALUE! | #VALUE! |
| 4/19/2007 | <0.010 | #VALUE! | <0.010 | 20 | #VALUE! | #VALUE! |
| 4/24/2007 | <0.010 | #VALUE! | <0.010 | 28 | #VALUE! | #VALUE! |
| 4/26/2007 | <0.010 | #VALUE! | <0.010 | 33 | #VALUE! | #VALUE! |
| 5/1/2007 | <0.010 | #VALUE! | <0.010 | 25 | #VALUE! | #VALUE! |
| 5/3/2007 | <0.010 | #VALUE! | <0.010 | 26 | #VALUE! | #VALUE! |
| 5/8/2007 | <0.010 | #VALUE! | <0.010 | 27 | #VALUE! | #VALUE! |
| 5/10/2007 | <0.010 | #VALUE! | 0.012 | 29 | #VALUE! | #VALUE! |
| 5/15/2007 | <0.010 | #VALUE! | <0.010 | 21 | #VALUE! | #VALUE! |
| 5/17/2007 | <0.010 | #VALUE! | <0.010 | 30 | #VALUE! | #VALUE! |
| 5/22/2007 | <0.010 | #VALUE! | 0.012 | 29 | #VALUE! | #VALUE! |
| 5/24/2007 | <0.010 | #VALUE! | 0.015 | 29 | #VALUE! | #VALUE! |
| 5/29/2007 | <0.010 | #VALUE! | 0.011 | 25 | #VALUE! | #VALUE! |
| 5/31/2007 | <0.010 | #VALUE! | <0.010 | 25 | #VALUE! | #VALUE! |
| 6/5/2007 | <0.010 | #VALUE! | 0.011 | 27 | #VALUE! | #VALUE! |
| 6/7/2007 | 0.012 | 0.006 | 0.018 | 29 | 0.017241 | 0.5 |
| 6/12/2007 | 0.018 | 0.006 | 0.024 | 24 | 0.013889 | 0.333333 |
| 6/14/2007 | 0.025 | 0.007 | 0.032 | 23 | 0.012174 | 0.28 |
| 6/19/2007 | 0.019 | 0.0045 | 0.0235 | 20 | 0.011842 | 0.236842 |
| 6/21/2007 | 0.029 | 0.005 | 0.034 | 20 | 0.008621 | 0.172414 |
| 6/26/2007 | <0.010 | #VALUE! | 0.014 | 6.0 | #VALUE! | #VALUE! |
| 6/28/2007 | <0.010 | #VALUE! | 0.014 | 66 | #VALUE! | #VALUE! |
| 7/3/2007 | <0.010 | #VALUE! | <0.010 | 34 | #VALUE! | #VALUE! |
| 7/5/2007 | <0.010 | #VALUE! | <0.010 | 38 | #VALUE! | #VALUE! |
| 7/10/2007 | 0.010 | 0.012 | 0.022 | 27 | 0.044444 | 1.2 |
| 7/12/2007 | 0.019 | 0.012 | 0.031 | 21 | 0.030075 | 0.631579 |
| 7/17/2007 | 0.022 | 0.0075 | 0.0295 | 15 | 0.022727 | 0.340909 |
| 7/19/2007 | 0.022 | 0.004 | 0.026 | 13 | 0.013986 | 0.181818 |

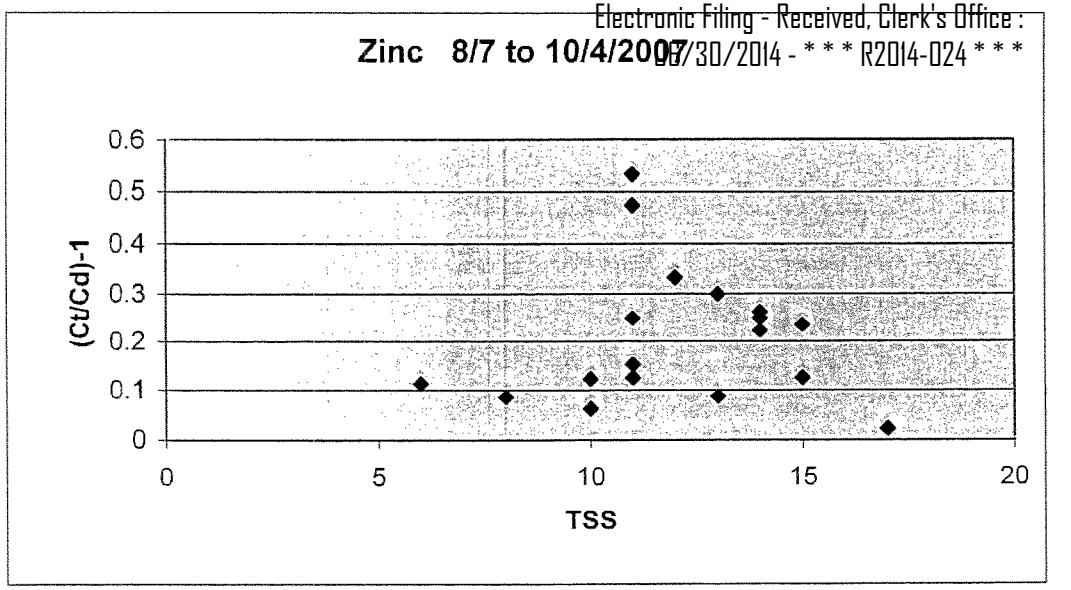
**Sangamon River Downstream - Zinc TSS Partition Coefficient**

Variables :

Cd = Concentration Disolved
Cp = Concentration Particulate
Ct = Concentration Total
Kp = Partition Coefficient (=Cp/(Cd x TSS)
TSS = Total Suspended Solids

| Sample Date | Cd | Cp | Ct | TSS | Kp | (Ct/Cd)-1 |
|---|---|---|---|---|---|---|
| 7/24/2007 | <0.010 | #VALUE! | 0.014 | 24 | #VALUE! | #VALUE! |
| 7/26/2007 | <0.010 | #VALUE! | 0.014 | 26 | #VALUE! | #VALUE! |
| 7/31/2007 | 0.017 | 0.005 | 0.022 | 18 | 0.01634 | 0.294118 |
| 8/2/2007 | 0.027 | -0.006 | 0.021 | 14 | -0.015873 | -0.222222 |
| 8/7/2007 | 0.015 | 0.008 | 0.023 | 11 | 0.048485 | 0.533333 |
| 8/9/2007 | 0.020 | 0.005 | 0.025 | 14 | 0.017857 | 0.25 |
| 8/14/2007 | 0.036 | 0.008 | 0.044 | 14 | 0.015873 | 0.222222 |
| 8/16/2007 | 0.043 | 0.001 | 0.044 | 17 | 0.001368 | 0.023256 |
| 8/21/2007 | 0.032 | 0.002 | 0.034 | 10 | 0.00625 | 0.0625 |
| 8/23/2007 | 0.035 | 0.003 | 0.038 | 8.0 | 0.010714 | 0.085714 |
| 8/28/2007 | 0.046 | 0.004 | 0.050 | 13 | 0.006689 | 0.086957 |
| 8/30/2007 | 0.019 | 0.009 | 0.028 | 11 | 0.043062 | 0.473684 |
| 9/4/2007 | 0.053 | 0.008 | 0.061 | 11 | 0.013722 | 0.150943 |
| 9/6/2007 | 0.024 | 0.006 | 0.030 | 11 | 0.022727 | 0.25 |
| 9/11/2007 | 0.022 | 0.0025 | 0.0245 | 6.0 | 0.018939 | 0.113636 |
| 9/13/2007 | 0.018 | 0.006 | 0.024 | 12 | 0.027778 | 0.333333 |
| 9/18/2007 | 0.049 | 0.006 | 0.055 | 10 | 0.012245 | 0.122449 |
| 9/20/2007 | 0.024 | 0.003 | 0.027 | 15 | 0.008333 | 0.125 |
| 9/25/2007 | 0.020 | 0.006 | 0.026 | 13 | 0.023077 | 0.3 |
| 9/27/2007 | 0.048 | 0.006 | 0.054 | 11 | 0.011364 | 0.125 |
| 10/2/2007 | 0.019 | 0.005 | 0.024 | 14 | 0.018797 | 0.263158 |
| 10/4/2007 | 0.017 | 0.004 | 0.021 | 15 | 0.015686 | 0.235294 |

| | x | y |
|---|---|---|
| Date | TSS | (Ct/Cd)-1 |
| 8/7/2007 | 11 | 0.533333 |
| 8/9/2007 | 14 | 0.25 |
| 8/14/2007 | 14 | 0.222222 |
| 8/16/2007 | 17 | 0.023256 |
| 8/21/2007 | 10 | 0.0625 |
| 8/23/2007 | 8.0 | 0.085714 |
| 8/28/2007 | 13 | 0.086957 |
| 8/30/2007 | 11 | 0.473684 |
| 9/4/2007 | 11 | 0.150943 |
| 9/6/2007 | 11 | 0.25 |
| 9/11/2007 | 6.0 | 0.113636 |
| 9/13/2007 | 12 | 0.333333 |
| 9/18/2007 | 10 | 0.122449 |
| 9/20/2007 | 15 | 0.125 |
| 9/25/2007 | 13 | 0.3 |
| 9/27/2007 | 11 | 0.125 |
| 10/2/2007 | 14 | 0.263158 |
| 10/4/2007 | 15 | 0.235294 |




**slope =** **0.001044**
R-Square = **0.000407** **Poor Correlation**
**Y-int =** **0.196168**

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 - ( 217) 782-2829
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 - (312) 814-6026



217/558-2012

DOUGLAS P. SCOTT, DIRECTOR



Timothy R. Kluge, P.E., Technical Director
Sanitary District of Decatur
501 Dipper Lane
Decatur, Illinois 62522

RE: NPDES No. IL0028321
Decatur Sanitary District - Main (Macon County)
Nickel and Zinc Translator

Dear Mr. Kluge:

The subject facility discharges to the Sangamon River at a point where 0 cfs flow exists upstream of the outfall during critical 7Q10 low-flow conditions. The Sangamon River is classified as a General Use Water. According to the 2008 IDNR document "Integrating Multiple Taxa in a Biological Stream Rating System", the Sangamon River is not a biologically significant stream at this location, nor is it given an integrity rating in that document, however, approx. 9 miles downstream the Sangamon River is rated "C"." The Sangamon River, Waterbody Segment, E-09, is listed on the Illinois Integrated Water Quality Report and Section 303(d) List – 2006 as impaired for aquatic life use with causes given as manganese, nitrogen (total) and dissolved oxygen (non-pollutant); fish consumption use with causes given as polychlorinated biphenyls; and primary contact use with cause given as fecal coliform. The partially approved 2008 Illinois Integrated Water Quality Report and Section 303(d) List is identical, except that nitrogen (total) has been removed as a cause for the aquatic life use impairment. This segment of the Sangamon River is not subject to enhanced dissolved oxygen standards.

In order to determine a site-specific metals translator, the Decatur Sanitary District collected total Nickel and Zink and dissolved Nickel and Zinc data from the effluent and a location downstream from the plant outfall between the dates March 2007 to November 2007. This data set includes 65 sets of total and dissolved Nickel and Zinc results from the effluent and the receiving stream.

The Nickel and Zinc standards are based on site-specific hardness data collected downstream of the discharge, for the dates August 2007 to November 2007, with a critical hardness value of 359 mg/L as $CaCO_3$. Since the data was taken at low flow, the Agency used the $10^{th}$ percentile data as the critical hardness.

Nickel

Acute Water Quality Standard = 0.2429 mg/L dissolved Nickel

Chronic Water Quality Standard = 0.0147 mg/L dissolved Nickel

The metals translator was calculated from the effluent and receiving stream as 0.966 and 0.937 respectively. The metal translator of 0.966 was used since it is the most conservative.

Total Nickel daily maximum permit limit = dissolved Acute Water Quality Standard / metals translator = 0.2429 / 0.966 = 0.2514 mg/L.

Total Nickel monthly average permit limit = dissolved Chronic Water Quality Standard / metals translator = 0.0147 / 0.966 = 0.0152 mg/L.

Zinc

Acute Water Quality Standard = 0.3529 mg/L dissolved Zinc

Chronic Water Quality Standard = 0.0637 mg/L dissolved Zinc

The metals translator was calculated from the effluent and receiving stream as 0.848 and 0.692 respectively. The metal translator of 0.848 was used since it is the most conservative.

Total Zinc daily maximum permit limit = dissolved Acute Water Quality Standard / metals translator = 0.3529 / 0.848 = 0.4162 mg/L.

Total Zinc monthly average permit limit = dissolved Chronic Water Quality Standard / metals translator = 0.0637 / 0.848 = 0.0751 mg/L.

As per my November 9, 2006 memorandum, there is no reasonable potential to exceed the acute water quality standard for Nickel. My evaluation of the metals finds that water quality based permit limits are necessary for Nickel and Zinc at the limits below. Permit limits identified in the table are expressed in units of mg/L.

| Substance | Daily Maximum | Monthly Average |
|---|---|---|
| Nickel | | 0.015 |
| Zinc | 0.416 | 0.075 |

These recommendations reflect a water quality standards perspective only and should not be construed as being inclusive of all factors, which must be taken into consideration by the permit writer.

