



FILED  
OFFICE OF THE SECRETARY  
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FEDERAL ENERGY  
REGULATORY COMMISSION

1414 West Hamilton Avenue  
P.O. Box 8  
Eau Claire, WI 54702-0008  
Telephone (800) 895-4999

January 3, 2001

Mr. David P. Boergers, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

**Subject: Monitoring Results of the 2000 Surveys of Water Quality Conditions at the Big Falls (FERC Project No. 2390) and Thornapple (FERC Project No. 2475) Hydro Projects.**

Dear Secretary:

Enclosed is an original and eight copies of the results of the water quality monitoring performed at the above-mentioned projects in 2000 as directed by the Federal Energy Regulatory Commission's (Commission) license orders. The license orders require Northern States Power Company – Wisconsin (d.b.a Xcel Energy) to perform water quality sampling on the two flowages after ice-out, in mid-July, and mid-August to monitor long-term changes in water quality.

The results of the sampling indicate the water quality parameters sampled for were well within normal ranges for natural environments and were comparable to results from previous years. The sampling results were filed with the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish and Wildlife Service (USFWS) on November 8, 2000 and they were allowed time to provide comments on the sampling results (*see attached letter*). Comments were not received as of the transmittal of this letter.

If you have any questions in regards to the monitoring results or to this filing, please feel free to give me a call at (715) 839-2692 or Mr. Robert Olson of my staff at (715) 839-1353.

Very truly yours,

Lloyd Everhart  
Administrator, Hydro Licensing

Attachment: Water quality monitoring results

c: Mr. Jim Fossum (U.S. Fish and Wildlife Service)  
Mr. Jeff Scheirer (Wisconsin DNR)

H:\references\bigfalls\010301letter.doc

010111-0146-3

**Water Quality Monitoring Results**  
**Big Falls and Thornapple Flowages**

DATE May 23, 2000

FROM T M Leverentz

LOCATION CSC-1

TO Rob Olson

LOCATION Eau Claire Off

SUBJECT ANALYSIS OF BIG FALLS AND THORNAPPLE RIVERS

### 1.0 Purpose of Testing

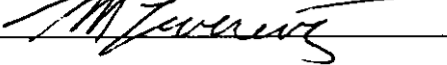
At your request, the Testing Lab analyzed samples of water from the Big Falls and Thornapple rivers.

### 2.0 Test Results

Lab No	Sample Description	Date Sampled	Phosphorus, Total EPA 365.3 mg/L P	Chlorophyll a Spectrum Labs ug/L
423.27	BIG FALLS - SURFACE	4/14/2000	0.03	<5
423.28	BIG FALLS - BOTTOM	4/14/2000	0.04	
423.29	THORNAPPLE - SURFACE	4/14/2000	0.04	6
423.30	THORNAPPLE - BOTTOM	4/14/2000	0.04	

“Less than” values indicate that the concentration is below the lab’s PQL.

T. M. LEVERENTZ, SENIOR CHEMIST, ENVIRONMENTAL LAB

BY 

T.M Leverentz  
Senior Chemist

DATE August 25, 2000

FROM T M Leverentz

LOCATION CSC-1

TO Rob Olson

LOCATION Eau Claire SC

SUBJECT ANALYSIS OF WISCONSIN FLOWAGE WATER

### 1.0 Purpose of Testing

The Testing Lab analyzed samples of water from the Big Falls and Thornapple flowages at your request.

### 2.0 Test Methods

The methods used by the lab are listed in the table below.

### 3.0 Test Results

Lab No	Sample Description	Date Sampled	Phosphorus, Total EPA 365.3 mg/L P	Chlorophyll a Spectrum Labs mg/L
449.11	BIG FALLS - SURFACE	7/26/2000	0.05	0.0050
449.12	BIG FALLS - BOTTOM	7/26/2000	0.12	
449.13	THORNAPPLE - SURFACE	7/26/2000	0.05	0.0039
449.14	THORNAPPLE - BOTTOM	7/26/2000	0.07	

T. M. LEVERENTZ, SENIOR CHEMIST, ENVIRONMENTAL LAB

BY 

T.M Leverentz  
Senior Chemist

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DATE October 26, 2000

FROM T M Leverentz LOCATION CSC-1

TO Rob Olson LOCATION Eau Claire Off

SUBJECT ANALYSIS OF BIG FALLS AND THORNAPPLE RIVERS

### 1.0 Purpose of Testing

At your request, the Testing Lab analyzed samples of water from the Big Falls and Thornapple rivers.

### 2.0 Test Methods

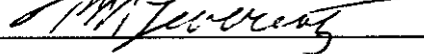
The samples were analyzed for Total Phosphorus according to EPA Method 365.3. Chlorophyll a was analyzed by Spectrum Labs.

