ORIGINAL

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
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Green Bay, WI 54307-9002

085

February 25, 2004

FERC Project No. 2595

Ms. Magalie R Salas, Secretary
Federal Energy Regulatory Commission
Mail Code: DTCA, HL 21.3
888 First Street, N.E.
Washington, DC 20423

Dear Secretary Salas:

High Falls Hydroelectric Project 2003 Dissolved Oxygen Monitoring Report

As per the Order Amending the Water Quality Monitoring Plans for the High Falls Hydroelectric Project (FERC Project No. 2595) dated April 30, 2002, Wisconsin Public Service Corporation (WPSC) is providing this report of the 2003 Water Quality Monitoring Activities. The main purpose of the report, per the amended monitoring plan, is to provide instances when the dissolved oxygen levels in the tailwater of the projects fell below the standards outlined in the approved plan.

The High Falls project had dissolved oxygen readings in compliance with the Dissolved Oxygen standard 100.0% of the time in 2003. Due to the protocol and mitigation options, WPSC was able to alleviate sustained periods of dissolved oxygen levels below the standards for the 2003 monitoring season.

The entire monitoring record with calibration records for the 2003 monitoring season was provided to the Wisconsin Department of Natural Resources (WDNR) and the Fish and Wildlife Service (FWS). Appendix 1 contains hard copies of the calibration records.

The following mitigation measures were implemented during the 2003 season:

High Falls

July 3, 2003	Taintor gate was raised to provide an aeration flow. Agency personnel not notified because level was not yet in a non-compliant condition (5.0 Mg/L +/- 0.2 Mg/L) before mitigation measures were initiated.
September 11, 2003	Taintor gate was raised to provide an aeration flow. Agency personnel not notified because level was not yet in a non-compliant condition (5.0 Mg/L +/- 0.2 Mg/L) before mitigation measures were initiated.

In reviewing the data, WPSC identified time periods where the maximum pH limit of 9.0 was exceeded. All of the high readings occurred during the following monitoring periods:

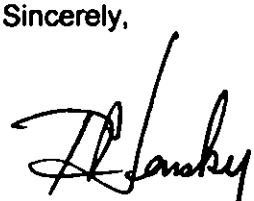
June 29 through July 3, 2003
07:00 July 11, through 11:00 July 11, 2003
September 30 through October 1, 2003

Since there has been no prior history of pH deviations at the project, WPSC investigated the pH data for validity. In comparing the calibration records for June 29 to July 11, 2003 included in Appendix 1 with the 2003-pH monitoring data, WPSC has determined, the readings were due to an intermittent error associated with the same monitoring device (Datasonde #36467). In comparing the calibration records for September 30 to October 1, 2003 included in Appendix 1 with the 2003-pH monitoring data, WPSC has determined, the readings were due to depletion of pH reference solution of Datasonde #36464. For the entire 2003 monitoring period, there were no sustained pH problems with this Datasonde #36464. Therefore, WPSC has determined the pH deviations are invalid and not an accurate representation of the quality of the water being released from the High Falls Hydroelectric Project. The error was not detected during calibration because of its intermittent nature. Datasonde #36467 will be returned to the manufacturer for repair, prior to returning it to service in the 2004 monitoring season. Datasonde #36464 will also be refurbished so that it will be ready for the 2004 monitoring season.

WPSC provided copies of the annual report to the WDNR and the FWS. Both were in agreement with the annual report. Documentation of consultation is available in Appendix 2.

Should you have any questions regarding this material, please do not hesitate to call Shawn Puzen at (920) 433-1094. Thank you for your time and consideration.

Sincerely,



Terry Jensky
Assistant Vice President – Energy Supply – Operations
Telephone: (920) 433-2277

vav

Enc.

Cc: Mr. Gil Snyder – WPSC D2
Mr. Bruce Crocker – WPSC D2
Ms. Joan Johanek – D2
Mr. Bill Bloczynski – WPSC MERH
Mr. Tom Meronek – WDNR
Mr. Larry Thompson - FWS
Ms. Peggy Harding, FERC Chicago

Appendix 1

Calibration Data Sheets

Monitoring Data

Per Past Conversation with Robert Fletcher FERC DL&C, full data set is being provided only to FWS and WDNR.

Field Notes for Datasonde Deployment

Date/Time: May 8, 2003 13:45 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36465

Calibration Information Datasonde Battery [volts]: 6.2 (New)

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.64	7.00
10.00 Std	6.02	10.00

New ph ref. solution

Conductivity (mS/cm) Before Cal. After Cal. Zero Conductivity Calibration

0.287 Std 0.275 0.287 Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.29" Hg, 744 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	99.2%	100.0%
mg/L D.O.	8.12 mg/L	8.32 mg/L
Temp – °C	23.43°C	23.45°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	71.6	97.0
mg/L D.O.	6.19	8.39
Temp – °C	22.6	22.6°C

New cap memb. on 4/23/03
Cal. elev @ 8

Test Program Readings

	Datasonde	YSI Meter
% Saturation	92.0%	93.7%
mg/L D.O.	9.32 mg/L	10.08 mg/L
Temp – °C	11.94°C	12.2°C

(Must be within 0.5 mg/L D.O.)

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.	Deploy			
Temp – °C				

Setup 5:11 5/30/03 17:00

YSI Reading at Tube - outside tube

Time	14:25
% Saturation	95.7%
mg/L D.O.	10.37 mg/L
Temp – °C	11.7°C

Check Status OK

Battery Life @ Start: 100%

Battery Life @ End: 12%

Notes: Setup to check data transfer to system operating. Sunny, light wind, 66°F Test program named HFT50803.txt

Field Notes for Datasonde Deployment

Date/Time: May 30, 2003 14:00 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36467

Calibration Information Datasonde Battery [volts]: 6.8 V (New)

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	5.34	7.00
10.00 Std	9.97	10.00

New ph Ref. Solution.

