K&A

Kapur & Associates

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

March 20, 1998

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

Re: Addendum to the Monitoring Report for the Oconomowoc Groundwater Treatment Facility

Dear Mr. Kozol:

Attached is an Addendum to the Monthly Monitoring Report for February 1998 for the above referenced project. Questions regarding this report should be directed toward Matthew Hahm at the treatment plant. The phone number at the treatment plant is (920) 474-4529.

Thank you for your cooperation and assistance with this project.

Sincerely,

Matthew Hahm, Project Engineer
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

Steps Taken Toward Automation

Steps taken to get the treatment plant closer to automation for the month of February was the Air Stripper (DAS-500) modification (P# 00031). Four trays were added to the air stripper to help extract the VOC contaminants in the water. This will help reduce the chance of exceeding the VOC permit limits and extend the life of the carbon filter.

The sulfuric acid drums need to be manually changed approximately once every 10 days at the present level of operation. The rest of the operation and equipment downstream of the air stripper is ready for automation.

Other process/equipment modifications upstream of the air stripper are necessary before the plant can be fully automated. The sand filter still receives high pH chlorinated process water from the inclined plate clarifier. Due to the influent flow characteristics, the effluent from the clarifier is high in alkalinity. Floc particles and calcium carbonate (CaCO3) settle on the sand and cause head loss across the filter. When the head loss across the sand filter reaches a certain level, the filter has to be manually backwashed. We have to backwash the filter at least once a day for efficient operation. Otherwise, more than 80 percent of the water goes over the weir and into the sump and has to be reprocessed.

The automatic sludge withdrawal from the inclined plate clarifier prevents the sludge bridging over problem; however, this fills up the sludge holding tank in about two days. In order to prevent the sludge from overflowing from the holding tank, it has to be processed by filter press every two to three days. And this is a manual operation.

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February 28, 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 February 1998, for the above referenced project. Questions regarding this report should be directed toward Matthew Hahm, at the treatment plant. The treatment plant phone number is (920) 474-4529.

Thank you for your cooperation and assistance with this project.

Sincerely,

Matthew Hahm

Matthew Hahm, Project Engineer
Kapur & Associates

cc: Steve Peterson, USACE, Omaha District
Randy Sitton, USACE
Tom Williams, USEPA
Paul Kozol, 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

February 28, 1998

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 February 1998. Any O&M problems that led to the 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. Sodium Hypochlorite Feed System:
   - The Rosemount Level Element at the sodium hypochlorite tank (SCT-250) is corroding and continues to leak.
2. Sodium Hydroxide:
   - Pump surge suppressor's for pumps SHP-361 and SHP-262 are leaking.
3. Tertiary Filter (TF-600):
   - Level of sand in the filter is below the recommended level.
4. NPDES Station (NMS-740):
   - Measuring probes still need to be calibrated.
5. All sampling ports provide evidence of corrosion of the process piping (iron pipes).
6. Sulfuric Acid Feed System:
   - Corrosion of electrical conduits.
7. Spare Parts on site for all mechanical equipment.
8. Extraction Wells Pumping Capacity:
   - Pumping capacity remains low.

O&M Repairs Made:

1. Sodium Hydroxide Pump (SHP-361)
2. Sludge Build Up On the Influent Pumps Impeller (TFT-110/111)

New O& M Issues include:

1. Air Stripper (DAS-500) Started Leaking
2. Sodium Hydroxide Pumps (SHP-261/262)
3. Static Mixer (SM-401) 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 December 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. Sodium Hypochlorite Feed System (SCT-250):
   Supplier of the Rosemount Level element has agreed to replace the tank level-measuring device when the level in the tank is sufficiently low for making the change. We anticipate this work to be accomplished in May 1998.
2. Sodium hydroxide chemical feed pumps (SHP-261/262/361):
   Pump surge suppressors and pipefittings continue to leak. This is leading to a loss of chemical and creating a hazardous environment in the chemical feed room.
3. Sand Filter (TF-600):
   The sand in the filter is below the manufacturer's recommended level. The low level of sand causes the effluent nozzles to be exposed to the precipitate in the filter influent. The nozzles become coated with the precipitate, reducing the efficiency of the filter. An additional 1000 pounds of sand is needed to help make the filter operation more efficient.
4. NPDES Station (NMS-740)
   A certified technician should calibrate this NPDES Station.
5. Sampling Ports
   All sampling ports continue to show corrosion when opened every week for sampling.
6. Sulfuric Acid Feed System:
   The areas surrounding the sulfuric acid feed system, including the electrical conduits, have severe corrosion problems. This is a hazardous situation and immediate measures should be taken to correct the situation.
7. Spare Parts
   It is necessary to supply the plant with spare parts for all of the equipment, to prevent unnecessary down time ordering parts.

