K&A

Kapur & Associates

Oconomowoc Electroplating GWTF ♦ P.O. Box 352 ♦ Ashippun, WI 53003-0352
Phone 920-474-4529 ♦ Fax 920-474-4639

April 30, 1998

Mr. Paul Kozol, P.E.
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Re: Monthly Monitoring Report for the Oconomowoc Groundwater Treatment Facility

Dear Mr. Kozol:

Attached is the Monthly Monitoring Report for April 1998 for the above referenced project. Questions regarding this report should be directed toward Syed Ihtheshamuddin at the treatment plant. The phone number at the treatment plant is (920) 474-4529.

Thank you for your continued cooperation and assistance with this project.

Sincerely,

Syed Ihtheshamuddin

Syed Ihtheshamuddin, Project Manager
Kapur & Associates

cc: Arne Thomsen, USACE, St. Paul District
Steve Peterson, USACE, Omaha District
Randy Sitton, USACE
Tom Williams, USEPA
Mike Boehlar, Black and Veatch
David J. Brodzinski , WDNR

MONTHLY MONITORING REPORT
FOR THE
OCONOMOWOC ELECTROPLATING
GROUNDWATER TREATMENT FACILITY
ASHIPPUN, WISCONSIN

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
ST. PAUL DISTRICT
HASTINGS, MINNESOTA
CONTRACT DACW45-95-C-0064

Prepared by:

Kapur & Associates, Inc.
7711 North Port Washington Road
Milwaukee, Wisconsin 53217

April 30, 1998

1.0 Introduction

This report summarizes the monthly effluent monitoring results for the Oconomowoc Electroplating Groundwater Treatment Plant (OEGTP) for April 1998. The OEGTP is located at the site of the former Oconomowoc Electroplating Company, in Ashippun, WI.

A summary of the laboratory results for the influent and effluent sampling is included in Table 1. Matt Hahm and Joe Fleischfresser, of Kapur & Associates, Inc. (K&A) conducted the plant sampling. En Chem, Inc., 802 Deming Way, Madison, Wisconsin 53707, provided laboratory analysis. All sampling and analyses were conducted in accordance with the Oconomowoc Electroplating Groundwater Treatment System's Chemical Data Acquisition Plan (CDAP). The parameters tested for, frequency of testing, sample type, and limits are set forth in the Final Discharge Limits, Table 1 of the Oconomowoc Electroplating Superfund Site Limits and Requirements for Discharge of Treated Groundwater, issued by the Wisconsin Department of Natural Resources (WDNR) on September 24, 1996. This report is submitted in accordance with the reporting requirements of the WDNR permit.

1.1 Site Background Review

The OEGTP is located at 2572 Oak Street in Ashippun, Wisconsin, in the NW ¼ of the SE ¼ of Section 30, Township 30 North, Range 17 East. The site consists of approximately 10 acres, which includes approximately 3.5 acres of the former electroplating facility. The site is bounded by Oak Street (Highway O) and Eva Street to the North, and Davey Creek and the Town of Ashippun's garage facilities to the South. The property directly across Oak Street is occupied by Thermogas, Inc. A residential area is located across Eva Street, and a wetland surrounds Davey Creek.

The contact person for the plant operation is Arne Thomsen of the U.S. Army Corps of Engineers (USACE). Mr. Thomson's phone number is (612) 438-3076, Fax (612) 438-2464. Kapur & Associates, Inc is contracted by the USACE to operate and maintain the treatment facilities. The contact person for K&A, is Syed Ihtheshamuddin. He can be reached at the plant at (920) 474-4529, Fax (920) 474 4639, or at the K&A office in Milwaukee, Wisconsin at (414) 351-6668, Fax (414) 351-4117.

1.2 Project Objectives

The objective of this project is to prevent the spreading of any plume of contamination that may exist at the site. Contaminated groundwater is pumped from five extraction wells, treated for cyanide, metals, suspended solids, and volatile organic compounds (VOC's). The treated water is then transferred to a groundwater influent gallery, located south of Elm Street, near Davey Creek.

1.3 Effluent Monitoring

Weekly monitoring was conducted on April 3, 8, 16, and 22, 1998. The monthly 24-hour composite monitoring samples were collected on April 22, 1998. Results from the April 29 sampling will be included in the May report. En Chem, Inc tested all samples.