If you have any questions or comments regarding this letter, please contact me at the above address and phone number. If you have questions regarding permit modification, please call Permit Section at 217/782-0610.

Sincerely,

Scott Twait

Scott Twait
Water Quality Standards Unit
Bureau of Water

SAT:decaturtranslator

Attachment

| Zinc | effluent diss/tot | downstrear dissolved | downstrear total | downstream diss/tot |
|---|---|---|---|---|
| | 0.967 | **0.005** | 0.011 | 0.454545 |
| | 1 | 0.016 | 0.011 | **1** |
| | 0.973 | **0.005** | 0.0125 | 0.4 |
| | 0.949 | **0.005** | **0.005** | |
| | 1 | **0.005** | **0.005** | |
| | 0.931 | **0.005** | **0.005** | |
| | 0.982 | **0.005** | **0.005** | |
| | 0.898 | **0.005** | **0.005** | |
| | 0.918 | **0.005** | **0.005** | |
| | 0.868 | **0.005** | **0.005** | |
| | 1 | **0.005** | **0.005** | |
| | 0.951 | **0.005** | **0.005** | |
| | 0.944 | **0.005** | **0.005** | |
| | 0.973 | **0.005** | **0.005** | |
| | 0.725 | **0.005** | 0.012 | 0.416667 |
| | 0.885 | **0.005** | **0.005** | |
| | 0.917 | **0.005** | **0.005** | |
| | 0.84 | **0.005** | 0.012 | 0.416667 |
| | 0.954 | **0.005** | 0.015 | 0.333333 |
| | 0.889 | **0.005** | 0.011 | 0.454545 |
| | 0.881 | **0.005** | **0.005** | |
| | 0.828 | **0.005** | 0.011 | 0.454545 |
| | 0.851 | 0.012 | 0.018 | 0.666667 |
| | 0.908 | 0.018 | 0.024 | 0.75 |
| | 0.879 | 0.025 | 0.032 | 0.78125 |
| | 0.879 | 0.019 | 0.0235 | 0.808511 |
| | 0.845 | 0.029 | 0.034 | 0.852941 |
| | 0.727 | **0.005** | 0.014 | 0.357143 |
| | 0.804 | **0.005** | 0.014 | 0.357143 |
| | 0.699 | **0.005** | **0.005** | |
| | 0.75 | **0.005** | **0.005** | |
| | 0.826 | 0.01 | 0.022 | 0.454545 |
| | 0.864 | 0.019 | 0.031 | 0.612903 |
| | 0.778 | 0.022 | 0.0295 | 0.745763 |
| | 0.844 | 0.022 | 0.026 | 0.846154 |
| | 0.82 | **0.005** | 0.014 | 0.357143 |
| | 0.766 | **0.005** | 0.014 | 0.357143 |
| | 0.823 | 0.017 | 0.022 | 0.772727 |
| | 0.762 | 0.027 | 0.021 | **1** |
| | 0.75 | 0.015 | 0.023 | 0.652174 |
| | 0.707 | 0.02 | 0.025 | 0.8 |
| | 0.88 | 0.036 | 0.044 | 0.818182 |
| | 0.844 | 0.043 | 0.044 | 0.977273 |
| | | 0.032 | 0.034 | 0.941176 |
| | | 0.035 | 0.038 | 0.921053 |
| | 0.847 | 0.046 | 0.05 | 0.92 |
| | 0.867 | 0.019 | 0.028 | 0.678571 |
| | 0.698 | 0.053 | 0.061 | 0.868852 |
| | 0.811 | 0.024 | 0.03 | 0.8 |
| | 0.871 | 0.022 | 0.0245 | 0.897959 |
| | 0.738 | 0.018 | 0.024 | 0.75 |
| | 0.881 | 0.049 | 0.055 | 0.890909 |
| | 0.838 | 0.024 | 0.027 | 0.888889 |
| | 0.814 | 0.02 | 0.026 | 0.769231 |
| | 0.789 | 0.048 | 0.054 | 0.888889 |
| | 0.898 | 0.019 | 0.024 | 0.791667 |
| | 0.939 | 0.017 | 0.021 | 0.809524 |
| | 0.816 | 0.058 | 0.063 | 0.920635 |
| | 0.837 | 0.023 | 0.03 | 0.766667 |
| | 0.571 | 0.073 | 0.044 | **1** |
| | 0.597 | 0.047 | 0.06 | 0.783333 |
| | 0.824 | 0.075 | 0.087 | 0.862069 |
| | 0.927 | 0.033 | 0.041 | 0.804878 |
| | 0.949 | 0.031 | 0.035 | 0.885714 |
| | 0.947 | 0.032 | 0.035 | 0.914286 |
| **geom mea** | **0.847606** | | **geom mea** | **0.692113** |

| Nickel | effluent diss/tot | downstrear dissolved | downstrear total | downstream diss/tot |
|---|---|---|---|---|
| | 1 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.933 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.941 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.941 | **0.0025** | **0.0025** | |
| | 0.923 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.941 | **0.0025** | **0.0025** | |
| | 0.971 | **0.0025** | **0.0025** | |
| | 0.824 | **0.0025** | **0.0025** | |
| | 0.947 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.957 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.936 | **0.0025** | **0.0025** | |
| | 0.96 | **0.0025** | 0.0051 | 0.490196 |
| | 0.958 | 0.0085 | 0.01 | 0.85 |
| | 0.955 | 0.012 | 0.013 | 0.923077 |
| | 0.955 | 0.011 | 0.012 | 0.916667 |
| | 0.957 | 0.013 | 0.014 | 0.928571 |
| | 0.938 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 0.923 | **0.0025** | **0.0025** | |
| | 1 | **0.0025** | **0.0025** | |
| | 1 | 0.0061 | 0.0071 | 0.859155 |
| | 1 | 0.01 | 0.011 | 0.909091 |
| | 0.947 | 0.015 | 0.016 | 0.9375 |
| | 1 | 0.015 | 0.016 | 0.9375 |
| | 1 | 0.0058 | 0.0067 | 0.865672 |
| | 0.972 | 0.0068 | 0.0079 | 0.860759 |
| | 0.972 | 0.027 | 0.027 | 1 |
| | 1 | 0.027 | 0.027 | 1 |
| | 0.935 | 0.024 | 0.027 | 0.888889 |
| | 0.964 | 0.026 | 0.026 | 1 |
| | 0.967 | 0.03 | 0.0295 | **1** |
| | 0.962 | 0.027 | 0.029 | 0.931034 |
| | 1 | 0.021 | 0.021 | 1 |
| | | 0.022 | 0.022 | 1 |
| | 0.92 | 0.025 | 0.024 | **1** |
| | 1 | 0.023 | 0.024 | 0.958333 |
| | 0.935 | 0.029 | 0.03 | 0.966667 |
| | 1 | 0.028 | 0.029 | 0.965517 |
| | 1 | 0.018 | 0.0175 | **1** |
| | 0.931 | 0.021 | 0.022 | 0.954545 |
| | 1 | 0.026 | 0.026 | 1 |
| | 0.962 | 0.023 | 0.024 | 0.958333 |
| | 0.929 | 0.025 | 0.026 | 0.961538 |
| | 0.926 | 0.026 | 0.027 | 0.962963 |
| | 1 | 0.023 | 0.023 | 1 |
| | 1 | 0.018 | 0.018 | 1 |
| | 0.846 | 0.023 | 0.024 | 0.958333 |
| | 0.917 | 0.023 | 0.024 | 0.958333 |
| | 0.944 | 0.011 | 0.0088 | **1** |
| | 0.933 | 0.015 | 0.016 | 0.9375 |
| | 0.976 | 0.02 | 0.021 | 0.952381 |
| | 0.963 | 0.019 | 0.02 | 0.95 |
| | 1 | 0.022 | 0.022 | 1 |
| | 1 | 0.022 | 0.023 | 0.956522 |
| **geom mea** | **0.965832** | | **geom mea** | **0.936754** |

| Date | Downstream Hardness |
|---|---|
| 8/2/2007 | 509 |
| 8/7/2007 | 544 |
| 8/9/2007 | 540 |
| 8/14/2007 | 546 |
| 8/16/2007 | 585 |
| 8/21/2007 | 480 |
| 8/23/2007 | 483 |
| 8/28/2007 | 479 |
| 8/30/2007 | 524 |
| 9/4/2007 | 543 |
| 9/6/2007 | 554 |
| 9/11/2007 | 369 |
| 9/13/2007 | 429 |
| 9/18/2007 | 446 |
| 9/20/2007 | 454 |
| 9/25/2007 | 512 |
| 9/27/2007 | 480 |
| 10/2/2007 | 462 |
| 10/4/2007 | 344 |
| 10/9/2007 | 462 |
| 10/11/2007 | 521 |
| 10/16/2007 | 167 |
| 10/18/2007 | 314 |
| 10/23/2007 | 412 |
| 10/25/2007 | 429 |
| 10/30/2007 | 495 |
| 11/1/2007 | 534 |
| | |
| 10th %tile | 359 |

Electronic Filing - Received, Clerk's Office :
06/30/2014 - * * * R2014-024 * * *

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

| | | |
|---|---|---|
| SANITARY DISTRICT OF DECATUR, | ) | |
| | ) | |
| Petitioner, | ) | |
| | ) | PCB 14-111 |
| v. | ) | (Variance - Water) |
| | ) | |
| ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, | ) | |
| | ) | |
| | ) | |
| Respondent. | ) | |

## CERTIFICATE OF SERVICE

I, the undersigned, an attorney, state that I have served electronically the attached Recommendation of the Illinois Environmental Protection Agency upon:

John Therriault, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601

via electronic mail on April 7, 2014; and depositing said documents in the United States Mail, postage prepaid, in Springfield Illinois, on April 7, 2014 to each persons on the attached service list.

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: Sara Terranova

Sara Terranova
Assistant Counsel
Division of Legal Counsel

DATED: April 7, 2014

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**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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| SANITARY DISTRICT OF DECATUR, | ) | |
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| | ) | |
| | ) | |
| Respondent. | ) | |

**RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

NOW COMES the Illinois Environmental Protection Agency ("Illinois EPA" or "Agency") by one of its attorneys, Sara Terranova, and files its Recommendation pursuant to 35 Ill. Adm. Code 104.216. The Illinois EPA recommends that the Illinois Pollution Control Board ("Board") **DENY** the Sanitary District of Decatur's ("District" or "Petitioner") request for a variance extension. In support of its Recommendation to DENY the variance extension, the Illinois EPA states as follows:

## I. INTRODUCTION

1. On February 21, 2014, the District filed a Petition for Extension of Variance ("Petition") relating to their operation of a wastewater treatment plant ("Main Plant") in Decatur, Macon County, Illinois. The District requests to extend a 2010 variance ("Initial Variance") in which the Board granted from water quality standards for nickel 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. *See* Initial Variance, PCB 09-125, January 7, 2010.
2. The District's National Pollutant Discharge Elimination System Permit ("NPDES") authorizes the

District to discharge into the Sangamon River. *See* NPDES permit No. IL 0028321, Exhibit A.

## II. NOTICE

3. Pursuant to Section 104.214(a) of the Board's procedural rules, the Illinois EPA must provide notice of any petition for variance within 14 days after filing. *See* 35 Ill. Adm. Code 104.214(a). This Section provides that "the Agency must publish a single notice of such petition in a newspaper of general circulation in the county where the facility or pollution source is located." *See also* 415 ILCS 5/37(a)(2012). Section 104.214(b) requires the Illinois EPA to serve written notice of the petition on the County State's Attorney, the Chairman of the County Board, each member of the General Assembly from the legislative district in which the property is located, and any person in the county who has in writing requested notice of variance petitions. *See* 35 Ill. Adm. Code 104.214(b).
4. Consistent with 35 Ill. Adm. Code 104.214(a), the Illinois EPA published notice of the District's Petition for Extension of Variance in the Decatur *Herald & Review* on March 6, 2014. Consistent with Section 104.214(b), the Illinois EPA sent written notice of the petition to local officials on March 4, 2014.
5. On March, 21, 2014, the Agency received a comment letter ("2014 Letter") from Tinka G. Hyde, Director, Water Division, United State Environmental Protection Agency ("USEPA"). *See* USEPA March 21, 2014 Comment Letter, Exhibit B and C.
6. On April 2, 2014, the Agency received several questions, comments, and articles via email ("Emails") from a concerned citizen for consideration. *See* April 2, 2014 Emails from Emily Hood, Exhibit D.
7. Pursuant to the Board's procedural rules, "[w]ithin 21 days after the publication of notice, the Agency must file with the Board a certification of publication that states the date on which the notice was published and must attach a copy of the published notice." 35 Ill. Adm. Code 104.214(f).