8. Extraction Wells Pumping Capacity.
   The drawdown was determined not to be the problem for the low pumping capacity. The extraction wells should be serviced once a year to remove any silt or bacteria builds up. 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 13.1 gpm.

Table 1 - Individual Extraction Well Pumping Capacity

Extraction Well	Pumping Capacity (GPM)
1	2.3
2	1
3	5.9
4	2.8
5	5.9

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

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

1. **Sodium Hydroxide Pump (SHP-361)**
   On February 28, the Sodium Hydroxide Pump (SHP-361) could not keep up with the desired pH of 11.25. The pump was taken apart, which exhibited a worn valve seat. The valve seat was taken off of the Sodium Hydroxide Pump 261 (SHP-261) and used on SHP-361. At the current time, SHP-361 is working and maintaining the needed pH of 11.25 to retain good floc. SHP-261 and SHP-262 are currently out of service until spare parts arrive on site.

2. **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 February, to try to prevent further down time.

2.0.03 New O& M Issues:

1. **Air Stripper (DAS-500) Started Leaking**
   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. The manufacture was notified and maintains the corrosive water, as evident in the pipes that were replaced caused the leaks. The contractor, Warrington Builders, is currently involved in getting this unit repaired. At the time of this report, the air stripper is able to operate with the two small leaks.

2. **Sodium Hydroxide Pumps (261/262).**
   Two of the three Sodium Hydroxide Pumps (SHP-261/262) are out of service. Parts were removed from these two pumps to keep Sodium Hydroxide Pump 361 (SHP-361) working. SHP-361 must be operating at all times to maintain the desired pH of 11.25 to form good floc. Parts for these pumps should arrive the first week of March.

3. **Static Mixer (SM-401) Leaking.**
   The Static Mixer started to leak sulfuric acid on February 7, after pressure built up in the sulfuric acid feed lines. This leak is at the point where the injection quill is connected to the static mixer. At this time, the leak does not appear to interfere with the operation of the treatment plant, but maintains a hazardous situation.

K&A

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February 28, 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 February 1998 for the above referenced project. Questions regarding this report should be directed toward Matthew Hahm at the treatment plant. The phone number at the treatment plant is (920) 474-4529.

Thank you for your cooperation and assistance with this project.

Sincerely,

Matthew Hahm, Project Engineer
Kapur & Associates

cc: Arne Thomsen, USACE, St. Paul District
Steve Peterson, USACE, Omaha District
Randy Sitton, USACE
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Mike Boehlar, Black and Veatch

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

February 28, 1998

1.0 Introduction

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

A summary of the laboratory results for our influent and effluent sampling is included in Table 1. Matt Hahm, 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 plant. The contact person for K&A, for the month of February, is Matthew Hahm. 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.