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.287 Std	0.282	0.287	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 28.79" Hg, 731.5 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	95.8%	100.0%
mg/L D.O.	8.32 mg/L	8.75 mg/L
Temp – °C	20.01 °C	19.99 °C

YSI calibration (See field notes for YSI Model MEA 95 calibration information)

	Before Calibration	After Calibration
% Saturation	89.6%	97.1%
mg/L D.O.	8.20 mg/L	8.88 mg/L
Temp – °C	19.7 °C	19.7 °C

New Cap memb. on 5/10/03

Cal. elev. @ 8

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	86.6%	84.7%	
mg/L D.O.	8.02 mg/L	8.02 mg/L	
Temp – °C	17.9 °C	17.9 °C	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C	Deploy			

YSI Reading at Tube – outside tube

Time	13:10
% Saturation	84.1%
mg/L D.O.	8.02 mg/L
Temp – °C	17.7 °C

Check Status – OK

Battery Life @ Start: _____

Battery Life @ End: _____

Notes: test file named HFT0530.txt

Cloudy, no wind, 57°F

Circulator works.

No Batteries (?)

recal backup

Field Notes for Datasonde Deployment

Date/Time: May 30, 2003 13:00 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 36468

Calibration Information Datasonde Battery [volts]: 6.04

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.81	7.00
10.00 Std	10.06	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.287 Std	0.276	0.287	Before 0.008 After 0.000

Barometric Pressure (mm Hg) 28.64 "Hg, 727 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	112.8 %	100.0%
mg/L D.O.	9.88 mg/L	8.69 mg/L
Temp – °C	20.05 °C	19.99 °C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	89.6%	97.1%
mg/L D.O.	8.32 mg/L	8.88 mg/L
Temp – °C	19.7 °C	19.7 °C

New cap memb. on 5/10/03

Cal elev. @ 8

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	89.3 %	88.4%	
mg/L D.O.	8.47 mg/L	8.73 mg/L	
Temp – °C	15.78 °C	15.8 °C	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.	Deploy			
Temp – °C				

YSI Reading at Tube

Time	14:45
% Saturation	84.3%
mg/L D.O.	8.37 mg/L
Temp – °C	15.7

Check Status OK

Battery Life @ Start: 98%

Battery Life @ End: 58%

Notes: Test file named HFT2530.txt

Cloudy, 57°F, No wind

Circulator works

Field Notes for Datasonde Post Calibration

Date/Time: May 30, 2003 14:20 Analyst: HD

Location: High Falls Bridge Datasonde Serial #: 36465

Ending Datasonde Battery [volts]: 5.8 V

Calibration Information

pH (s.u.)	Reads
7.00 Std	8.25
10.00 Std	11.32

zero cond. reads

Conductivity (mS/cm) 0.287 Std 0.285 Reads 0.0000

Barometric Pressure (mm Hg) 28.79"Hg, 731.5 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	86.1%	100.0%
mg/L D.O.	8.00 mg/L	9.14 mg/L
Temp – °C	17.81°C	17.79°C

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	X
mg/L D.O.	
Temp – °C	

Notes:

Setup for D.O. Calibration w/ tap H_2O.
~~Calibrate~~ Download file named HF053003.txt
then calibrate D.O. and read other
parameters. large file, datasonde
deployed since 5/8/03.

bbir plate is missing from circulator

Field Notes for Datasonde Deployment

Date/Time: June 9, 2003 12:15 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36465

Calibration Information Datasonde Battery [volts]: 6.3V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	7.87	7.00
10.00 Std	10.26	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.287 Std	0.285	0.287	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.23" Hg, 742.5 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	119.0%	100.0%
mg/L D.O.	9.96 mg/L	8.49 mg/L
Temp – °C	22.27°C	22.28°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	97.4%	97.1%
mg/L D.O.	8.30 mg/L	8.27 mg/L
Temp – °C	23.3°C	23.3°C

New memb. on 5/8/03
Cal. elev. @ 8

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation			
mg/L D.O.			
Temp – °C			

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

YSI Reading at Tube

Time	
% Saturation	
mg/L D.O.	
Temp – °C	

Check Status

Battery Life @ Start: _____

Battery Life @ End: _____

Notes: Test file named HFT0509.txt

Cloudy, light wind, 67°F

Circulator test => OK

Field Notes for Datasonde Post Calibration

Date/Time: June 9, 2003 Analyst: TR

Location: High Falls Bridge Datasonde Serial #: 364608

Ending Datasonde Battery [volts]: 6.0 V

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.20
10.00 Std	10.01

Conductivity (mS/cm) 0.287 Std 0.286 Reads

Barometric Pressure (mm Hg) 29.23" Hg, 742.5mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	91.9%	100.0%
mg/L D.O.	7.81 mg/L	8.68 mg/L
Temp – °C	21.14 °C	21.14 °C

YSI calibration (See field notes for — for calibration info.)

% Saturation	
mg/L D.O.	X
Temp – °C	

Notes:

Setup for D.O. Calibration w/ Cap H_2O. Download file named HF060903.txt Then calibrate D.O. and read other parameters. Low D.O. value is 6.69 mg/L. Scan ph numbers for Consistancy. Ph good 7.3 to 7.5 units Circulator test => OK

6.69 mg/L on 6/9/03 0400

Field Notes for Datasonde Post Calibration

Date/Time: 6/19/03 11:05 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36466

Ending Datasonde Battery [volts]: _____

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.40
10.00 Std	10.20

Conductivity (mS/cm) 0.288 Std 0.383 Reads

Barometric Pressure (mm Hg) 724

Dissolved Oxygen	before cal	after cal
% Saturation	94.1	100.0
mg/L D.O.	8.55	8.84
Temp – °C	18.77	18.70

(Probe not very dirty) Actually real good.