8. Consistent with 35 Ill Adm. Code 104.214(f), on March 25, 2014, the Illinois EPA filed with the Board a certification of publication stating the date on which the notice was published and attached a copy of the published notice.

## III. INVESTIGATION

9. The Illinois EPA is required to "promptly investigate such petition and consider the views of persons who might be adversely affected by the grant of the variance." *See* 415 ILCS 5/37(a) (2012) and 35 Ill. Adm. Code 104.216(a). Section 104.216(b)(1) requires the Agency to provide (i) a description of the efforts made to investigate the facts alleged and to ascertain the views of persons who might be affected, and (ii) a summary of the views so ascertained. *See* 35 Ill. Adm. Code 104.216(b)(1).
10. In preparing this Recommendation, the Illinois EPA consulted personnel within the Division of Water Pollution Control, including Rick Pinneo of the Permits Section and Brian Koch and Bob Mosher of the Water Quality Standards Section.
11. The Agency also carefully reviewed the 2014 Letter from Tinka G. Hyde of USEPA. *See* USEPA March 21, 2014 Comment Letter, Exhibit B. The 2014 Letter references USEPA's March 15, 2013 CITGO Variance Denial letter ("2013 Denial Letter") that disapproved Illinois' request for approval of a variance for CITGO Petroleum Corp. *Id* at 1. *See also* USEPA March 15, 2013 CITGO Variance Denial Letter, Exhibit C. The 2014 Letter states that as was explained in the 2013 Letter, under the Clean Water Act ("CWA") and USEPA's implementing regulations, a variance can only be approved by USEPA as a revision to water quality standards in accordance with section 303(c) of the CWA if, among other things, the State can demonstrate that the designated use for the water body at issue is not attainable for at least one of the reasons specified at 40 CFR 131.10(g). *Id* at 1.
12. The 2014 Letter further states this has been USEPA's long standing interpretation of the CWA and USEPA's implementing regulations and continues to be USEPA's interpretation. *Id* at 1. The 2014

Letter continues, explaining that for a variance to be approvable by USEPA under section 303(c) of the CWA and USEPA's implementing regulations, the Illinois EPA will be required to affirmatively demonstrate that attainment of the General Use designation for the Sangamon River is not feasible due to one of the reasons specified at 40 CFR 131.10(g). *Id* at 1. The 2014 Letter "urge[s] the Illinois EPA and the Board to carefully evaluate the District's variance request to determine whether this threshold has been met" and in doing so, should consider if all alternatives for reducing the discharge of nickel into the Sangamon River have been evaluated and demonstrated to be infeasible. *Id* at 1.

13. The 2014 Letter suggests considering "all alternatives for treating discharges from the District's wastewater treatment plant, all alternatives for reducing nickel in the wastewater from the ADM facility before it enters the District's sewer system such as treatment alternatives and process changes, and all alternatives for eliminating ADM's discharges into the District's sewer system such as piping ADM's discharges away from the sewer system to another receiving stream location where there might be more available dilution than currently exists in the portion of the Sangamon River into which the District discharges." *Id* at 1 and 2. Finally, the 2014 letter reiterates, as was explained in the 2013 Letter disapproving the CITGO variance, the feasibility threshold in section 131.10(g) is different from the "arbitrary and unreasonable hardship" threshold set forth in 415 ILCS 5/35(a). *Id* at 2.

14. The Agency also reviewed the questions, comments, and articles submitted via Email from Emily Hood. *See* April 2, 2014 Emails from Emily Hood, Exhibit D. Ms. Hood touched on many topics associated with the potential impacts to air and water quality due to point source contributions from ADM and Tate & Lyle, as well as from the District. *Id.*

15. The Emails raise air quality concerns regarding carbon monoxide complexing with nickel to form

nickel carbonyl and whether chronic air exposures were taken into consideration. *Id.*

16. As to water quality, the Emails put forth a number of questions, including whether "new nickel and zinc toxicology data" has been included in the variance extension, which seemingly is in reference to whether or not the District has developed site-specific water quality standards. *Id.*

17. Finally, the Emails pose whether the District is claiming that it is not required to meet Clean Water Act and Clean Air Act regulations due to fact that the majority of nickel and zinc emissions are from ADM and Tate & Lyle.

18. Additional and supplemental information provided by Ms. Hood is attached. *See* April 2, 2014 Emails from Emily Hood, Exhibit D.

## IV. COST OF COMPLIANCE

19. Section 104.216(b)(5) of the Board's rules requires the Illinois EPA to estimate the cost that compliance would impose on the Petitioner and others. 35 Ill. Adm. Code 104.216(b)(5). Section 35(a) of the Environmental Protection Act ("Act") (415 ILCS 5/35(a) (2012)) requires the Board to determine if the petitioner has presented adequate proof that it would suffer an arbitrary or unreasonable hardship if required to immediately comply with the Board regulation at issue. *See* 415 ILCS 5/35(a)(2012).

20. As filed, the District's petition provides no discussion of the costs of immediate compliance. *See* 35 Ill. Adm. Code 104.210(b) and (d), 104.204(d). While the District has incorporated the entire PCB 09-125 record pursuant to 35 Ill. Adm. Code 104.210(d)(3), the Agency is unable to accurately ascertain what data from these files is still current and applicable, especially as the District has not made any such representations. The Agency is therefore unable to provide a current estimate of the costs that compliance would impose on the Petitioner and others.

## V. IMPACT

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

22. Section 104.216(b)(6) of the Board's rules requires the Illinois EPA to estimate injury that the grant of the variance would impose on the public, including the effect that continued discharge of contaminants will have upon the environment. *See* 35 Ill. Adm. Code 104.216(b)(6).

23. As indicated in the Petition and Exhibit I of the Petition, the District, along with pretreatment facilities identified as significant sources of nickel and zinc loadings, has taken steps to reduce the concentrations of nickel and zinc received and discharged by Main Plant. Zinc influent and effluent reductions have been sufficiently effective that the District would be compliant with zinc permit limits. Therefore, the District is not seeking a variance extension relating to zinc. However, the District and ADM, the District's most significant industrial source of nickel, are still working towards attaining compliance with the chronic nickel limits. Two significant nickel reduction treatment processes have been installed at ADM and a third (a precipitation and filtration treatment system for ADM's Polyol manufacturing process) is presently being installed.

24. Despite the past and ongoing nickel reductions, complete attainment of the chronic nickel water quality standard is not presently achievable by the District. Thus, a potential for environmental

impacts to the District's receiving water, Segment E-09 of the Sangamon River, exists. Under drought conditions when the District's receiving water contains low stream flow, excess concentrations of nickel from the District occasionally lead to in-stream excursions of the chronic nickel water quality standard. However, despite these excursions (See Petitioner's Exhibit I), District effluent has not had an appreciable effect on aquatic life in the receiving water, as the receiving water has been and continues to be fully supportive of aquatic life use as determined by Illinois EPA and summarized in *Final Illinois IR for 2014*.

25. Additionally, Eastern Illinois University ("EIU") biotic assessments, performed in 1998 and annually from 2001-2014, conducted upstream and downstream of the District's discharge point have not shown an appreciable environmental impact from the District's effluent. In fact, according to these EIU studies, slight improvements in biotic communities have been observed downstream of the District. However, this may be more so attributed to the consistent flow existing downstream of the discharge point, rather than the quality of the effluent being discharged.

26. While Illinois EPA is concerned that nickel concentrations in the District's effluent may be harmful due to exceedances of the chronic nickel water quality standard, Illinois EPA is also cognizant that the existing hardness-based chronic nickel standard applicable to the receiving water may not be entirely representative of nickel toxicity due to site-specific water quality. Based on the physical and chemical characteristics of the receiving water, a site-specific chronic nickel water quality standard using a multitude of parameters influencing nickel toxicity (e.g. pH, hardness, dissolved organic carbon) may be more appropriate than the General Use standard based solely on hardness. Therefore, the District, along with oversight from Illinois EPA and USEPA, is currently working towards the development of site specific nickel water quality standards for its receiving water. Once developed, a re-evaluation of the environmental impacts from the District's discharge may be necessary.

## VI. COMPLIANCE PLAN

27. Pursuant to section 104.204(f), the Petitioner is required to present a detailed description of the compliance plan. *See* 35 Ill. Adm. Code 104.204(f). The District does provide a plan with suggested conditions. However, the District provides no detailed description of how the plan will bring them into compliance. *See* Petition For Extension of Variance at 12 and 13.

28. Suggested Condition f. in the District's compliance plan provides the District will "achieve compliance with the District's NPDES permit effluent limits for nickel" by July 1, 2015. *Id.* at13. The District provides no details on, or explanation as to how that is possible given that the appropriate research required for the development of a site specific nickel water quality standard for the District's receiving water is still on-going. One possibility is that the District will come into compliance with the existing permit limits by implementing the third nickel reduction treatment process at ADM. However, the District notes that "reducing nickel concentration reductions in the District's influent will not, by itself, allow the District to achieve compliance with its current NPDES discharge limit for Nickel." *Id* at 11. Therefore, the Agency is unable to ascertain how compliance with the District's NPDES permit effluent limits for nickel by July 1, 2015 is possible.

## VII. CONSISTENCY WITH FEDERAL LAW

29. Section 104.216(b)(7) of the Board's rules requires the Agency to provide an analysis of applicable federal laws and regulations as well as an opinion concerning the consistency of the petition with such federal laws and regulations. See 35 Ill. Adm. Code 104.216(b)(7).

*ANALYSIS OF APPLICABLE FEDERAL LAW AND REGULATIONS*

*Designated Uses and Water Quality Criteria*

30. Section 101(a)(2) of the Clean Water Act ("CWA") states the national interim goal of achieving by July 1, 1983, "water quality which provides for the protection and propagation of fish, shellfish, and

wildlife and provides for recreation in and on the water" (hereafter collectively referred to as "the uses specified in section 101( a)(2)"), wherever attainable. Section 303 of the CWA requires states to adopt water quality standards for waters of the United States within their respective jurisdictions. Section 303(c) of the CWA requires, among other things, that state water quality standards include the designated use or uses to be made of the waters and water quality criteria based upon such uses.[1]

31. USEPA's regulations at 40 CFR Part 131 interpret and implement sections 101(a)(2) and 303(c) of the CWA through a requirement that water quality standards include the uses specified in section 101(a)(2) of the CWA, unless those uses have been shown to be unattainable, in which case a state can adopt subcategories of the uses specified in section 101(a)(2) which require less stringent criteria. *See* 40 CFR 131.5(a)(4), 131.6(a), and 131.10(j), and 131.20(a); *see also* Idaho Mining Association v. Browner,.90 F.Supp. 2d 1078, 1092 (D. Id. 2000); 68 Fed. Reg. 40428, 40430-31 (July 27, 2003).

32. Federal regulations regarding the designation of uses are found in 40 CFR 131.10.[2] Section 131.10(g) provides that, once a state designates the uses specified in section 101(a)(2) of the CWA or subcategories thereof for a specific water body, the state can only remove the designated use if, among other things, the state can demonstrate that attaining the designated use is not feasible for at

[1] Section 303(c)(2)(A) of the CWA requires that water quality standards "protect the public health or welfare, enhance the quality of water and serve the purposes" of the CWA. USEPA's regulations at 40 CFR 131.2 explain that:

> "Serve the purposes of the Act" (as defined in sections 101(a)(2) and 303(c) of the Act) means that water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value of public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water, and agricultural, industrial, and other purposes including navigation.

[2] When a state adopts designated uses that include the uses specified in section 101(a)(2) of the CWA or subcategories thereof, the state must also adopt "water quality criteria that protect the designated use." 40 CFR 131.11 (a). "Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use." *Id.*

least one of the six reasons set at 40 CFR 131.10(g)[3].

33. Unlike with designated uses, nothing in the CWA or USEPA's regulations allows states to relax or modify criteria, based on concepts of attainability, to levels that are not protective of the designated use. Instead, if criteria are not attainable, the CWA and USEPA's regulations allow states to (1) remove the current designated use after demonstrating, among other things, that attaining the current designated use is not feasible for one of the 40 CFR 131.10(g) reasons, and replace it with a subcategory of use and, then, (2) adopt new, potentially less stringent, criteria necessary to protect the new designated use.

*Variances*

34. USEPA provides it has long recognized[4] it could also approve a state decision to limit the applicability of the use removal to only a single discharger, while continuing to apply the previous use designation and criteria to other dischargers. Such a state decision, which is often referred to as a

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[3]40 CFR 101.10(g): States may remove a designated use which is *not* an existing use, as defined in §131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is not feasible because:
(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or
(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or
(3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or
(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or
(5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or
(6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

[4] USEPA March 21, 2014 Comment Letter, Exhibit B., USEPA March 15, 2013 CITGO Variance Denial Letter, Exhibit C. Decision of the General Counsel No. 44, June 22, 1976., Decision of the General Counsel No. 58, March 29, 1977 (published, in part, at 44 F.R. 39508 (July 6, 1979))., EPA's definition of a WQS variance to the Regional WQS Coordinators, July 3, 1979., Director of the Office of Water Regulations and Standards, responding to questions raised on WQS variances, issued a reinterpretation of the factors that could be considered when granting variances, March 1985., Water Quality Standards Handbook - Chapter 5: General Policies pp.: 5-1–5-12.