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

Parameter	January 28		February 04		February 11		February 25		WDNR Permit
	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	
pH	7.40	7.20	8.80	7.20	7.40	7.10	7.50	7.50	Monitor
TSS	77.00	Monthly	110.00	Monthly	70.00	ND	46.00	Monthly	Monitor (mg/l)
Arsenic	ND	ND	ND	ND	0.89	ND	ND	ND	5
Barium	80.00	140.00	100.00	82.00	110.00	66.00	33.00	22.00	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	ND	ND	1.60	1.00	1.20	ND	1.40	0.90	10
Chromium +6	ND	ND	ND	ND	10.00	6.90	ND	9.10	Monitor
Copper	5.50	3.50	2.90	2.80	4.50	4.10	10.00	6.50	Monitor
Iron	270.00	100.00	520.00	130.00	660.00	65.00	470.00	150.00	Monitor
Lead	ND	ND	ND	ND	0.89	0.78	ND	ND	1.5
Manganese	56.00	12.00	82.00	2.80	98.00	1.30	53.00	1.80	Monitor
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	0.2
Nickel	31.00	19.00	30.00	19.00	33.00	17.00	24.00	17.00	20
Selenium	ND	ND	5.10	ND	ND	ND	ND	ND	10
Silver	ND	ND	ND	ND	ND	ND	ND	2.90	10
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	0.4
Zinc	ND	8.70	16.00	6.50	15.00	12.00	7.30	110.00	Monitor
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	40
Cyanide Free	NT	0.0046	NT	ND	NT	ND	NT	0.0033	Monitor
1,1-dichloroethane	16.00	ND	37.00	0.73	39.00	1.10	36.00	1.60	85
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.5
1,1-dichloroethene	6.90	ND	8.10	ND	9.10	ND	6.20	ND	0.7
1,2-dichloroethene cis	38.00	ND	57.00	ND	60.00	ND	55.00	ND	7
1,2-dichloroethene tran	9.10	ND	9.90	ND	11.00	ND	8.20	ND	20
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	140
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Tetrachloroethene	5.50	ND	5.20	ND	6.80	ND	3.50	ND	0.5
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	68
1,1,1-trichloroethane	130.00	ND	180.00	ND	190.00	0.66	140.00	1.30	40
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.5
TCE	450.00	ND	610.00	ND	670.00	ND	470.00	ND	0.5
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	0.2
Xylene Total	ND	ND	ND	ND	ND	ND	ND	ND	124
COD	NT	NT	NT	NT	NT	14.00	NT	NT	Monitor (mg/l)
Phosphorus total	NT	NT	NT	NT	NT	0.10	NT	NT	Monitor (mg/l)
Nitrate + Nitrite	NT	NT	NT	NT	NT	0.17	NT	NT	Monitor (mg/l)
Ammonia Nitrogen	NT	NT	NT	NT	NT	ND	NT	NT	Monitor (mg/l)

1.3 Effluent Monitoring

Weekly monitoring was conducted on January 28, February 4, 11, and 25. The monthly 24-hour composite monitoring samples were collected on February 11. En Chem, Inc tested all samples. For the week of February 15, no sampling was conducted due to contract negotiations and modifications to the plant.

1.4 Monitoring Results

A summary of the results from the weekly influent and effluent monitoring for January 28, February 4, 11, and 25 is shown in Table 1. Samples were not taken on February 18, due to contract negotiations and plant modifications. 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). None of the effluent parameters exceeded the WDNR permit limits.

2.0.0 Plant Operation and Shut Down

During the month of February, the plant was shut down for a total of 54.75 hours.

The following Table summarizes the February plant down time, due to operation and maintenance problems:

Table 2 - February Plant Down Time Summary

Date(s)	Hours Shut Down	Reason
February 01	4.00	Low EQT Levels
February 05	6.00	TFP-110 Sludge build up on the pump impeller
February 07	0.75	High pH Sulfuric Acid Injection Quill Malfunction
February 11	0.50	Cleaned Influent line
February 18-19	15.00	Low pH at the NPDES
February 19-20	28.50	Air Stripper (DAS-500) Modification
Total	**54.75**	

2.1.1 Shut Down Due to Low Equalization Tank (EQT-100) Levels

On February 1, the plant shut down because the Equalization Tank (EQT-100) fell below the 25% level. The extraction wells were unable to keep up with the plant flow. The plant flow averaged 23 gpm, while the extraction wells average 13.9 gpm. At the time of this report, the

average extraction well flow is 13.0 gpm. The plant was down for a total of 4.0 hours due to this problem.