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	_____
mg/L D.O.	_____
Temp – °C	_____

Notes:

HFB619.txt

Sunny +65°

Limits

(<5) D.O. Low: 5.19

(6.9) P.H. Low: 7.39

Field Notes for Datasonde Deployment

Date/Time: 6/19/03 9:30 Analyst: MLM

Location: High Falls - Bridge Datasonde Serial #: 36468

Calibration Information Datasonde Battery [volts]: 5.7

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	7.23	7.00
10.00 Std	10.01	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.294	0.288	Before .0000 After .0000

Barometric Pressure (mm Hg) 721

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	118.4	100.0
mg/L D.O.	10.16	8.34
Temp – °C	21.72	21.64

YSI calibration (See field notes for YSI Model 95 calibration information) Calcd @ 800 ft.

	Before Calibration	After Calibration
% Saturation	–	97.0
mg/L D.O.	8.84	8.62
Temp – °C	21.2	21.1

Test Program Readings

	Datasonde	YSI Meter (Must be within 0.5 mg/L D.O.)
% Saturation	70.6	78.5
mg/L D.O.	6.15	7.22
Temp – °C	17.48	19.5

* – **Re-calibration required if outside 0.5 mg/l limit**

	Before Cal.	After Cal.	Datasonde	YSI	
% Saturation	90.4	100.0	79.0	78.4	2nd Test
mg/L D.O.	8.31	9.19	6.88	7.20	ok
Temp – °C	16.86	16.90	19.53	19.5	

YSI Reading at Tube Final #'s (at 10:00)

Time	10:00	63.8
% Saturation	78.4	5.74
mg/L D.O.	7.20	19.38
Temp – °C	19.5	

Check Status
Battery Life @ Start: 89%
Battery Life @ End: 71%

*

10:00 Readings do not compare well with YSI readings D.O. Probe-ok

Notes: Sunny + 62° - Winds 10-12 MPH

HFT619.txt - Test #1 - No Good

* - HFT6192.txt - Test #2 - ok

* – Circulator is working. Put in TTY mode.

Field Notes for Datasonde Post Calibration

Date/Time: June 27, 2003 14:30 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 364468

Ending Datasonde Battery [volts]: 5.9 V (Change)

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.18
10.00 Std	10.12

Zero Cond. Reads

0.0000

Conductivity (mS/cm) 0.287 Std 0.280 Reads

Barometric Pressure (mm Hg) 734 mm Hg, 28.92" Hg

Dissolved Oxygen	before cal	after cal
% Saturation	98.8%	100.0%
mg/L D.O.	8.10 mg/L	8.34 mg/L
Temp – °C	22.57°C	22.65°C

YSI calibration (See field notes for ——— for calibration info.)

% Saturation	X
mg/L D.O.	X
Temp – °C	X

Notes:

Setup for D.O. Calibration w/ tap water, download file named HF062703.EXC and then calibrate D.O. and read other parameters. Low D.O. value is 5.05 mg/L 57.7% @ 18.4°C pH readings look ok, ~7.16 to ~7.30

6/27/03 @ 15:02

Circulator test ⇒ OK

Field Notes for Datasonde Deployment

Date/Time: June 27, 2003 14:00 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36467

Calibration Information Datasonde Battery [volts]: 6.2 V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	5.42	7.00
10.00 Std	10.11	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.287 Std	0.285	0.287	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 734 mm Hg, 28.92" Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	109.3%	100.0%
mg/L D.O.	9.02 mg/L	8.28 mg/L
Temp – °C	23.00	23.02°C

YSI calibration (See field notes for YSI Model 55 calibration information)

Cal elev. @ 8

	Before Calibration	After Calibration
% Saturation	95.6%	97.2%
mg/L D.O.	8.05 mg/L	8.17 mg/L
Temp – °C	24.0°C	24.0°C

Test Program Readings

	Datasonde	YSI Meter (Must be within 0.5 mg/L D.O.)
% Saturation	73.0%	74.1%
mg/L D.O.	6.23 mg/L	6.55 mg/L
Temp – °C	21.47°C	21.3°C

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation	Deploy			
mg/L D.O.				
Temp – °C				

YSI Reading at Tube - outside tube OK

Time	14:57
% Saturation	72.6%
mg/L D.O.	6.49 mg/L
Temp – °C	20.9°C

Check Status

Battery Life @ Start: 100%

Battery Life @ End: 60%

Notes: Test file name @ HFT0627.txt

Partly Cloudy, Variable winds, 68°F

circulator => OK

Field Notes for Datasonde Post Calibration

Date/Time: July 3, 2003 11:20 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 364467

Ending Datasonde Battery [volts]: 6.0 V

Calibration Information

Datasonde pulled because stopped reading and high ph readings

pH (s.u.)	Reads
7.00 Std	8.62
10.00 Std	11.63

→ change ph ref. sol. and fric#

Conductivity (mS/cm) 0.288 Std 0.286 Reads

Barometric Pressure (mm Hg) 28.75" Hg, 732 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	93.2%	100.0%
mg/L D.O.	7.49 mg/L	8.00 mg/L
Temp – °C	24.63°C	24.70°C

YSI calibration (See field notes for — for calibration info.)

% Saturation	
mg/L D.O.	X
Temp – °C	

Notes:

Setup for D.O. Calibration with tap water. Download file named HF070303.exe Then read + calibrate D.O. and read other parameters. High ph readings starting on 6/29/03 10:00 ph 7.36 @ 11:00 on 6/29/03 ph reads 9.69 Circulator works fine.