1.4 Monitoring Results

A summary of the results from the weekly influent and effluent monitoring April 3, 8, 16, and 22 is shown in Table 1. This summary table shows the results of the effluent monitoring parameters listed in the Monitoring Requirements of the Oconomowoc Electroplating Superfund Site Substantive WPDES Permit Requirements Summary (9/96).

2.0.0 Plant Operation and Shut Down

During the month of April, the plant was shut down for a total of 49 hours. The plant shut down was due to scheduled maintenance activities.

2.1.1 Shut Down Due to the Replacement of the Rosemount Leveling Element

During the last two weeks of March, the ORP value in the cyanide metals reactors could not be maintained at the required 600 mv. Upon further investigations and inquiring with the chemical supplier, we discovered that the chemical had been stored about 45 days longer than the prescribed shelf life. The reactive chemical ingredient was neutralized. Fresh chemical was not ordered so as to empty the tank to replace the Rosemount Leveling Element, a warranty item. Coordination between the contractor to install the leveling element and supply of chemical resulted in loss of 28 hours of operating time.

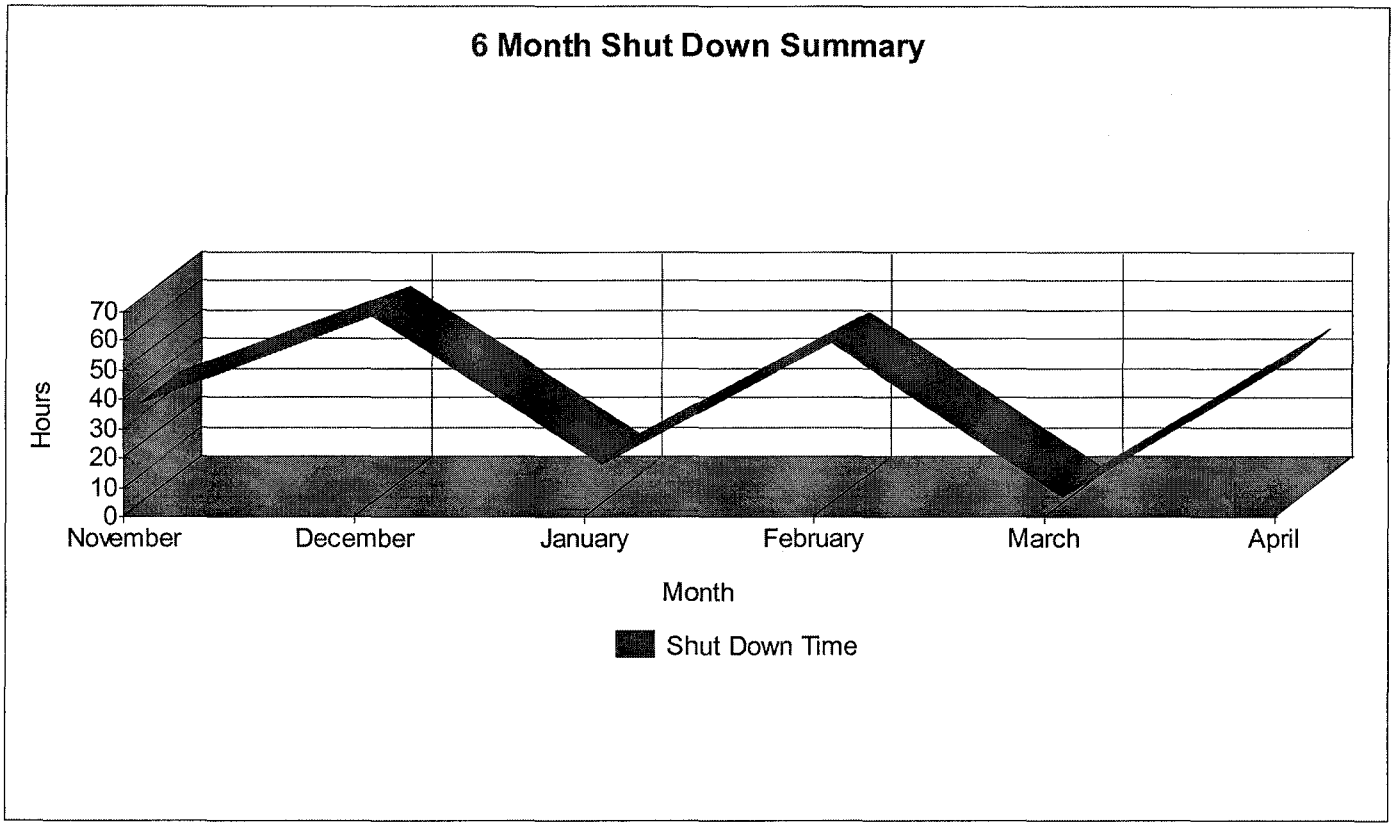
2.1.2 Shut Down Due to Sludge Removal from Equalization Tank