### 3.0 Test Results

Lab No	Sample Description	Date Sampled	Phosphorus, Total mg/L P	Chlorophyll a mg/L
456.02	BIG FALLS SURFACE	8/25/2000	0.04	0.0048
456.03	BIG FALLS BOTTOM	8/25/2000	0.06	
456.04	THORNAPPLE SURFACE	8/25/2000	0.04	<0.0005
456.05	THORNAPPLE BOTTOM	8/25/2000	0.05	

“Less than” values indicate that the concentration is below the lab’s PQL.

T. M. LEVERENTZ, SENIOR CHEMIST, ENVIRONMENTAL LAB

BY 

T.M Leverentz  
Senior Chemist

## Water Quality Sampling - Big Falls Flowage

Date: 4/12/00  
 Temperature: 40°F  
 Weather Conditions: Sunny, cold, E wind @ 5 mph  
 Depth of Bottom Sample: 46'  
 Secchi Disk Reading: 5.5 ft.

### Dissolved Oxygen and Temperature Profile

Depth	Temperature (C)	Dissolved Oxygen (mg/l)
Surface	7.2	11.3
2	7.0	11.4
4	6.7	11.5
6	6.6	11.7
8	6.5	11.6
10	6.5	11.6
12	6.5	11.6
14	6.4	11.7
16	6.4	11.2
18	6.4	11.3
20	6.4	11.2
22	6.4	11.1
24	6.4	11.2
26	6.4	11.2
28	6.4	11.2
30	6.4	11.1
32	6.4	10.9
34	6.4	10.9
36	6.4	10.9
38	6.4	10.8
40	6.4	10.8
42	Bottom	Bottom
44		
46		

Remarks: \* Sample was taken at the second buoy from the west side of the dam;  
 \* checked for navigational hazards; one floating log was removed;  
 \* checked eagle nest for activity - one mature eagle was present in nest and its mate was perched in a tree nearby.

## Water Quality Sampling - Thornapple Flowage

Date: 4/12/00

Temperature: 45°F

Weather Conditions: P. Sunny, NE Wind @ ~5 mph

Depth of Bottom Sample: 23 ft.

Secchi Disk Reading: 5 ft.

### Dissolved Oxygen and Temperature Profile

Depth	Temperature	Dissolved Oxygen (mg/l)
Surface	7.8	11.7
2	7.3	11.5
4	6.5	11.3
6	6.2	11.2
8	6.1	11.3
10	6.1	11.4
12	6.1	11.4
14	6.1	11.6
16	6.1	11.5
18	6.1	11.4
20	6.1	11.4
22	Bottom	Bottom
24		
26		
28		
30		
32		
34		
36		
38		
40		
42		
44		
46		

Remarks: - No navigational hazards were identified in flowage near dam,  
 - DO levels were unusual from surface to bottom in that they increased to a small degree as depth increased. The DO profile was collected a second time which gave the same results.

## Water Quality Sampling - Big Falls Flowage

Date: 7/26/00  
 Temperature: 75°F 5 used @ 5mph  
 Weather Conditions: Cloudy, Humid  
 Depth of Bottom Sample: 11.5 meters (37 feet)  
 Secchi Disk Reading: 4.5 feet

### Dissolved Oxygen and Temperature Profile

Depth	Temperature (°C)	Dissolved Oxygen (mg/l)
Surface	22.9	7.38
2	22.8	7.36
4	22.8	7.36
6	22.8	7.36
8	22.7	7.35
10	22.7	7.35
12	22.7	7.33
14	22.7	7.31
16	22.7	7.30
18	22.7	7.23
20	22.7	7.18
22	22.7	7.17
24	22.6	7.16
26	22.6	7.15
28	22.4	7.14
30	22.6	7.14
32	22.6	7.12
34	22.6	7.10
36	22.4	6.91
38	22.3	1.89
40	Bottom	Bottom
42		
44		
46		

Remarks: \* Water sample and DO/temperature profile was taken at the second buoy from the west side of the boat restraining barrier;  
 \* Checked eagle nest - on immaterial eagle was on the nest and another one was perched in a large white pine on the island;  
 \* The flowage in front of dam was surveyed for navigational hazards. There were no navigational hazards observed.