Low D.O. value on 7/02/03 @ 18:00 4.93 mg/L 56.2%, @ 19:00 7/2/03 D.O is 7.41 mg/L 88.9% - Gate open

Field Notes for Datasonde Deployment

Date/Time: July 3, 2003 10:50 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36468

Calibration Information Datasonde Battery [volts]: 6.2 V (New)

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.68	7.00
10.00 Std	9.93	10.00

New ph ref. Sol. on 7/3/03

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.281	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 28.75" Hg, 732 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	102.0%	100.0%
mg/L D.O.	8.15	7.96 mg/L
Temp – °C	24.90°C	24.95°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	95.2%	97.0%
mg/L D.O.	7.71 mg/L	7.84 mg/L
Temp – °C	26.2°C	26.2°C

New cap membrane on 6/26/03
Cal. elev. @ 8

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	94.4%	96.0%	
mg/L D.O.	7.98 mg/L	8.41 mg/L	ph = 8.02 > test ran off fishing bridge
Temp – °C	21.77°C	21.8°C	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation	Deploy			
mg/L D.O.				
Temp – °C				

YSI Reading at Tube (outside Tube)

Time	11:30
% Saturation	90.1%
mg/L D.O.	7.94 mg/L
Temp – °C	21.5°C

Check Status
Battery Life @ Start: 100%
Battery Life @ End: 71%

Notes: Partly Cloudy, moderate winds, 80°F, Test File named HFT0703.txt. Deploy because of low D.O. values Circulator => OK

File setup through 17:00 hrs on 7/10/03

Field Notes for Datasonde Deployment

Date/Time: July 9, 2003 12:45 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36467

Calibration Information Datasonde Battery [volts]: 6.0 V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.78	7.00
10.00 Std	9.87	10.00

> New ph Ref. Sol and ph Frit on 7/8/03

Conductivity (mS/cm)		Before Cal.	After Cal.	Zero Conductivity Calibration
0.288	Std	0.288	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.10" Hg, 740 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	103.2%	100.0%
mg/L D.O.	8.48 mg/L	8.31 mg/L
Temp – °C	23.19°C	23.20°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	9.04 mg/L	97.0%
mg/L D.O.	108.4%	8.06 mg/L
Temp – °C	24.5	24.6

Cal. elev. @ 8

New memb. cap on 6/26/03

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	94.6%	95.3%	
mg/L D.O.	7.82 mg/L	8.08 mg/L	
Temp – °C	23.56°C	23.6°C	

Test program ran off fishing Bridge

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

Deploy

YSI Reading at Tube – outside Tube OK

Time	14:00
% Saturation	80.2%
mg/L D.O.	6.94 mg/L
Temp – °C	22.9°C

Check Status

Battery Life @ Start: 93%

Battery Life @ End: 65%

Notes: Mostly Cloudy, 66°F, light wind.

Test file named HFT0709.txt.

Circulator test ⇒ OK

Field Notes for Datasonde Post Calibration

Date/Time: July 7, 2003 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 364468

Ending Datasonde Battery [volts]: 6.2 v - one deployment

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.05
10.00 Std	10.12

Conductivity (mS/cm) 0.288 Std 0.288 Reads

Barometric Pressure (mm Hg) 29.10"Hg, 740 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	95.4%	100.0%
mg/L D.O.	7.85 mg/L	8.33 mg/L
Temp – °C	23.12°C	23.12°C

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	X
mg/L D.O.	
Temp – °C	

Notes:

Setup for D.O. calibration w/ tap H_2O. Download file named HF070903.txt. Calibrate D.O. and read other parameters. Low D.O. reading is 5.70 mg/L @ 68.5% on 7/8/03 @ 18:00. ph values 7.46 to 7.87 - OK circulator works fine

Field Notes for Datasonde Deployment

Date/Time: July 11, 2003 11:15 Analyst: TA

Location: High Falls Bridge Datasonde Serial #: 36465

Calibration Information Datasonde Battery [volts]: 6.3 V (New)

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.73	7.00
10.00 Std	9.75	10.00

New ph ref. Sol & Frit

Conductivity (mS/cm)		Before Cal.	After Cal.	Zero Conductivity Calibration
0.288	Std	0.285	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 28.81"Hg, ~~732~~ 732mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	100.6%	100.0%
mg/L D.O.	8.98 mg/L	8.94 mg/L
Temp – °C	19.00	18.93°C

YSI calibration (See field notes for YSI Model 55 calibration information)

	Before Calibration	After Calibration
% Saturation	97.0%	97.2%
mg/L D.O.	9.71 mg/L	9.72 mg/L
Temp – °C	20.60°C	20.60°C

Cal. clev @ 8

Test Program Readings - off Fishing Bridge

	Datasonde	YSI Meter (Must be within 0.5 mg/L D.O.)
% Saturation	94.3%	92.1%
mg/L D.O.	7.96 mg/L	8.06 mg/L
Temp – °C	21.82	21.7°C

ph = 8.30

Deploy

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

YSI Reading at Tube - outside of tube

Time	12:30
% Saturation	88.0%
mg/L D.O.	7.69 mg/L
Temp – °C	21.90°C

Check Status OK

Battery Life @ Start:

Battery Life @ End:

Notes: Cloudy, light rain, 60°F, Unscheduled trip- High ph, transfer loss.

Test file named HFT0711.EXT

circulator works good

Field Notes for Datasonde Post Calibration

Date/Time: July 11, 2003 11:45 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 364667

Ending Datasonde Battery [volts]: 6.0V

Calibration Information

pH (s.u.)	Reads
7.00 Std	8.84
10.00 Std	11.91

> replace ph probe (2nd time, this time w/ new ph ref. sol. and frit

Conductivity (mS/cm) 0.788 Std 0.789 Reads

Zero cond. 0.000

Barometric Pressure (mm Hg) 733mmHg, 28.82"Hg

Dissolved Oxygen	before cal	after cal
% Saturation	95.3%	100.0%
mg/L D.O.	8.59 mg/L	8.97 mg/L
Temp – °C	19.07°C	19.07°C

YSI calibration (See field notes for — for calibration info.)