During the months of February and March the plant influent pump capacity got progressively lower from 25 gpm to about 18 gpm. Mr. Arne Thomsen authorized work to vacuum the EQT-100 and augur the influent line between EQT-100 and influent pumps. All the process tanks in the Cyanide Metals Package were also drained and cleaned. This work was accomplished on April 14 and 15

A total of 21 hours of plant operation time was lost due to this maintenance procedure.

Chart 1, 6 Month Shut Down Summary, displays the shut down times for the last six months.

Chart 1



3.0 Summary

Weekly monitoring was conducted on April 3, 8, 16, and 22, 1998. The monthly 24-hour composite monitoring samples were collected on April 22, 1998. Results from the April 29 sampling will be included in the May report. A summary of these laboratory results is included in Table 1. The effluent sampling results show that all contaminants, except the chromium effluent concentration from April 3 sampling, comply with the effluent discharge permit limits listed in the Requirements of the Oconomowoc Electroplating Superfund Site Substantive WPDES Permit Requirements Summary (9/96). The exceedence in the chromium concentration was due to the inadequate reactivity of the sodium hypochlorite solution. The sodium hypochlorite has since been restocked such that the shelf life of the chemical is not exceeded.

During the month of April 1998, a total of 436,801 gallons of water was extracted from the wells and treated. During the month of April, the plant was shut down for a total of 49 hours for scheduled maintenance.

4.0 Steps Taken Toward Automation

No physical modifications to the plant process or equipment were made during the month of April 1998. Mike Boehler and Matt Webber of Black & Veatch, the Design Engineers, visited the plant on April 6 and 7 to discuss and collect plant process data to incorporate design changes in the treatment process to enhance treatment and operation of the plant. The following process and equipment modifications were discussed:

- Addition of a polymer dilution tank: To optimize the polymer feed rates and reduce down time due to pump priming needs.
- Two-stage neutralization of the process stream: Addition of acid neutralization step prior to sand filtration would reduce precipitation of calcium carbonate in the sand filter and would lead to longer filter cycles.
- Addition of sand in the sand filter: Addition of sand to the manufacturer recommended level in the sand filter would optimize filter operation, which is a major component for automation of the plant.
- Modifications to the sulfuric acid feed system: Changes to the sulfuric acid feed system to include a positive head on the suction end of the pump would enhance safe and continuous operation of the chemical feed system.
- Modifications to the process PLC and instrumentation and control system leading to process automation and reduced equipment supervision.

All equipment operation and maintenance related issues are detailed in a separate report, entitled *"Monthly Operation and Maintenance Report for the Oconomowoc Electroplating Groundwater Treatment Facility."*

Table 1
Oconomowoc Ground Water Treatment Plant
Summary Result - Plant Influent & Effluent