"variance," can be approved as being consistent with the requirements of the CWA and 40 CFR Part 131. This is because the state's action in limiting the applicability of an otherwise approvable use removal to a single discharger and to a single pollutant is environmentally preferable and would be more stringent than a full use removal. States have the right to establish more stringent standards under section 510 of the CWA. See 58 FR 20802, 20921-22 (April16, 1993).

*USEPA Proposed Rule*

35. On September 4, 2013, USEPA proposed clarification revisions to USEPA's water quality standards regulations. *See* Water Quality Standard Regulatory Clarifications,78 Fed Reg.54518 (Sept 4, 2013).

36. The proposed revision adds Section 131.14 to establish regulatory guidelines for Water Quality Standard ("WQS") variances and WQS variance renewals, including that a WQS variance submission must specify:

    a. the pollutant(s), the permittee(s), and/or the waterbody or water by segments to which the WQS variance applies;
    b. numeric interim requirements that apply during the WQS variance for CWA section 402 NPDES permitting and section 401 certification;
    c. an expiration date not to exceed 10 years; and
    d. a section 131.10(g) factor to justify why and for how long a WQS variance is necessary.

37. A WQS variance will be defined as "a time-limited use and criterion for a specified pollutant(s), permittee(s), and/or waterbody or waterbody segment(s) that reflect the highest attainable condition during the specified time period." *See* EPA 820-F-13-026, Summary of Water Quality Standards Regulatory Clarifications Proposed Rule, August 2013.

38. In the 2014 Letter, USEPA informed the Agency, "a variance can only be approved by the USEPA as a revision to water quality standards in accordance with section 303(c) of the CWA if, among other things, the State can demonstrate that the designated use for the water body at issue is not attainable for at least one of the reasons specified in 40 CFR 131.10(g)." *See* USEPA March 21,

2014 Comment Letter, Exhibit B. USEPA went on to say, "this continues to be USEPA's interpretation and nothing in the Federal Register notice or in the USEPA's proposed revisions to its water quality regulations changes that longstanding interpretation." *Id.*

*Water Quality Submission Requirements and USEPA Review Authority*

39. Pursuant to 40 CFR 131.6, states must submit, among other things, the following to the USEPA for review when they adopt new or revised designated uses and criteria:

    a. Use designations consistent with the provisions of section 101(a)(2) and 303(c)(2)of the CWA.
    b. Methods used and analyses conducted to support water quality standards revisions.
    c. Water quality criteria to protect the designated uses.
    ....
    f. General information which will aid the Agency in determining the adequacy of the scientific basis of the standards which do not include the uses specified in section 101(a)(2) of the CWA as well as information on general policies applicable to State standards which may affect their application and implementation.

40. Pursuant to 40 CFR 131.5 5(a), in reviewing new or revised use designations and criteria, the USEPA must determine, among other things:

    1. Whether the State has adopted water uses which are consistent with the requirements of the Clean Water Act;
    2. Whether the State has adopted criteria that protect the designated uses;
    ...
    4. Whether the State standards which do not include the uses specified in section 101 (a)(2) of the Act are based upon appropriate technical and scientific data and analyses; and
    5. Whether the State submission meets the requirements included in § 131.6 of this part.

41. Pursuant to 40 CFR 131.21(c)(2), new or revised water quality standards that are adopted by states do not become applicable water quality standards for purposes of the CWA until after they have been submitted to and approved by USEPA in accordance with section 303(c) of the CWA.

*ILLINOIS EPA OPINION CONCERNING THE CONSISTENCY OF THE PETITION WITH FEDREAL LAW AND REGULATIONS*

42. Under USEPA's regulations and interpretations, a state can only remove a designated use specified in section 101(a)(2) of the CWA, or a subcategory thereof, if, among other things, the state demonstrates that it is not feasible to attain the designated use for one of the reasons specified at 40 CFR 131.10(g). *See* 2013 Denial Letter. USEPA holds that the CWA and federal regulations do not allow states to remove designated uses or modify criteria simply because a state believes that such standards "would impose an arbitrary or unreasonable hardship." *Id.*

43. Petitioner makes no demonstration that it is not feasible to attain the designated use for one of the reasons specified at 40 CFR 131.10(g).

44. As was set forth in the 2013 Denial Letter, and reiterated in the 2014 Letter, USEPA will not approve a variance request that does not affirmatively demonstrate that attainment of the designated use is not feasible for one of the reasons specified at 40 CFR 131.10(g). Without such a demonstration, a variance granted by the Board will be disapproved by the USEPA pursuant to its stated regulations and longstanding policy and interpretations. Therefore, until the District demonstrates that is not feasible to attain the designated use for one of the reasons specified at 40 CFR 131.10(g), the Agency concludes the Petition is inconsistent with Federal Law and Regulations.

## VIII. PERMITS AND ENFORCMENT ACTION

45. Section 104.214(b)(8) of the Board's rules requires the Illinois EPA to discuss in its recommendation the status of any permits or pending permit applications that are associated with or affected by the requested variance. 35 Ill. Adm. Code 104.216(b)(8).

46. The District's NPDES Permit was issued April 20, 2007 and became effective July 1, 2007. This permit has an expiration date of June 30, 2012. This permit was modified July 1, 2009. A

modification request was received by the Agency June 20, 2010 and a draft of the modification was sent to 15-day notice April 12, 2011. The permit was then sent to 30-day notice on May 20, 2011. The Agency received comments from Prairie River Network as well as from the District. A public hearing was not held for this modification request. The Agency received a renewal application on December 27, 2011.

47. In addition to the Initial Variance, the Board granted Petitioner a Site Specific Rule exempting the District from certain biochemical oxygen demand and suspended solids discharge limits. This Site Specific Rule can be found at Section 304.212 of Title 35 of the Board regulations. *See* 35 Ill. Adm. Code 304.212.

48. The Illinois EPA is required by Section 104.216(b)(4) to inform the Board of any past or pending enforcement actions against the Petitioner. *See* 35 Ill. Adm. Code 104.216(b)(4).

49. The District was issued four Violation Notices for Overflows from Sanitary Sewers since the Initial Variance. Violation Notice W-2011-50444, issued November 2, 2011, cited a sanitary sewer overflow. Following the Violation Notice the District returned to compliance. Violation Notice W-2011-50421, issued November 2, 2011, cited a sanitary sewer overflow. The Agency accepted the District's response on December 22, 2011. Violation Notice W-2012-50173, issued on July 9, 2012, cited a sanitary sewer overflow. The Agency accepted the District's response on August 29, 2012. Violation Notice W-2013-50013, issued on February 13, 2013, cited a sanitary sewer overflow. The Agency accepted the District's response on April 23, 2013.

50. USEPA has an on-going case with the District for sanitary sewer overflows. Therefore, the Agency is currently sending all new (since April 2013) sanitary sewer overflow violations to USEPA.

51. The District was issued three Violation Notices for Overflows from Sanitary Sewers in 2009. Violation Notice W-2009-00181, issued on July 2, 2009, cited a sanitary sewer overflow that

occurred on May 24, 2009. Violation Notice W-2009-00188, issued July 2, 2009, cited a sanitary sewer overflow that occurred on May 29, 2009. Violation Notice W-2009-00189, also issued July 2, 2009, cited a sanitary sewer overflow that occurred on June 1, 2009.

52. Finally, the District has been the respondent to at least four Illinois EPA enforcement actions that occurred more than 20 years ago:

    a. a case filed in U.S. District Court on December 17, 1982 that resulted in the District paying a civil penalty of $1000;

    b. case number PCB 1977-238 was a Water enforcement case against both the City of Decatur and Decatur Sanitary District that involved a fishkill resulting from discharges from the combined sewer and wastewater treatment plant;

    c. case number PCB 1977-157 was a mixed media enforcement case against the District, A.E. Staley Manufacturing Company and ADM that involved among other issues, violations of the dissolved oxygen limits set in the District's NPDES permit; and

    d. case number PCB 1976-181 was an Air enforcement case (listed as a Land enforcement case) on the Board's website at http://www.ipcb.state.il.us/COOL/external/CaseView.aspx?referer=results&case=10015 against the District that involved excessive odors at the sewage treatment plant.

## IX. RECOMMENDATION

53. Given that the District needs to perform additional Biotic Ligand Model ("BLM") work and ADM has yet to implement new pretreatment technology to reduce nickel, the District is clearly in need of additional time by which to achieve compliance with the applicable nickel water quality

standard. The Agency believes that additional time of one year would be sufficient to complete the appropriate BLM research required to validate the resulting site-specific nickel standard and file a petition with the Board. This additional time would also allow the District to conduct the confirmatory Water Effects Ratio ("WER") testing, should it choose to do so. The request to seek this additional time through a variance however must comply with state as well as federal requirements. As discussed in detail under the Consistency With Federal Law heading, the District has failed to comply with the mandatory federal requirements. The District maintains that there is no valid current applicable federal law or regulation that precludes the Board's granting the District's variance extension request. However, under USEPA's regulations and interpretations, the District can only remove a designated use specified in section 101(a)(2) of the CWA, or a subcategory thereof, if, among other things, the District demonstrates that it is not feasible to attain the designated use for one of the reasons specified at 40 CFR 131.10(g).

54. Based on the totality of the factors stated above, the Illinois EPA recommends that the Board DENY the Petitioner's request for an extension of variance from water quality standards for nickel 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.

Wherefore, for the reasons stated above, the Illinois EPA recommends that the Board **DENY** the extension of variance requested by the Sanitary District of Decatur.

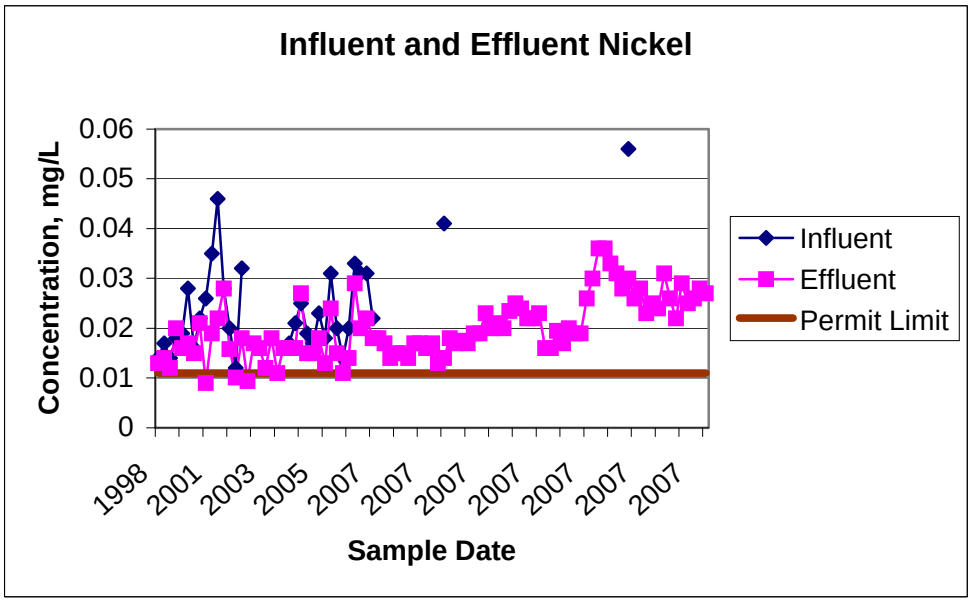
Respectfully submitted,

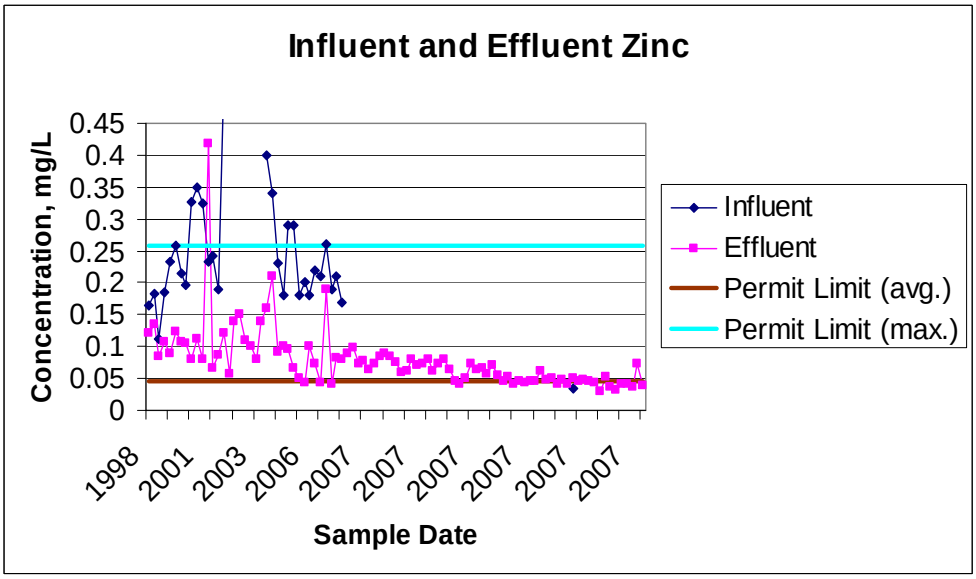
Dated: April 7, 2014
1021 North Grand Avenue East
PO Box 19276
Springfield IL 62794-9276
217-782-5544