% Saturation	X
mg/L D.O.	X
Temp – °C	

Notes:

Unscheduled trip ⇒ High ph, data transfer alarm setup for D.O. calibration w/ tap water, download file named HF071103.txt, then calibrate D.O. and read other parameters. pH high as of 7/11/03 @ 07:00 8.05 to 10.25, Low D.O. value is 6.60 mg/L, 78.1% on 7/9/03 @ 22:00
circulator works fine
gate open on dam

Field Notes for Datasonde Deployment

Date/Time: July 16, 2003 13:30 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 3604604

Calibration Information Datasonde Battery [volts]: 6.3 V (New)

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	5.84	7.00
10.00 Std	10.06	10.00

> New ph ref. solution and frit.

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.285	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.19"Hg, 742mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	92.4%	100.0%
mg/L D.O.	7.33 mg/L	8.01 mg/L
Temp – °C	25.32°C	25.35°C

New Ca

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	93.3%	97.0%
mg/L D.O.	7.28 mg/L	7.57 mg/L
Temp – °C	28.2°C	28.2°C

New cap memb. on 6/26/03
Cal. elev. @ 8

Test Program Readings – off Fishing Bridge

	Datasonde	YSI Meter (Must be within 0.5 mg/L D.O.)
% Saturation	93.6%	91.9%
mg/L D.O.	7.81 mg/L	7.95 mg/L
Temp – °C	23.14°C	23.2°C

Deploy

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

YSI Reading at Tube – outside tube

Time	14:25
% Saturation	89.6%
mg/L D.O.	7.88 mg/L
Temp – °C	22.7°C

OK

Check Status
Battery Life @ Start: 100%
Battery Life @ End: 64%

Notes: Clear, light wind, 80°F
Test file named HFT0716.txt

circulator test =>

Field Notes for Datasonde Post Calibration

Date/Time: July 16, 2003 Analyst: TR

Location: High Falls Bridge Datasonde Serial #: 364C65

Ending Datasonde Battery [volts]: 6.2V

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.32
10.00 Std	10.35

Zero Cond. Reads

Conductivity (mS/cm) 0.288 Std 0.282 Reads 0.0000

Barometric Pressure (mm Hg) 29.12"Hg, 742 mmHg

Dissolved Oxygen	before cal	after cal
% Saturation	85.8%	99.9%
mg/L D.O.	6.81 mg/L	8.04 mg/L
Temp – °C	25.07 °C	25.09

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	X
mg/L D.O.	X
Temp – °C	X

Notes:

Setup for D.O. Calibration w/ tap H2O. Download file named HF07603.EXE. Calibrate D.O. and read other parameters.

Low D.O. => 5.02 mg/L, 58.3% @ 12:00 on 7/14/03

pH => 7.68 to 8.29 pH units

Circulator test => OK

Field Notes for Datasonde Deployment

Date/Time: July 25, 2003 07:45 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 36468

Calibration Information Datasonde Battery [volts]: 6.0 V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.98	7.00
10.00 Std	10.03	10.00

Change ph ref. sol. on 7/24/03

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.288	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.19" Hg, 742 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	103.9%	100.0%
mg/L D.O.	8.77 mg/L	8.48 mg/L
Temp – °C	22.32°C	22.28°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	95.9%	97.0%
mg/L D.O.	8.24 mg/L	8.35 mg/L
Temp – °C	22.9°C	22.9°C

Cal. elev. @ 8

New cap. memb. on 7/24/03

Test Program Readings Taken off fishing Bridge

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	87.4%	84.0%	
mg/L D.O.	7.49 mg/L	7.46 mg/L	
Temp – °C	21.78°C	21.8°C	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation	Deploy			
mg/L D.O.				
Temp – °C				

YSI Reading at Tube – outside tube

Time	08:30
% Saturation	82.3%
mg/L D.O.	7.23 mg/L
Temp – °C	21.8°C

Check Status – OK

Battery Life @ Start: 98%

Battery Life @ End: 56%

Notes: Clear, light winds, 63°F

Test file named HFT72503.txt

Circulator test => OK

Field Notes for Datasonde Post Calibration

Date/Time: July 25, 2003 08:00 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 364464

Ending Datasonde Battery [volts]: 6.3 V

Calibration Information

pH (s.u.)	Reads
7.00 Std	6.72
10.00 Std	9.79

Zero Cond. Reads
0.0000

Conductivity (mS/cm) 0.288 Std 0.277 Reads

Barometric Pressure (mm Hg) 29.19" Hg, 742 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	77.6%	100.0%
mg/L D.O.	6.66 mg/L	8.57 mg/L
Temp – °C	21.74°C	21.70°C

YSI calibration (See field notes for ____ for calibration info.)

% Saturation	
mg/L D.O.	
Temp – °C	

Notes:

Setup for D.O. calibration w/ tap H2O, Download file named HF072503.txt and then calibrate D.O. and read other parameters. Low D.O. value is 5.66 mg/L, 66.0% on 7/23/03 @ 04:00 ph range is 7.15 to 8.44 ph units circulator test ⇒ OK

Field Notes for Datasonde Deployment

Date/Time: Aug 4, 2003 12:10 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 36465

Calibration Information Datasonde Battery [volts]: 6.1 V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	7.14	7.00
10.00 Std	10.04	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.290	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.10 "Hg, 739 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	121.9%	100.0%
mg/L D.O.	10.51°C	8.59°C
Temp – °C	21.42°C	21.39°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	109.7%	97.0%
mg/L D.O.	9.50 mg/L	8.40 mg/L
Temp – °C	22.5°C	22.5°C

New cap memb. on 7/25/2003

Cal. elev. @ 8

Test Program Readings Run off Fishing Bridge

	Datasonde	YSI Meter (Must be within 0.5 mg/L D.O.)
% Saturation	98.9%	98.9%
mg/L D.O.	8.31 mg/L	8.53 mg/L
Temp – °C	22.6°C	22.7°C

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation	Deployed			
mg/L D.O.				
Temp – °C				