Parameter	April 03		April 08		April 16		April 22		
	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	WDNR Permit
pH	9.00	7.60	NT	7.90	8.50	7.60	9.00	8.40	Monitor
TSS	38.00	Monthly	31.00	Monthly	41.00	Monthly	56.00	2.00	Monitor (mg/l)
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	5
Barium	18.60	1.60	16.10	1.40	34.00	3.50	29.00	ND	400
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Cadmium Total Recove	NT	ND	NT	ND	NT	ND	NT	ND	Monitor
Chromium Total	19.00	17.00	ND	ND	0.73	ND	ND	ND	10
Chromium +6	25.00	20.00	ND	ND	12.00	6.80	10.00	8.20	Monitor
Copper	8.00	ND	19.00	1.00	21.00	4.70	14.00	10.00	Monitor
Iron	226.00	48.00	0.34	0.03	550.00	72.00	460.00	ND	Monitor
Lead	2.00	ND	ND	ND	ND	ND	ND	ND	1.5
Manganese	21.60	0.70	19.30	0.40	42.00	1.80	44.00	0.52	Monitor
Mercury	ND	ND	ND	ND	0.11	ND	0.19	0.11	0.2
Nickel	18.00	11.00	27.00	7.00	26.00	10.00	21.00	11.00	20
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	10
Silver	ND	ND	ND	ND	ND	ND	ND	ND	10
Thallium	ND	ND	ND	ND	1.80	ND	ND	ND	0.4
Zinc	191.00	2.00	104.00	2.00	6.50	5.60	ND	4.20	Monitor
Cyanide	ND	ND	ND	ND	0.0062	ND	ND	ND	40
Cyanide Free	NT	ND	NT	ND	NT	ND	NT	ND	Monitor
1,1-dichloroethane	2.50	ND	44.00	ND	37.00	ND	41.00	ND	85
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.5
1,1-dichloroethene	ND	ND	ND	ND	5.70	ND	ND	ND	0.7
1,2-dichloroethene cis	3.60	ND	68.00	ND	58.00	ND	57.00	ND	7
1,2-dichloroethene tran	ND	ND	8.00	ND	7.20	ND	7.30	ND	20
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	140
Methylene Chloride	0.80	ND	ND	ND	ND	ND	ND	ND	0.5
Tetrachloroethene	ND	ND	ND	ND	2.30	ND	3.20	ND	0.5
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	68
1,1,1-trichloroethane	9.50	ND	160.00	ND	130.00	ND	140.00	ND	40
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.5
TCE	32.00	0.20	580.00	ND	380.00	ND	410.00	ND	0.5
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	0.2
Xylene Total	ND	ND	6.00	ND	ND	ND	ND	ND	124
COD	NT	NT	NT	NT	NT	NT	NT	7.60	Monitor (mg/l)
Phosphorus total	NT	NT	NT	NT	NT	NT	NT	0.53	Monitor (mg/l)
Nitrate + Nitrite	NT	NT	NT	NT	NT	NT	NT	0.17	Monitor (mg/l)
Ammonia Nitrogen	NT	NT	NT	NT	NT	NT	NT	ND	Monitor (mg/l)

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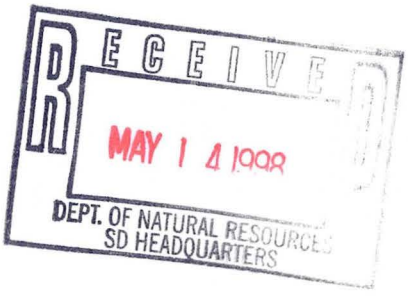
April 30, 1998



Mr. Arne Thomsen
USACE, St. Paul District
801 Pine Street, Suite B
Hastings, MN 55033

Re: Monthly O&M Report for the Oconomowoc Groundwater Treatment Facility

Dear Mr. Thomsen:

Attached is the Monthly O&M Report for April 1998, for the above referenced project. Questions regarding this report should be directed toward Syed Ihtheshamuddin at the treatment plant. The phone number at the treatment plant is (920) 474-4529.

Thank you for your continued cooperation and assistance with this project.

Sincerely,

Syed Ihtheshamuddin

Syed Ihtheshamuddin, Project Manager
Kapur & Associates

cc: Steve Peterson, USACE, Omaha District
Randy Sitton, USACE
Tom Williams, USEPA
Paul Kozol, WDNR
David J. Brodzinski, WDNR
Mike Boehlar, Black and Veatch

MONTHLY OPERATIONS AND MAINTENANCE REPORT
FOR THE
OCONOMOWOC ELECTROPLATING
GROUNDWATER TREATMENT FACILITY

2572 Oak Street
ASHIPPUN, WISCONSIN

Prepared for:
U.S. ARMY CORPS OF ENGINEERS
ST. PAUL DISTRICT
HASTINGS, MINNESOTA
CONTRACT DACW45-95-C-0064

Prepared by:
Kapur & Associates, Inc.
7711 North Port Washington Road
Milwaukee, Wisconsin 53217

April 30, 1998

1.0 Introduction

This report is submitted to provide information concerning the equipment maintenance work completed, and operations and maintenance (O&M) problems encountered at the Oconomowoc Electroplating Groundwater Treatment Plant during the month of April 1998. O&M issues that led to plant shut down are discussed in the *Monthly Monitoring Report for the Oconomowoc Electroplating Groundwater Treatment Facility.*