By: Sara Terranova
Sara Terranova
Assistant Counsel
Illinois EPA

# Exhibit 6

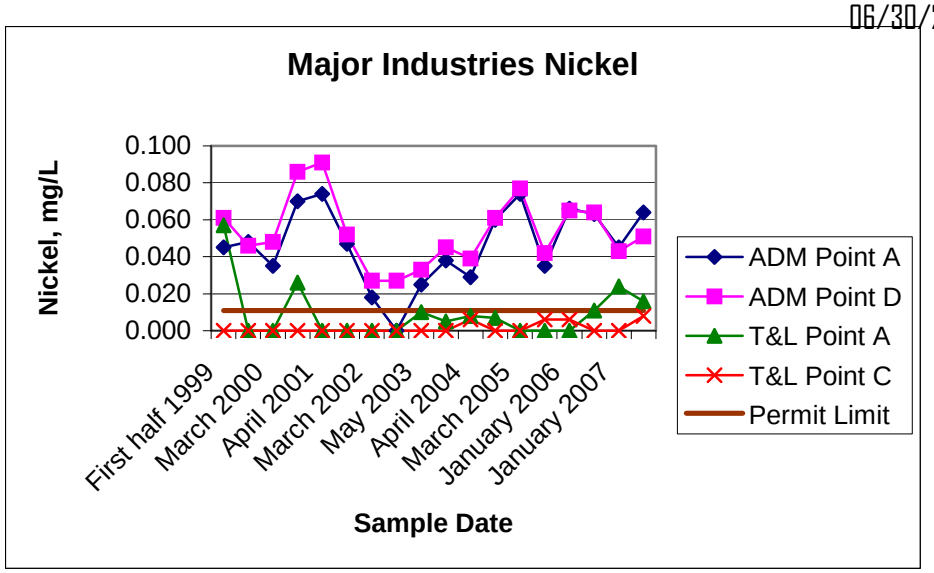
## SDD Nickel & Zinc Limits



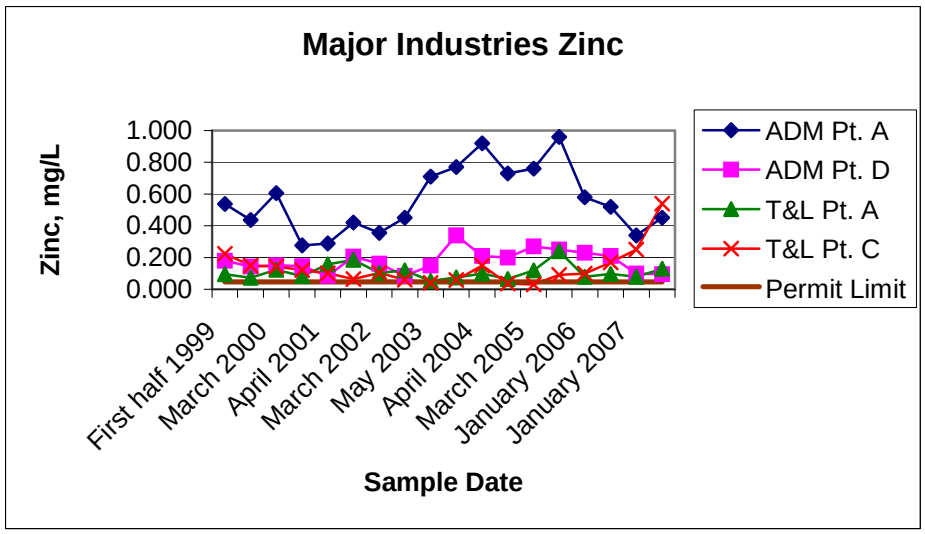




"Domestic" wastewater concentrations
- Nickel – below detection limit
- Zinc – approximately 0.066 mg/L

Drinking water supply concentrations
- Nickel – below detection limit
- Zinc – approximately 0.011 mg/L




(ADM permit limit for Ni is 0.17 mg/L)




Ongoing information gathering
- Influent, effluent, stream sampling
- Industrial and domestic wastewater sampling
- Chronic toxicity testing
- EIU stream biosurveys

Calculation options
- Translator study
- Hardness
- Biotic ligand model

Questions
- Other dischargers affected?
- Any federal updates on Ni and Zn criteria scheduled?
- Relief options potentially available – site-specific standards, use designation?
- Others? Which could IEPA support?
- Other information needed?
- Five day/week monitoring?

**Tim Kluge**

**From:** Twait, Scott [Scott.Twait@Illinois.gov]
**Sent:** Wednesday, January 02, 2008 4:55 PM
**To:** timk@sdd.dst.il.us
**Cc:** Keller, Al; Mosher, Bob; Pinneo, Rick
**Subject:** Zinc and Nickel

Tim,

I looked at the Decatur December 20, 2007 report for zinc and nickel. Based on our procedures, the Agency uses the tenth percentile hardness during the tenth percentile low flows. In this case, we used the tenth percentile hardness for the low flow period August 2, 2007 through November 1, 2007 which resulted in a critical hardness of 359 mg/L. The Agency also used all of the translator data (excluding data when both the dissolved and total were below the detection level) that was available. This resulted in a translator for zinc of 0.848 and a translator for nickel of 0.966. Permit limits would result in:

Zinc monthly average = 0.0637/0.848 = 0.075 mg/L
Zinc daily maximum = 0.3529/0.848 = 0.416 mg/L

Nickel monthly average = 0.0147/0.966 = 0.015 mg/L

If you have any questions or would like to schedule a meeting, please let me know.

Scott

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

December 29, 2008

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.

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

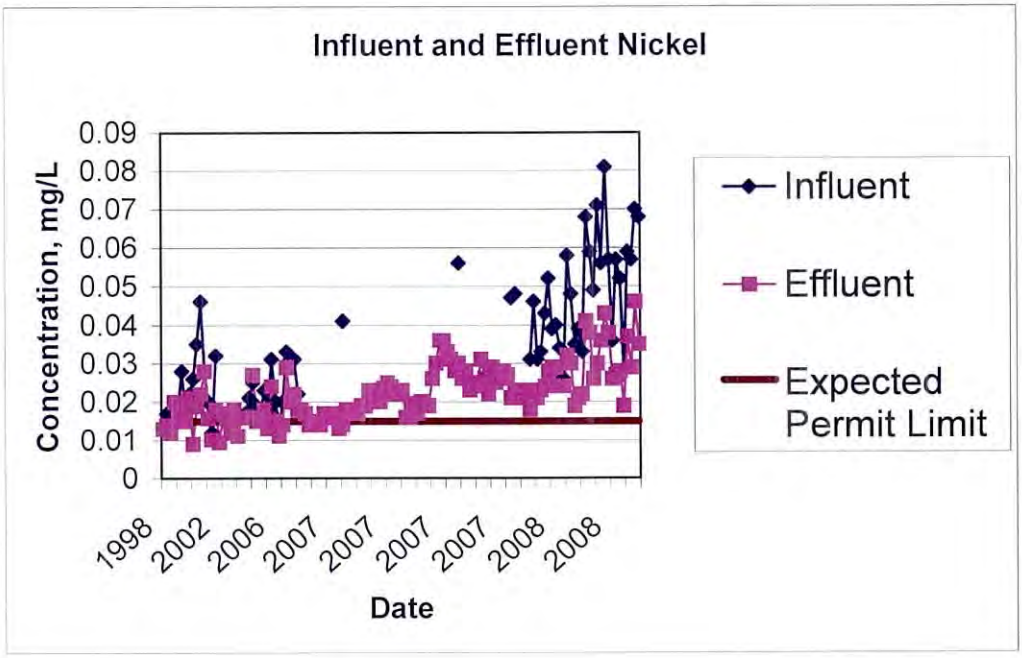
**Sanitary District of Decatur**
**Nickel and Zinc Limits**
**December 2008 Interim Report**

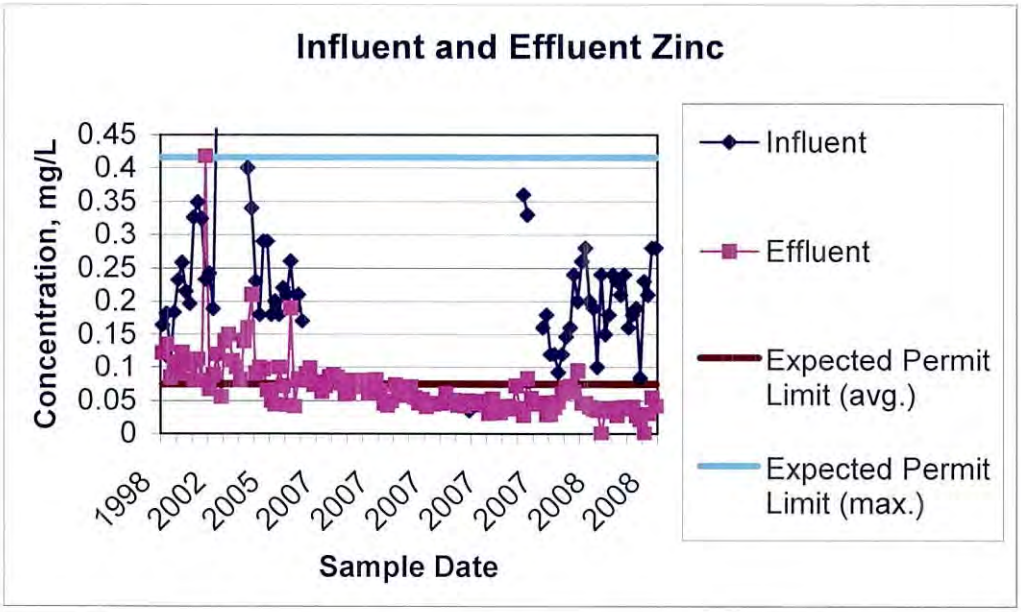
The reissued NPDES permit for the Sanitary District of Decatur that became effective July 1, 2007 contains new limits for nickel and zinc and a two-year compliance schedule for meeting the limits. Special Condition 18 requires that an interim progress report be submitted to Illinois EPA by January 1, 2009. A summary of information gathered and activities since the July 1, 2008 report is provided below.

**Plant Influent and Effluent Sampling**

Nickel and zinc have been included in quarterly plant influent and effluent sampling for many years. During 2007, effluent sampling frequency increased to twice weekly as part of the translator study. Ongoing influent and effluent sampling for nickel and zinc is planned to continue at a frequency of twice monthly. The District will begin 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 would not be able to consistently meet the expected nickel limit calculated on a hardness of 359 mg/L (per 1/2/08 email from Scott Twait of Illinois EPA). Recent zinc concentrations appear to be below the expected limit.






**Industrial Source Sampling**

Analyses for metals including nickel and zinc have been performed semi-annually as part of the District's industrial pretreatment program. Sampling of the major industries (ADM and Tate & Lyle) has been increased to monthly and other industries discharging metals are now sampled quarterly.

**Receiving Stream Sampling**

Upstream and downstream sampling at the locations described in the translator study will be continued at a twice monthly frequency to provide a more complete picture of nickel and zinc in the Sangamon River.

**Chronic WET Testing**

Chronic toxicity tests were conducted in July and September 2007. An additional chronic toxicity test using EDTA to chelate metals in the samples was conducted in December 2007. The EDTA treated tests showed more chronic toxicity than the untreated effluent, which the laboratory attributed to the possibility that EDTA itself was causing toxicity. Results of the toxicity testing have been reviewed by Illinois EPA personnel.

**Industrial Source Investigations**

Tentative pretreatment local limits have been calculated based on the expected permit limits for nickel and zinc. The District's two major industrial users have been made aware of the tentative limits. During 2008, three formal meetings have been held with ADM personnel and one with Tate & Lyle; inspections and other contacts with each during the year also oncluded discussion of nickel and zinc issues. 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 expected zinc pretreatment limit. ADM is continuing to ivestigate the possible impact of the zinc limit on their planned wasting of solids from the pretreatment system to the District.

ADM is by far the most significant industrial source of nickel. While it is primarily used as a catalyst in hydrogenation processes, investigations have found that even very small amounts that exist in other plant waste streams become important when pretreatment limits are very low. Incoming grain and sodium hydroxide used in the plant contain small but significant amounts of nickel. Production swings and changes in product mix present sampling challenges. A summary of ADM's investigations and findings to date is attached. A meeting with ADM early in January 2009 is planned to further review their investigations and plans for compliance.