YSI Reading at Tube - ~~off Fishing Bridge~~ Outside tube

Time	13:00
% Saturation	94.9%
mg/L D.O.	8.15 mg/L
Temp – °C	22.7

Check Status – OK

Battery Life @ Start: 98%

Battery Life @ End: 57%

Notes: Cloudy, No Wind, 68°F

Test file named HET8Ø403.txt

Circulator test ⇒ OK

A lot of rain lately, high volume of water spilling through Gate

Field Notes for Datasonde Post Calibration

Date/Time: Aug. 4, 2003 Analyst: HA

Location: High Falls Bridge Datasonde Serial #: 36468

Ending Datasonde Battery [volts]: 6.04

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.15
10.00 Std	10.17

Zero Cond. Reads

0.0007

Conductivity (mS/cm) 0.288 Std .0284 Reads

Barometric Pressure (mm Hg) 29.10"Hg, 739 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	85.4%	100.0%
mg/L D.O.	7.26 mg/L	8.46 mg/L
Temp – °C	22.18°C	22.18°C

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	X
mg/L D.O.	
Temp – °C	

Notes:

Setup for D.O. Calibration w/ tap water. Download file named HF080403.txt. Calibrate D.O. and read other parameters. Low D.O. value is 5.24 mg/L, 60.6% @ 21.3°C on 7/25/03 @ 15:00. PH range is: 7.29 to 8.30 ph units. Circulator test => OK

Field Notes for Datasonde Deployment

Date/Time: 8/13/03 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36468

Calibration Information Datasonde Battery [volts]: 6.0

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	7.22	7.01
10.00 Std	10.00	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.294	0.288	Before .0000 After .0000

Barometric Pressure (mm Hg) 751.5

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	123.6	100.0
mg/L D.O.	10.23	8.44
Temp – °C	23.30	23.18

YSI calibration (See field notes for YSI Model 95 calibration information) Cold at 800'

	Before Calibration	After Calibration
% Saturation	98.7	97.1
mg/L D.O.	8.68	8.57
Temp – °C	21.6	21.6

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	94.4	96.4	
mg/L D.O.	8.02	8.28	= OK
Temp – °C	22.88	22.9	

Final #'s
71.0
5.94
22.93

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

YSI Reading at Tube

Time	8:50
% Saturation	93.0
mg/L D.O.	7.98
Temp – °C	22.8

Check Status
Battery Life @ Start: 98%
Battery Life @ End: 77%

Notes: HFT813.txt - OK
Circulator - OK
TTY Mode - OK
Sunny + 70° - No Wind

Put in TTY mode. End Date = 8/22/03
Time = 17:00

Field Notes for Datasonde Post Calibration

Date/Time: 8/13/03 9:30 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36465

Ending Datasonde Battery [volts]: 5.9

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.51
10.00 Std	10.53

Conductivity (mS/cm) 1.288 Std 0.444 Reads

Barometric Pressure (mm Hg) 751

Dissolved Oxygen	before cal	after cal
% Saturation	88.5	100.0
mg/L D.O.	7.52	8.63
Temp – °C	21.99	21.99

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	
mg/L D.O.	
Temp – °C	

Notes:

HFB813.txt : ok

Limits - (<5) D.O. Low = 5.62 8/9/03 23:00:00

(6-9) PH : ok - all 8's

Sunny +70° - No Wind

Field Notes for Datasonde Deployment

Date/Time: Aug. 21, 2003 13:20 Analyst: HP

Location: High Falls Bridge Datasonde Serial #: 360465

Calibration Information Datasonde Battery [volts]: 5.9 V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.82	7.00
10.00 Std	10.05	10.00

New ph ref. sol on 8/20/03

Conductivity (mS/cm)		Before Cal.	After Cal.	Zero Conductivity Calibration
0.288	Std	0.284	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 28.94" Hg, 736.5 mm Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	119.3%	100.0%
mg/L D.O.	9.50 mg/L	7.80 mg/L
Temp – °C	26.32°C	26.35°C

YSI calibration (See field notes for YSI Model MEA 95 calibration information)

	Before Calibration	After Calibration
% Saturation	92.2%	97.0%
mg/L D.O.	7.08 mg/L	7.39 mg/L
Temp – °C	29.5°C	29.5°C

Cal. elev. @ 8

New memb. cap on 7/25/03

Test Program Readings – Ran off Fishing Deck

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	95.0%	96.9%	
mg/L D.O.	7.50 mg/L	7.89 mg/L	
Temp – °C	25.71°C	25.8°C	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.		Deploy		
Temp – °C				

YSI Reading at Tube – outside tube

Time	14:15
% Saturation	86.6%
mg/L D.O.	7.21 mg/L
Temp – °C	24.6°C

Check Status – OK

Battery Life @ Start: 89%

Battery Life @ End: 41%

Notes: Partly cloudy, moderate wind, 85°F

Test file named HET08203.txt.

Circulator works ⇒

Field Notes for Datasonde Post Calibration

Date/Time: Aug. 21, 2003 Analyst: TR

Location: High Falls Bridge Datasonde Serial #: 364668

Ending Datasonde Battery [volts]: 6.0V

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.18
10.00 Std	10.17

Zero Cond. Reads

Conductivity (mS/cm) 0.288 Std 0.282 Reads 0.000

Barometric Pressure (mm Hg) 736.5 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	81.0%	100.0%
mg/L D.O.	6.46 mg/L	7.85 mg/L
Temp – °C	26.05°C	26.11°C

YSI calibration (See field notes for ——— for calibration info.)

% Saturation	X
mg/L D.O.	X
Temp – °C	X

Notes:

Setup for D.O. calibration w/ tap water. Download file named HFØ82103.txt and then calibrate D.O. and read other parameters. Low D.O. value is 5.51 mg/L w/ 64.7% @ 22.81°C on 8/21/03 3:20 AM. PH range 7.8 to 8.2. Circulator works well.