Continuing O & M Issues from Previous Month include:

1. Tertiary Filter (TF-600):
   - Level of sand in the filter is below the recommended level.
2. Sulfuric Acid Feed System:
   - Corrosion of electrical conduits.
3. Extraction Wells Pumping Capacity:
   - Pumping capacity remains low.
4. Air Stripper (DAS-500) Leaking

2.0.0 Process Difficulties

2.0.01 Continuing O&M Issues from Previous Months:

The O&M problems listed are repeated from the March O&M report. None of the O&M difficulties contributed to exceedence of effluent permit limits. For other related information regarding plant shut down times, see the *Monthly Monitoring Report for the Oconomowoc Electroplating Groundwater Treatment Facility.*

The following O & M issues should be addressed immediately before the plant operation is affected:

1. Sand Filter (TF-600):
   This issue has been discussed with the Design Engineers during their visit to the plant on April 6 and 7. Mr. Arne Thomsen has also noted that during the time of plant modifications, the sand in the filter will be replaced and filled up to the manufacturer recommended level.
2. Sulfuric Acid Feed System:
   This issue has been discussed with the Design Engineers during their plant visit on April 6 and 7. Changes to the sulfuric acid feed system are planned to include positive head on the suction side of the pumps to enhance safety of the chemical feed system.

3. Extraction Wells Pumping Capacity.
   The current individual pumping capacity for each extraction well is shown in Table 1. At this time, the combined pumping capacity of all five (5) wells into the plant is down to 12.0 gpm.

Table 1 - Individual Extraction Well Pumping Capacity

Extraction Well	Pumping Capacity (GPM)
1	2.2
2	1
3	5.7
4	2.3
5	5.7

   This issue has been discussed with Mr. Arne Thomsen. Efforts are being made to rehabilitate the wells to restore their capacity.
4. Air Stripper (DAS-500) Leakage:
   After the modification #P00031 was completed, the Air Stripper (DAS-500) started to leak from both corners in the front of the sump. These leaks have been progressively getting worse, and a third leak has started. Mr. Arne Thomsen has negotiated this issue with the manufacturer and a modification order has been planned for welding the sump.

2.0.02 O&M Repairs Made during the Month of April:

The following O&M work was completed during the month:

Sodium Hypochlorite Feed System (SCT-250):

On April 1, Peiper Electric replaced the Rosemount Leveling Element on the Sodium Hypochlorite Tank (SCT-250). This was a warranty item.

Air Compressors Serviced

On April 30, the compressors were service by Cochrane Compressor Company. The USACE has executed an annual maintenance service agreement with Cochrane Compressor. The service technician recommended the drain valve be replaced during the July service call.

Sludge Build Up On the Influent Pumps Impeller (TFT-110/111)

The plant influent, over a period of time, mixes with the sludge in the Equalization Tank (EQT-100) and coats the influent pump (TFP-110/111), impellers. This reduces the pumping capacity and eventually binds up and brings the pumps to a halt. The influent pump impellers were cleaned with

dilute muriatic acid, each week for the month of April, which prevented further down time.

Pumped Sludge From Equalization Tank and Cyanide Metals (C-400) Tanks

After receiving approval from the USACE, sludge from the EQT-100 was pumped into the sludge holding tank using a vacuum truck. Sludge from the process tanks in the cyanide metals package was drained and cleaned. This was completed on April 14. The plant influent line between EQT-100 and the influent pumps was also augured and cleaned.

2.0.03 New O& M Issues:

Sodium Hydroxide Pump (SHP 361)

The microprocessor on the sodium hydroxide pump, SHP 361, has corroded and does not respond to the pH signal from the cyanide metals reactor tank. The microprocessor unit is molded into the pump. A replacement pump would be required to have an operational system.

Clarifier Thickening Drive (TD401)

The Clarifier Thickening Drive (TD401) has started to leak water and sludge again. This seal was replaced in October of 1997 during CSK's warranty work on the cyanide metals package.

GAC Pumps

The GAC pumps between the air stripper and the activated carbon units cannot keep up with the plant flow in excess of 22 gpm. Upon investigation, we have discovered that the pump impellers have corroded due reaction with high pH water.