# Water Quality Sampling - Thornapple Flowage

Date: 7/26/00

Temperature: 80°F

Weather Conditions: Cloudy, S wind @ 10 mph

Depth of Bottom Sample: 6 m or 19.5 feet

Secchi Disk Reading: 4.0 feet

## Dissolved Oxygen and Temperature Profile

Depth	Temperature (°C)	Dissolved Oxygen (mg/l)
Surface	23.6	6.80
2	23.3	6.80
4	22.9	6.81
6	22.8	6.79
8	22.8	6.69
10	22.8	6.74
12	22.8	6.73
14	22.7	6.69
16	22.7	6.59
18	22.7	6.56
20	22.7	6.56
22	22.7	6.40
24	22.6	1.75
26	22.6	<1.0
28	Bottom	Bottom
30		
32		
34		
36		
38		
40		
42		
44		
46		

*Bottom influenced*

Remarks: \* Water sample and DO/temperature profile was taken from the buoy with the canal take-out sign;  
 \* The lower portion of the flowage in front of the dam was checked for navigational hazards. No hazards were observed.

## Water Quality Sampling - Big Falls Flowage

Date: 8/22/00  
 Temperature: 75°F  
 Weather Conditions: Sunny  
 Depth of Bottom Sample: 11.0m  
 Secchi Disk Reading: 4.0 feet

### Dissolved Oxygen and Temperature Profile

Depth	Temperature (°C)	Dissolved Oxygen (mg/L)
Surface	21.1	7.84
2	20.4	7.82
4	20.3	7.96
6	20.3	7.97
8	20.3	7.98
10	20.2	7.95
12	20.2	7.96
14	20.2	7.91
16	20.0	7.99
18	19.8	7.92
20	19.7	7.91
22	19.6	7.91
24	19.6	7.91
26	19.6	7.94
28	19.6	7.94
30	19.6	7.94
32	19.6	7.94
34	19.6	7.92
36	19.6	7.92
38	19.6	7.89
40	Bottom @ 39 feet	
42		
44		
46		

Remarks: \* Sample was taken from the second buoy from the west side of the boat restraining barrier;  
 \* The lower portion of the reservoir was checked for navigational hazards and none were found.

H:\excel5\bigfalls\wqsheets The eagle nest was checked for eagle activity. No eagles were observed at the nest site although an immature and an adult were observed on the island near the nest site. Another adult flew over the island while we were observing.

## Water Quality Sampling - Thornapple Flowage

Date: 8/22/00

Temperature: 78 °F

Weather Conditions: Cloudy

Depth of Bottom Sample: 5.5 meters

Secchi Disk Reading: 5.5 feet

### Dissolved Oxygen and Temperature Profile

Depth	Temperature	Dissolved Oxygen (mg/l)
Surface	23.1	6.99
2	22.8	7.05
4	22.3	7.03
6	21.8	7.03
8	21.7	6.94
10	21.6	6.89
12	21.6	6.87
14	21.6	6.87
16	21.6	6.79
18	21.6	6.72
20	21.4	6.38
22	Bottom	—
24		
26		
28		
30		
32		
34		
36		
38		
40		
42		
44		
46		

Remarks:

Sample taken at the buoy with the Talk Out sign,  
 No navigational hazards were observed on the lower end of the flowage.  
 Buoy was cleaned up at the boat landing and at the tailwater fishing area.

## **Agency Correspondence**



Northern States Power Company

1414 West Hamilton Avenue  
P.O. Box 8  
Eau Claire, WI 54702-0008  
Telephone (800) 895-4999

November 8, 2000

Mr. Jeff Scheirer  
Wisconsin DNR  
875 South 4<sup>th</sup> Avenue  
P.O. Box 220  
Park Falls, WI 54552

Mr. Jim Fossum  
Department of the Interior  
U.S. Fish and Wildlife Service  
1015 Challenger Court  
Green Bay, WI 54301

**Subject: Results of the 2000 Water Quality Monitoring Performed On The Big Falls and Thornapple Flowages Pursuant To Article 404 of the Big Falls License (FERC Project No. 2390) and Article 406 of the Thornapple License (FERC Project No. 2475).**

Dear Mr. Scheirer and Mr. Fossum:

Enclosed are the results of the water quality sampling that Northern States Power Company personnel conducted during the 2000 field season on the Big Falls and Thornapple Flowages. The samples were taken after ice-out and during July and August, in the deepest point of the reservoirs, immediately upstream from the boat restraining barriers. The results indicate that the water quality parameters sampled for were well within normal ranges for natural environments and were comparable to results from the 1998 and 1999 assessments.

Please provide me with any comments that you might have concerning the sampling results by December 29, 2000 so that I can transmit the water quality data and any resource agency comments to the Federal Energy Regulatory Commission by January 30, 2001. If I don't hear from you by the above-mentioned date, I will assume that you do not have any comments or recommendations. If you have any questions concerning the water quality sampling or the results provided to you, please feel free to give me a call at (715) 839-1353.

Sincerely,

Robert W. Olson  
Coordinator, Licensing

Enclosure: Water quality monitoring results