Field Notes for Datasonde Deployment

Date/Time: Aug. 27, 2003 13:40 Analyst: AR

Location: High Falls Bridge Datasonde Serial #: 36468

Calibration Information Datasonde Battery [volts]: 5.9 V

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.83	7.00
10.00 Std	9.97	10.00

New ph ref. sol. on 8/28/03

Conductivity (mS/cm)		Before Cal.	After Cal.	Zero Conductivity Calibration
0.288	Std	0.282	0.288	Before 0.000 After 0.000

Barometric Pressure (mm Hg) 29.25"Hg, 744 mg Hg

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	99.6%	100.0%
mg/L D.O.	8.45 mg/L	8.49 mg/L
Temp – °C	22.43°C	22.40°C

YSI calibration (See field notes for YSI Model 95 MEA calibration information)

	Before Calibration	After Calibration
% Saturation	93.2%	97.0%
mg/L D.O.	7.57 mg/L	7.90 mg/L
Temp – °C	25.9°C	25.9°C

Cal. elev. @ 8

New cap memb. on 8/24/03

Test Program Readings - Ran off Fishing Bride

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	95.5%	97.0%	
mg/L D.O.	7.90 mg/L	8.20 mg/L	
Temp – °C	23.77°C	23.8°C	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

Deploy

YSI Reading at Tube - outside tube

Time 14:30

% Saturation	
mg/L D.O.	
Temp – °C	

Check Status - ok

Battery Life @ Start: 93%

Battery Life @ End: 53%

Notes: Mostly cloudy, breezy, 70°F

Test file named HFT82903.txt

Circulator => Fine

Tree around tube, removed it and adjusted depth of Datasonde. With clouds and clear water I could see Datasonde outside of tube underwater.

Field Notes for Datasonde Post Calibration

Date/Time: Aug. 29, 2003 Analyst: TA

Location: High Falls Bridge Datasonde Serial #: 364465

Ending Datasonde Battery [volts]: 5.9 V (change)

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.34
10.00 Std	10.25

Zero Cond. Reads => 0.0000

Conductivity (mS/cm) 0.288 Std 0.283 Reads

Barometric Pressure (mm Hg) 29.25" Hg, 744mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	73.4%	100.2%
mg/L D.O.	6.24 mg/L	8.58 mg/L
Temp – °C	21.93°C	21.89

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	~~X~~
mg/L D.O.	
Temp – °C	

* High degree of bio-accumulation on all probes

Notes:

Setup for D.O. calibration w/ tap water. Download file named HF082903.txt. Calibrate D.O. and read other parameters.

Low D.O. value = 5.11 mg/L @ 63.1% on 8/22/03 @ 20:00

ph range = 7.6 to 8.5

Circulator => works fine

Tree stuck on tube, removed it by pulling it to shore. Spilling High amounts of water because of low D.O. Told Et Supply to monitor and change Date.

Field Notes for Datasonde Deployment

Date/Time: 9/8/03 10:40 Analyst: MLR

Location: High Falls Bridge Datasonde Serial #: 36464

Calibration Information Datasonde Battery [volts]: 6.0

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.94	7.01
10.00 Std	9.95	10.00

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.291	0.288	Before .0000 After .0000

Barometric Pressure (mm Hg) .746

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	135.1	100.0
mg/L D.O.	11.47	8.53
Temp – °C	22.25	22.30

YSI calibration (See field notes for YSI Model 95 calibration information)

	Before Calibration	After Calibration
% Saturation	100.2	97.0
mg/L D.O.	8.65	8.40
Temp – °C	22.7	22.6

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	95.2	97.0	
mg/L D.O.	8.21	8.50	: OK
Temp – °C	21.7	21.8	

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

End #'s
6.86
79.5
21.5°

YSI Reading at Tube

Time	11:10
% Saturation	88.0
mg/L D.O.	7.81
Temp – °C	21.5

Check Status
Battery Life @ Start: 98%
Battery Life @ End: 75%

Notes: HFBT908.txt - OK

Sunny +75° - No Wind

Circulator: OK

Field Notes for Datasonde Post Calibration

Date/Time: 9/8/03 11:40 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36468

Ending Datasonde Battery [volts]: _____

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.18
10.00 Std	10.21

Conductivity (mS/cm) 0.288 Std 0.297 Reads

Barometric Pressure (mm Hg) 746

Dissolved Oxygen	before cal	after cal
% Saturation	92.9	100.0
mg/L D.O.	7.86	8.48
Temp – °C	22.54	22.57

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	_____
mg/L D.O.	_____
Temp – °C	_____

Notes:

HFB908.txt

Sunny + 75°. No Wind

Low D.O. = (<5) · 5.03 - 9/3 - 240000

PH Range = (6-9) · OK

Circulator: OK

Field Notes for Datasonde Deployment

Date/Time: 9/18/03 9:05 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36465

Calibration Information Datasonde Battery (volts): 6.2

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.60	7.00
10.00 Std	9.92	10.01

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.295	0.288	Before .0000 After .0000

Barometric Pressure (mm Hg) 745

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	142.1	100.0
mg/L D.O.	12.09	8.52
Temp – °C	22.28	22.25

YSI calibration (See field notes for YSI Model _____ calibration information)

	Before Calibration	After Calibration
% Saturation	98.1	97.0
mg/L D.O.	8.60	8.49
Temp – °C	21.9	21.9

Elev. = 814

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)
% Saturation	88.3	89.4	
mg/L D.O.	7.91	8.16	- OK
Temp – °C	19.71	19.9	

9:00 End #'s

68.7
6.14
19.86

~~Re-calibration required if outside 0.5 mg/l limit~~

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
~~mg/L D.O.~~				
~~Temp – °C~~				