Several other industrial users would also be impacted by reduced pretreatment limits for nickel and zinc. While their concentrations are a concern, they discharge a very small volume of wastewater relative to the two large users and have an insignificant impact on concentrations in the plant influent. Use of mass rather than concentration pretreatment limits is being considered for these small users.

**Water Quality Standard Investigations**

The year 2008 was unusually wet, and did not present the opportunity to gather additional data related to a translator for nickel and zinc under critical low flow conditions. Following consultation with Illinois EPA, the District is continuing to investigate approaches to a water quality standard adjustment including the biotic ligand model and the water effect ratio approach. An initial contact has been made with a consultant that seems to be very familiar with these approaches, and information is being gathered to evaluate their possible application. In addition, the District has begun to consider what information might be needed to justify a standard based on a different level of water quality protection, as allowed for by state and federal regulations.

**Compliance Plan**

During the next reporting period, the District will continue to work toward compliance with final nickel and zinc limitations by means of the following activities:

1. Request a modification of the District's NPDES permit extending the compliance schedule for meeting the nickel and zinc limits. In spite of ongoing investigations by the District and ADM, it appears that the current nickel limit cannot be achieved without changes to treatment processes, operations (in particular, operations at industrial users), a site-specific adjustment of the water quality standard, or some combination of these three actions.

2. Continued effluent and stream monitoring to determine whether further adjustment of NPDES permit limits may be justified.

3. Finalization of local pretreatment limits for nickel and zinc, and ongoing discussions with industrial users regarding pollution prevention or control measures to enable reductions of nickel and zinc.

4. Ongoing review and analysis of technical information that would be needed to support a site-specific water quality standard. This information includes both biological and toxicity data related to the standard, and economic data that would also be required for a legal proceeding.

The next report will be submitted by July 1, 2009 as required by our NPDES permit.

**CURRENT ADM DECATUR COMPLEX BALANCE - 1H2006**

| | | Lbs / day | MGD | ppm Ni | lbs Ni / day | ppm Zn | lbs Zn / day | % of Ni from Grain | Ni from Grain, Lbs / day |
|---|---|---|---|---|---|---|---|---|---|
| IN | ALL Water into Complex | | 18.5 | | 0 | | 0 | | |
| | 50% Sodium Hydroxide | 215,000 | | 1.7 | 0.4 | | | | |
| | ALL Grains into Complex | 36,500,000 | | | 57 | | 1300 | | |
| TO ADM WWTP | Corn Plant | | 5.1 | 0.040 | 1.70 | 0.40 | 16.9 | 50% | 0.85 |
| | East Plant | | 2.5 | 0.20 | 4.15 | 0.80 | 16.6 | 100% | 4.15 |
| | Biochem | | 1.65 | 0.030 | 0.41 | 0.30 | 4.1 | 100% | 0.41 |
| | West Plant | | 0.9 | 0.090 | 0.67 | 0.40 | 3.0 | 0% | 0 |
| | TOTAL to ADM WWTP | | | | 6.9 | | 40.6 | | 5.4 |
| EFFLUENT | Clarifier Carryover - Bugs | 35,000 | | 100 | 3.5 | 800 | 28.0 | | |
| | Effluent, Soluble Portion | | 9.3 | 0.091 | 7.0 | 0.11 | 8.5 | | |
| | C. Twr Blowdown Residual | | 2.7 | 0.020 | 0.45 | 0.15 | 3.4 | | |
| | FINAL EFFLUENT to SDD | 35,000 | 12.0 | 0.11 | 11.0 | 0.40 | 39.8 | | |
| | SDD Avg Limit (Proposed) | | | 0.0365 | 3.588 | 0.352 | 34.605 | | |

These numbers represent our best estimates of the current balance however these numbers may not take into account various factors inlcuding:

- Storm Water
- Glycol Plant Start-up (Ni Catalyst)
- Complex Variability:
  - --- Fructose Production swings
  - --- New Ion Exchange product, Feb09
  - --- Changes in IX / Non-IX balance
- Future Soy Expansion
- 50% NaOH contains nickel & Soda Ash availability
- Future In-plant Water Re-use efforts, reduced Effluent flow

**A**

## SOURCES

| | ppm Nickel Dry Basis | ppm Zinc Dry Basis | Bushels / day | Lbs Dry Grain / day | Lbs Nickel / day | Lbs Zinc / day |
|---|---|---|---|---|---|---|
| Corn: | 0.53 | 32 | 550,000 | 26,026,000 | 14 | 833 |
| Soybeans: | 4.1 | 46 | 200,000 | 10,440,000 | 43 | 480 |
| TOTAL with GRAIN | | | | 36,466,000 | 57 | 1,313 |
| Effluent, Lbs / day Max @ 12 MGD | | | | | 3.6 | 34.6 |

**Additional Nickel & Zinc Sources:**

**-- Nickel Catalysts used at Corn and West Plants.**

**-- Residual nickel & zinc at Corn Plant Towers, residual zinc at Bio Products Towers.**

| B | THESE STREAMS ARE OK |
|---|---|
| Co-gen: | Boiler Blowdown<br>RO Reject water<br>IX Waste Neutralization<br>#6 Cooling Tower |
| East Plant: | Refinery (low salt) |
| Biochem: | Bio Condensate (low salt)<br>Cooling Tower Blowdowns |
| Corn Plant: | Mill Hotwell condensate<br>Feed Scrubber discharge<br>Waste Heat condensate<br>Alcohol waste<br>Cooling Tower Blowdowns |
| West Plant: | Greasy Tower<br>Split Box<br>Car Washer (?)<br>Bean & Germ Plant Split Boxes<br>SFI |

## C STREAMS that have shown HIGH LEVELS

**Co-gen:** None

**East Plant:** 8" & 12" Isolate (high salt)
0.2 to 0.3 ppm Ni and 1 ppm Zn.

**Biochem:** Biochem Waste (high salt)
Nickel at 0.02 - 0.04ppm. Zinc in 0.3 - 0.6 ppm range.

**Corn Plant:** Refinery Fructose & Sorbitol IX regen waste
High Ni and Zn, varies with batch IX operation
Average Ni is 0.15ppm and zinc is 0.14 ppm

**West Plant:**

24 hour composite at Corn Plant
Periods of high Ni and Zn.

Packaging Plant
Zinc excursions > 1ppm.

Vitamin E
Nickel as high as 0.2 ppm.

1st DAF, 2nd DAF and Primary Skimmer
Periods of high nickel.

SSL waste
Zinc excursions > 1ppm.

Storm Water
Nickel excursions > 0.1ppm.

D

# Nickel & Zinc Chronology

| | |
|---|---|
| **2006-2007** | Investigated nickel recovery by electroplating…cost savings. |
| **Jan-08** | New SDD specs on nickel and zinc: 0.17 to 0.037ppm Ni and 0.45ppm Zn. |
| | Effluent was 0.06 to 0.10 ppm Ni at that time. |
| | Nickel found in West Plant stream & CP Cooling Towers. |
| **Mar - Apr 2008** | Hired nickel consultant at Corn Plant. |
| | Ran West Plant High Salt trial. |
| **May-08** | Met with SDD representatives. |
| | Began sampling program throughout Corn Plant & Sewer Plant. |
| | Ceased all zinc addition to Cooling Towers. |
| | West Plant in-process sampling began. |
| | Identified zinc analysis issues. |
| **June - July 2008** | Opened dialog with nickel catalyst supplier. |
| | Nickel precipitation problems surfaced…nickel-gluconate complex. |
| | Hydrogenation pH looked at again. |
| | SDD changed testing basis. |
| **Aug-08** | Widened scope of sampling. |
| | Began sharing samples with EPA lab. |
| | Streams of interest confirmed by EPA lab. |
| | Pursuing nickel-gluconate oxidation. |
| | Sought participation by ADM Research & GE Betz |
| **Sept - Nov 2008** | Turned Complex-wide sampling over to individual plants. |
| | Each plant responsible for determining reduction methods. |
| | Determined degree of Sludge nickel and zinc levels. |
| | Learned of lower nickel limit…3.7 lbs / day to 2.3 lbs / day. |
| | Began calculations on effect of Sludge wasting on effluent nickel & zinc. |
| | Ran bench and plant trials on nickel removal methods at Corn Plant. |
| | Determined approx % reduction necessary at each plant to reach nickel limit. |
| | Chemistry change on #4 Tower lowered zinc ppm to <0.5 ppm. |