2.1.2 Shut Down Due to Sludge Build up On the Pump Impeller (TFP110/110)

The plant influent continues to mix with the sludge build up in the Equalization Tank (EQT-100) and coat the influent lines as well as the influent pump impellers (TFP-110/111), reducing the flow capacity. This is confirmed by the need to clean the influent pump impellers once a week to prevent additional shut down time.

Currently the influent pipe from the EQT-100 is at an elevation very close the elevation of the sludge pump (ESP-120 &121) inlet pipes. A solution may be to extend the influent pipe from inside the EQT-100 upward 3 to 4 feet, at an EQT-100 capacity of about 35% full. This should help to prevent the influent pumps from extracting the sludge built up at the lower elevation. The plant was down for a total of 6.0 hours due to this problem.

2.1.3 Shut Down Due to Sulfuric Acid Injection Quill/Back Pressure Valve

On February 7, the plant was shut down upon arrival. The pH at the NPDES Station was at 9.0. The injection quill at the Static Mixer (SM-401) was leaking sulfuric acid onto the concrete floor. The tubing connections for the Sulfuric Acid Feed Station were also leaking at the connection points throughout the station. The injection quill was tapped on and a noise was heard. It sounded like a fast flow of acid going through the injection quill. It appeared that the injection quill might have been malfunctioning or obstructed. This pressure build up caused all of the sulfuric acid feed lines to leak. The plant was down for a total of 0.75 hours due to this problem.

This happened again on Monday February 9, late in the afternoon. The amount of Sulfuric Acid leaking from the injection quill had increased, as well as the pH rising at the NPDES Station. The injection quill was tapped on and it has been working since. Subsequently, the injection quill continues to leak occasionally.

2.1.4 Shut Down Due to Influent Line Maintenance.

On February 11, the plant was shut down for maintenance of the influent lines from the influent pumps (TFP-110/111) to the Cyanide Metals Package. The lines were soaked with muriatic acid to remove the sludge build up. The plant was shut down for a total of 0.5 hours due to this problem.

2.1.5 Shut Down Due to High pH at the NPDES

Since the shut down due to the injection quill malfunctioning, the stroke on both of the Sulfuric Acid Pumps (SAP-751/752) have been constantly adjusted in an attempt to stabilize

the effluent to the desired pH of 7.0. Before the injection quill malfunction, the stroke on both of the sulfuric acid feed pumps was at 75%. Currently the stroke is at 55%. The plant flow was shut down for a total of 15.0 hours due to this problem.

2.1.6 Shut Down Due to Modifications to the Air Stripper (DAS-500)

Work related to the modification order #P00031, involving the installation of four more trays to the air stripper, was completed on February 19 and 20. A total of 28.5 hours of plant operation time was lost due to these modifications and adjustments. Table 3 shows the sampling that was completed after the modification.

Table 3 Air Stripper Sampling After Modification

Parameter	Influent	Effluent	Permit
1,1-dichloroethane	26.00	ND	85
1,2-dichloroethane	ND	ND	0.5
1,1-dichloroethene	ND	ND	0.7
1,2-dichloroethene cis	34.00	ND	7
1,2-dichloroethene trans	4.50	ND	20
Ethylbenzene	ND	ND	140
Methylene Chloride	ND	ND	0.5
Tetrachloroethene	ND	ND	0.5
Toluene	ND	ND	68
1,1,1-trichloroethane	80.00	ND	40
1,1,2-trichloroethane	ND	ND	0.5
TCE	230.00	1.30	0.5
Vinyl Chloride	ND	ND	0.2
Xylene Total	ND	ND	124

3.0 Summary

Treatment plant influent and effluent monitoring were conducted on January 28, February 4, 11, and 25. Monthly monitoring samples were collected on February 11. A summary of these laboratory results is included in Table 1. The effluent sampling results show all contaminants listed in the Requirements of the Oconomowoc Electroplating Superfund Site Substantive WPDES Permit Requirements Summary (9/96) comply with the permit limits.

During the month of February 1998, a total of 494,512 gallons of water were extracted from the wells and treated, a gain of 117,740 gallons from the previous month. During the month of February, the plant was shut down for a total of 54.75 hours, an increase of 41.25 hours from the previous month. (See Table 2 for shut down times and reasons)

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."*