# REDUCING NICKEL & ZINC

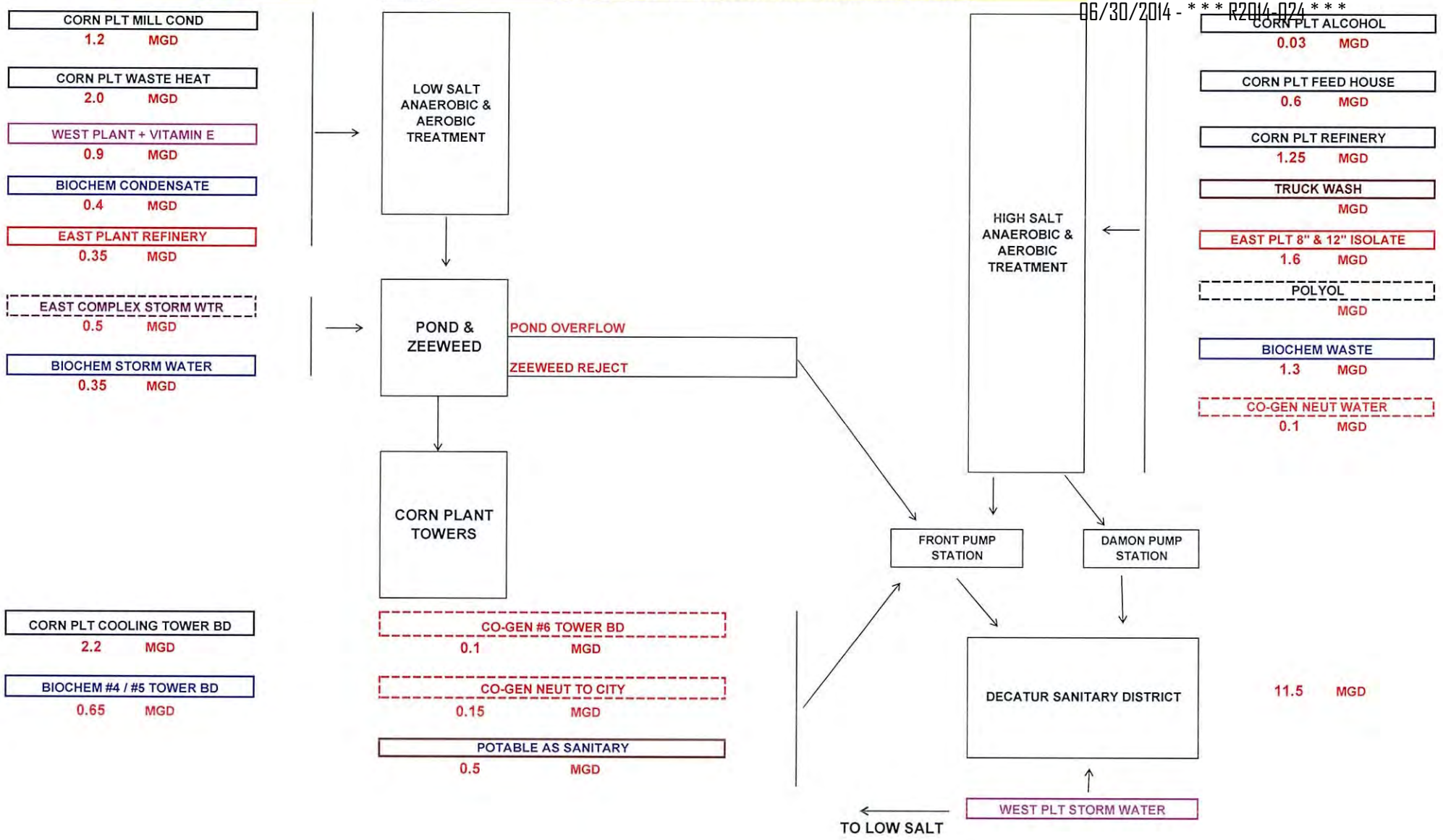


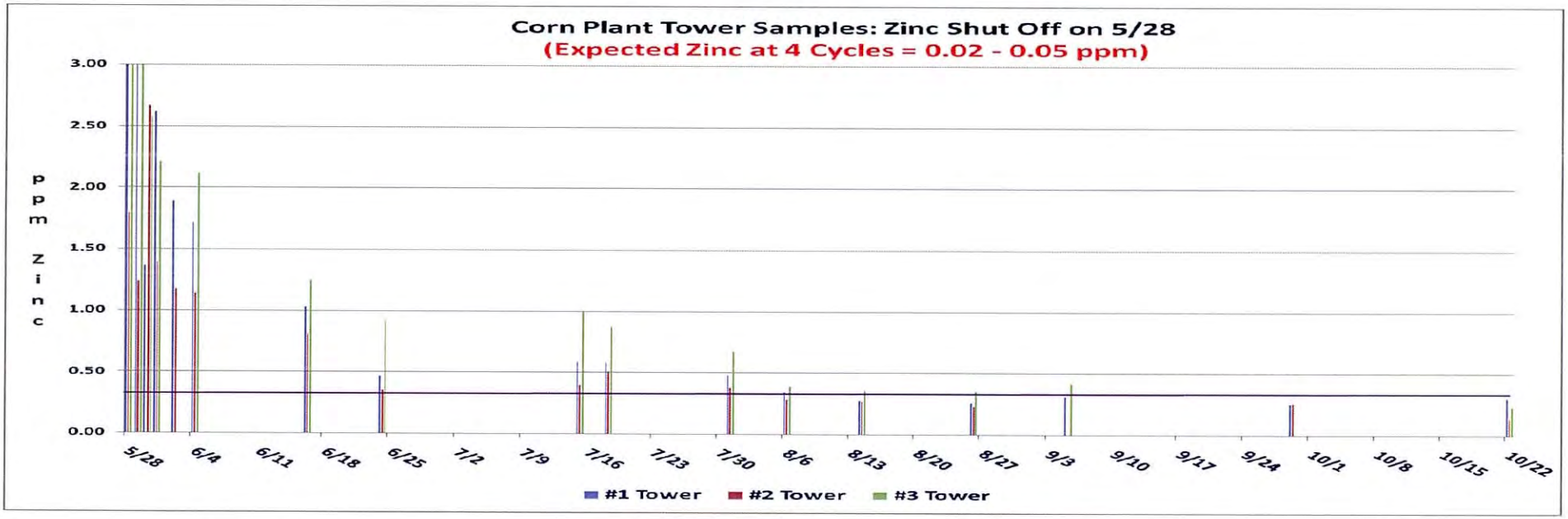
- Incoming Water (SWTP, NWTP and Well Water) not an issue.
- Zinc analysis had issues through mid-summer 2008.
- ADM ICP method will under-report nickel vs. EPA lab --- use multiplier.
- Both nickel & zinc will bleed from Cooling Tower systems.
- Streams with significant zinc-containing suspended solids are very difficult to filter.
- Nickel reclamation via electroplating has many issues in facilities of our kind.
  Chelating IX resins are not food grade. Expect high Acid / Base usage for any IX system.
  Nickel will precipitate at ~9.5 - 10.5 pH if it is not complexed with organic material.
  Organic matter can be oxidized with ozone and H2O2 to allow nickel precipitation. Very high ozone usage.
- In some plants, there are intermittent processes & discharges which complicate discovery of sources.
- Short-term, select streams can be sent to a Co-product, given FDA and quality compliance.
- Zinc can be brought under the limit by wasting sludge by removal from the effluent.
  Clarifier operation will be critical and may require additional drying equipment with signficant capital expenditure.
- If all Corn Plant acid IX waste is treated, approx 2.5MM lbs of 35% HCl per month must be raised to 10pH.
- Soy-based operation will need to find a feed / fertilizer outlet to reduce nickel & zinc.
- Oil refining operation believes that moving the entire catalyst handling system may significantly reduce nickel.

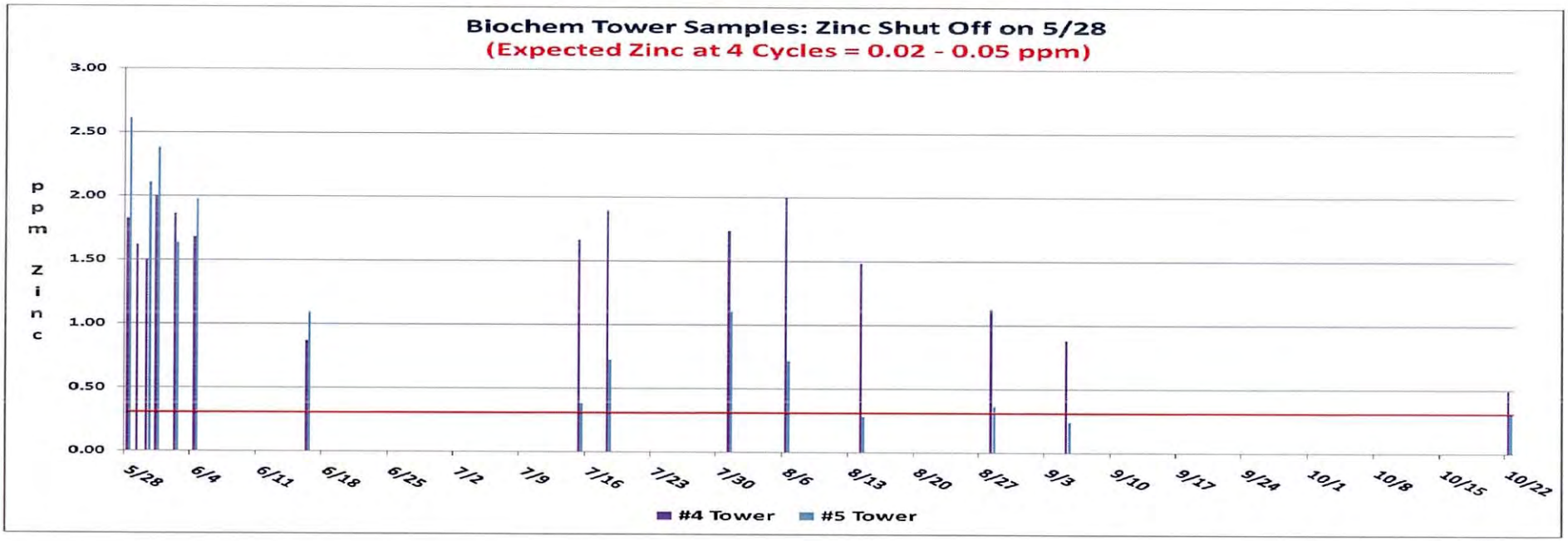
2008

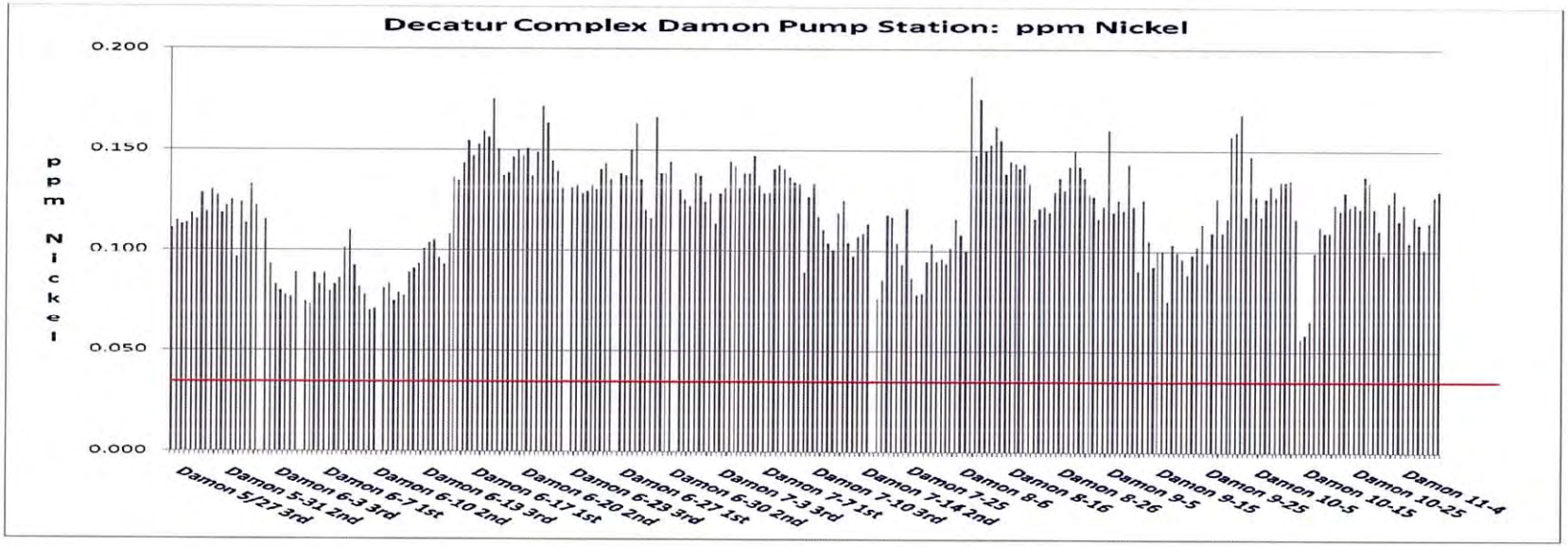
F

# BASIC WASTE WATER TREATMENT LAYOUT




Corn Plant Tower Samples: Zinc Shut Off on 5/28
(Expected Zinc at 4 Cycles = 0.02 - 0.05 ppm)
ppm Zinc
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/28
6/4
6/11
6/18
6/25
7/2
7/9
7/16
7/23
7/30
8/6
8/13
8/20
8/27
9/3
9/10
9/17
9/24
10/1
10/8
10/15
10/22
#1 Tower
#2 Tower
#3 Tower


Biochem Tower Samples: Zinc Shut Off on 5/28
(Expected Zinc at 4 Cycles = 0.02 - 0.05 ppm)
ppm Zinc
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/28
6/4
6/11
6/18
6/25
7/2
7/9
7/16
7/23
7/30
8/6
8/13
8/20
8/27
9/3
9/10
9/17
9/24
10/1
10/8
10/15
10/22
#4 Tower
#5 Tower


Decatur Complex Damon Pump Station: ppm Nickel
ppm Nickel
0.200
0.150
0.100
0.050
0.000
Damon 5/27 3rd
Damon 5-31 2nd
Damon 6-3 3rd
Damon 6-7 1st
Damon 6-10 2nd
Damon 6-13 3rd
Damon 6-17 1st
Damon 6-20 2nd
Damon 6-23 3rd
Damon 6-27 1st
Damon 6-30 2nd
Damon 7-3 3rd
Damon 7-7 1st
Damon 7-10 3rd
Damon 7-14 2nd
Damon 7-25
Damon 8-6
Damon 8-16
Damon 8-26
Damon 9-5
Damon 9-15
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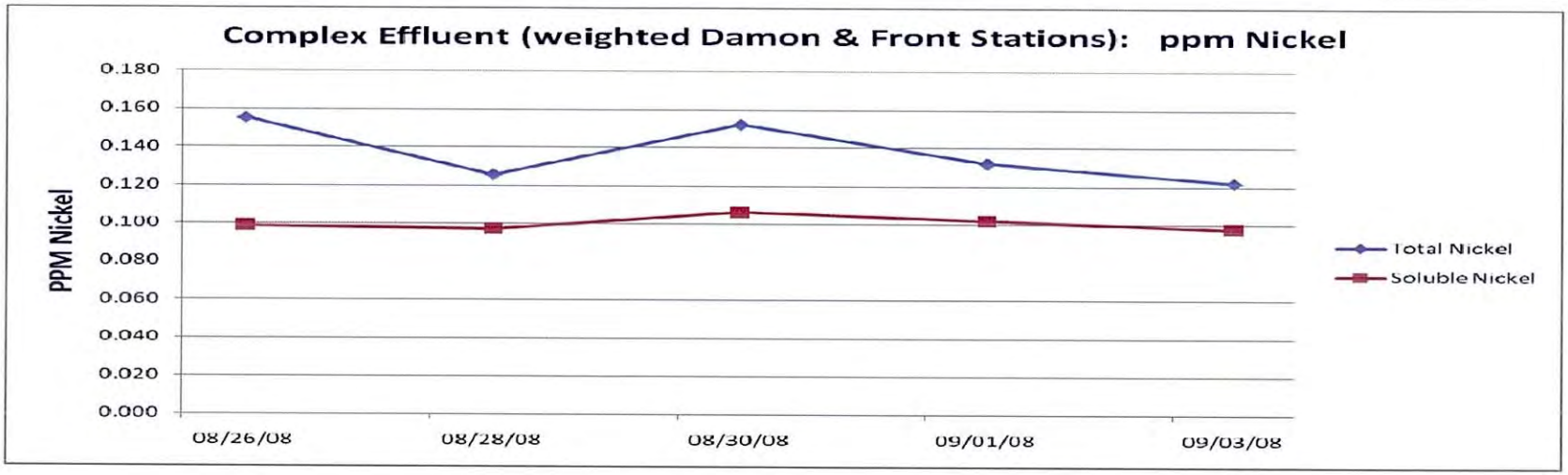
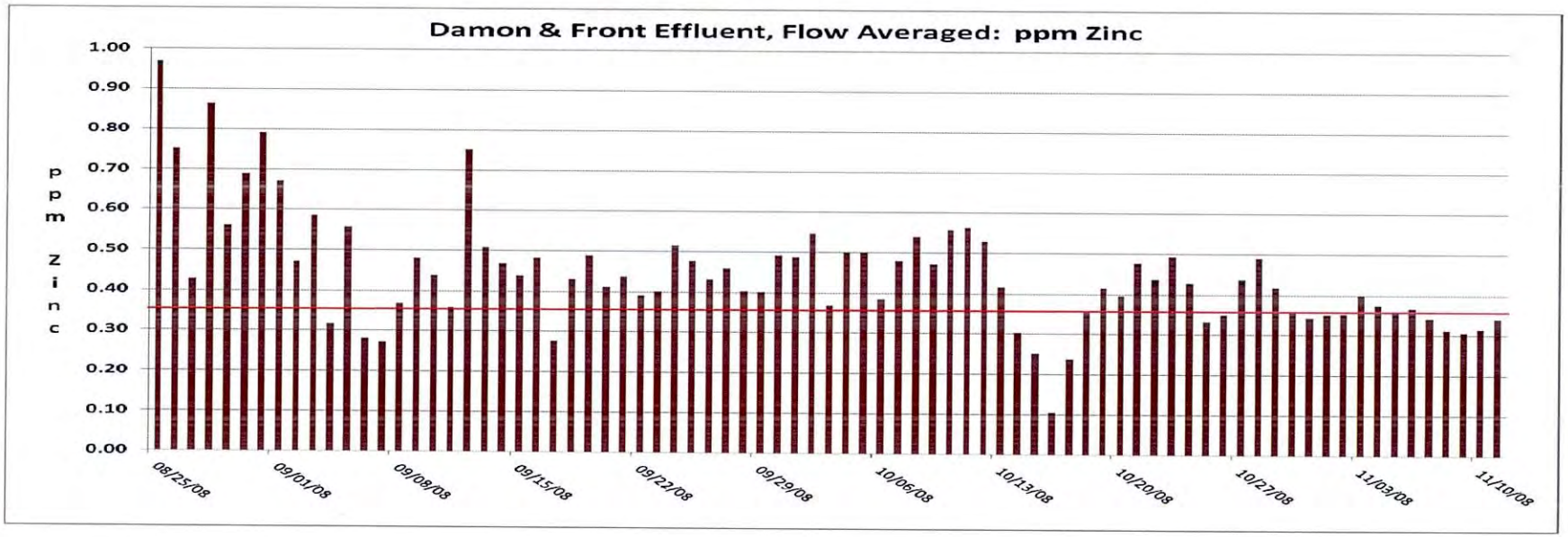
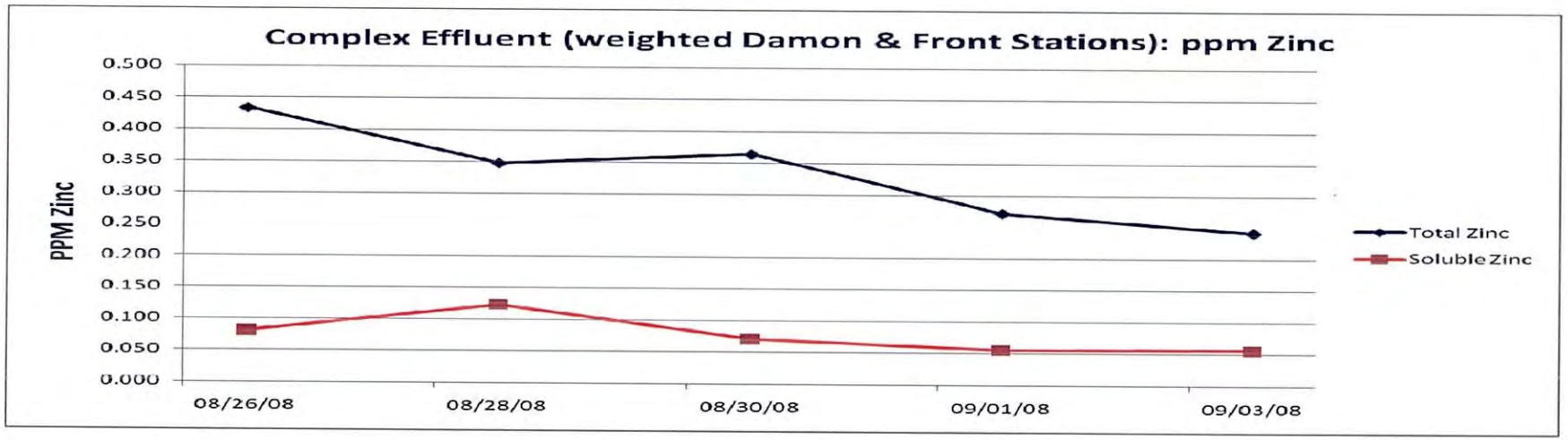
Damon 10-15
Damon 10-25
Damon 11-4


Complex Effluent (weighted Damon & Front Stations): ppm Nickel
PPM Nickel
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
08/26/08
08/28/08
08/30/08
09/01/08
09/03/08
Total Nickel
Soluble Nickel


Damon & Front Effluent, Flow Averaged: ppm Zinc
ppm Zinc
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
08/25/08
09/01/08
09/08/08
09/15/08
09/22/08
09/29/08
10/06/08
10/13/08
10/20/08
10/27/08
11/03/08
11/10/08


Complex Effluent (weighted Damon & Front Stations): ppm Zinc
PPM Zinc
0.500
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
08/26/08
08/28/08
08/30/08
09/01/08
09/03/08
Total Zinc
Soluble Zinc

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

December 30, 2009

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.

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**
**December 2009 Interim Report**

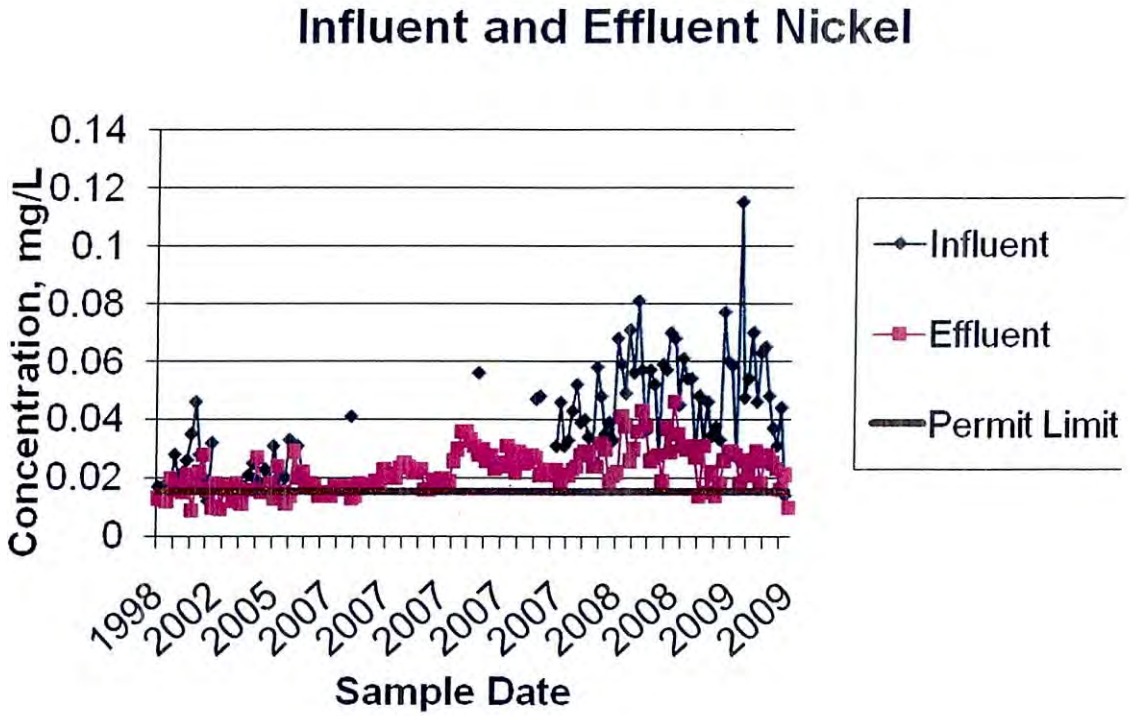
The modified NPDES permit for the Sanitary District of Decatur that became effective July 1, 2009 contains limits for nickel and zinc and a one-year compliance schedule extension for meeting the limits. Special Condition 17 requires that an interim progress report be submitted to Illinois EPA by January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

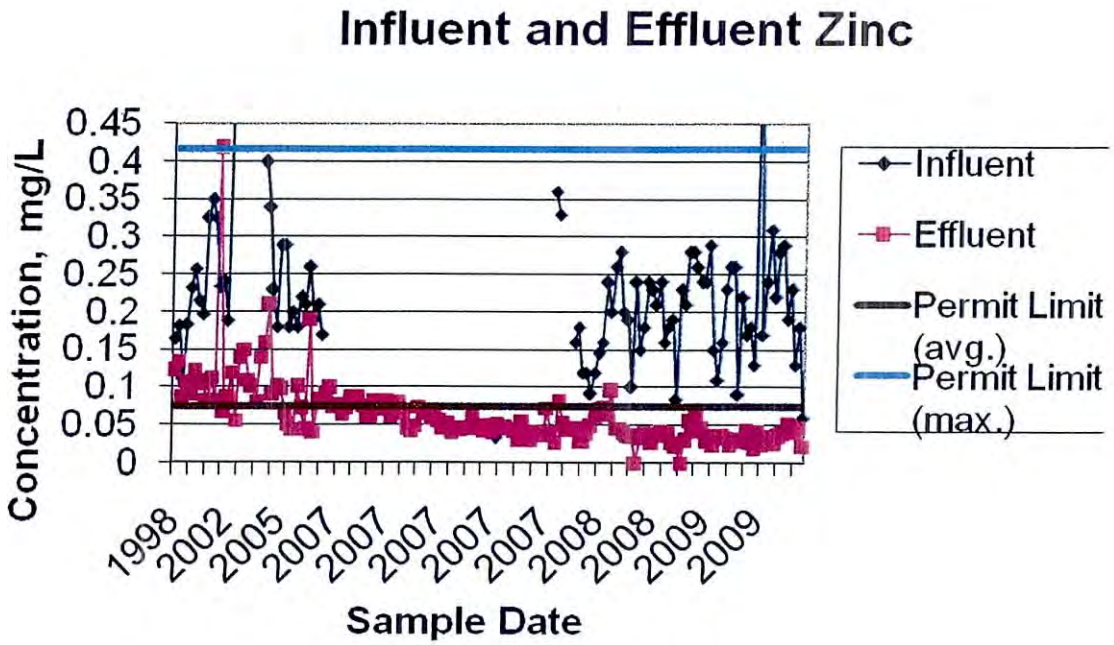
On June 15, 2009 the District submitted a variance petition to the Pollution Control Board requesting additional time to comply with final permit limits. The Board's decision deadline for the variance petition is January 7, 2010.

**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 appear to be below the permit limit.






**Industrial Source Sampling**

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. A week-long special nickel and zinc sampling study, including the major industries and the treatment plant, was conducted the last week of September 2009.

**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 next 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 years, and 1000 yards (Rock Springs Bicycle Trail bridge) downstream of the District's outfall.

**Industrial Source Investigations**

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 to reflect the new limits and provide a compliance schedule for meeting the limits. During 2009, six formal meetings have been held with ADM personnel and three with Tate & Lyle; inspections and other contacts with each during the year also included discussion of nickel and zinc issues. 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.

**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 recently 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. The scope of work includes the following:

1. Obtain water quality data from the District to assemble or estimate appropriate BLM inputs in order to calculate Ni bioavailability in the receiving waters;

2. Run the BLM using those data to predict Ni bioavailability to sensitive aquatic organisms;

3. Summarize those results and the calibration of the BLM from other data from the literature, and

4. Based on those results, advise the District of the relative merits of pursuing bioavailability modeling.

In addition, the District continues to consider what information might be needed to justify a standard based on a different level of water quality protection, consistent with state and federal regulations.

**Compliance Plan**

A proposed compliance plan and schedule was included in the District's June 15, 2009 variance petition. Subject to the Board's decision on the variance petition, the District's plan and schedule are as follows:

1. 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.

2. Industrial monitoring for nickel and zinc, previously performed quarterly at ADM and Tate & Lyle, has been increased to twice monthly.

3. 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 to exchange information.

4. The District will explore the possible development of stream flow-based compliance options. The District's discharge does not result in exceedences of the water quality standard except during 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.

5. 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.

6. 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.

7. 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.

a. 2009-2010

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.

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.

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.

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.

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.

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.

Nickel and Zinc – WWTP Sludge Removal System – Evaluation of options for sludge removal and management for the WWTP.

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.

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.

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.

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.

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.

The District will pursue variable limits based on flow with Illinois EPA and will seek permit modifications as necessary.

b. First Half of 2011

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.

Present findings to ADM division managers.

8. The District proposes the following time schedule for achieving compliance with permit limits for nickel and zinc:

| | | |
|---|---|---|
| July 1, 2010 | - | Submit an interim report to Illinois EPA 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 Illinois EPA 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 permit limits. |

The compliance plan described above will be modified as needed consistent with the Board's decision on the variance petition.