YSI Reading at Tube

Time	9:35
% Saturation	75.8
mg/L D.O.	6.89
Temp – °C	20.1

Check Status

Battery Life @ Start: 100 %
Battery Life @ End: 82 %

Notes: HFBT918.txt - ok

Circulator = OK

Weather = Sunny +70° - Very light breeze

End Date: 9/26/03 - 120000

Field Notes for Datasonde Post Calibration

Date/Time: 9/18/03 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36464

Ending Datasonde Battery [volts]: 6.0

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.12
10.00 Std	10.16

Conductivity (mS/cm) 0.288 Std 0.367 Reads

Barometric Pressure (mm Hg) 744.5

Dissolved Oxygen	before cal	after cal
% Saturation	76.0	100.6
mg/L D.O.	6.73	8.84
Temp – °C	20.30	20.33

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	
mg/L D.O.	
Temp – °C	

Notes:

HFB918.txt - ok

Weather: sunny +70° - very light breeze

Circulator: ok

PH range (6-9): ok

Low DO (<5) = 5.08 at 180000 on 9/11/03

Field Notes for Datasonde Deployment

Date/Time: 9/25/03 9:10 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36464

Calibration Information Datasonde Battery [volts]: 6.0

pH (s.u.)	Before Cal.	After Cal.
7.00 Std	6.74	7.01
10.00 Std	10.10	10.02

Conductivity (mS/cm)	Before Cal.	After Cal.	Zero Conductivity Calibration
0.288 Std	0.290	0.288	Before .0000 After .0000

Barometric Pressure (mm Hg) 742

Dissolved Oxygen	Before Calibration	After Calibration
% Saturation	128.3	100.0
mg/L D.O.	8.51	8.56
Temp – °C	16.75	16.58

YSI calibration (See field notes for YSI Model 95 calibration information) Elev. 814

	Before Calibration	After Calibration
% Saturation	99.7	97.1
mg/L D.O.	10.05	9.82
Temp – °C	15.0	14.9

Test Program Readings

	Datasonde	YSI Meter	(Must be within 0.5 mg/L D.O.)	End #'s
% Saturation	92.7	93.1		58.7
mg/L D.O.	8.88	9.02	- ok	5.58
Temp – °C	16.26	16.5		16.84

Re-calibration required if outside 0.5 mg/l limit

	Before Cal.	After Cal.	Datasonde	YSI
% Saturation				
mg/L D.O.				
Temp – °C				

YSI Reading at Tube

Time	9:35
% Saturation	85.9
mg/L D.O.	8.29
Temp – °C	16.9

Check Status

Battery Life @ Start: 98 %

Battery Life @ End: 84 %

Notes: HFBT925.txt = ok

circulator = ok

weather = mostly sunny + windy - 48° + 15-20 MPH

end date: 10/1/03 - 120000

Field Notes for Datasonde Post Calibration

Date/Time: 9/25/03 10:10 Analyst: MLM

Location: High Falls Bridge Datasonde Serial #: 36465

Ending Datasonde Battery [volts]: 6.1

Calibration Information

pH (s.u.)	Reads
7.00 Std	7.13
10.00 Std	10.27

Conductivity (mS/cm) 0.288 Std 0.346 Reads

Barometric Pressure (mm Hg) 742

Dissolved Oxygen	before cal	after cal
% Saturation	73.5	100
mg/L D.O.	7.75	10.52
Temp – °C	12.64	12.00

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	
mg/L D.O.	
Temp – °C	

Notes:

HFB925.txt:

Weather: sunny + windy - 48° + 15-20 MPH

circulator: ok

PH range (6-9): ok

Low DO (<5): 5.34 at 230000 on 9/21/03

Field Notes for Datasonde Post Calibration

Date/Time: Oct. 3, 2003 14:10 Analyst: HR

Location: High Falls Bridge Datasonde Serial #: 3C04C64

Ending Datasonde Battery [volts]: 6.0

Calibration Information

pH (s.u.)	Reads
7.00 Std	8.88
10.00 Std	12.00

Zero cond. Reads
0.000

Conductivity (mS/cm) 0.288 Std 0.284 Reads

Barometric Pressure (mm Hg) 731.5 mm Hg

Dissolved Oxygen	before cal	after cal
% Saturation	94.5%	100.0%
mg/L D.O.	9.31 mg/L	9.72 mg/L
Temp – °C	14.92°C	14.83°C

YSI calibration (See field notes for _____ for calibration info.)

% Saturation	X
mg/L D.O.	
Temp – °C	

Notes:

Partly cloudy, windy, 51°F. Setup for D.O. Calibration w/ tap water. Download file named HF100303.Ext. Calibrate D.O. and then read other parameters. Circulator works good.

9/27/03
low D.O. value is 7.34 mg/L w/ 77.9% @ 16.4°C on 05:05

ph was in mid/high 8 values from start and trended [redacted] upwards. New ph ref. solution is needed.

Appendix 2

Documentation of Consultation

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
700 North Adams Street
P.O. Box 19002
Green Bay, WI 54307-9002

February 11, 2004

FERC Project No. 2595

Mr. Tom Meronek - WDNR
Mr. Larry Thompson - FWS
Mail Code: DTCA, HL 21.3
888 First Street, N.E.
Washington, DC 20426

Dear Sir:

High Falls Hydroelectric Project 2003 Dissolved Oxygen Monitoring Report

As per the Order Amending the Water Quality Monitoring Plans for the High Falls Hydroelectric Project (FERC Project No. 2595) dated April 30, 2002, Wisconsin Public Service Corporation (WPSC) is providing this report of the 2003 Water Quality Monitoring Activities. The main purpose of the report, per the amended monitoring plan, is to provide instances when the dissolved oxygen levels in the tail water of the projects fell below the standards outlined in the approved plan.

The High Falls project had dissolved oxygen readings in compliance with the Dissolved Oxygen standard 100.0% percent of the time in 2003. Due to the protocol and mitigation options, WPSC was able to alleviate sustained periods of dissolved oxygen levels below the standards for the 2003 monitoring season.

The entire monitoring record with calibration records for the 2003 monitoring season was provided to the Wisconsin Department of Natural Resources (WDNR) and the Fish and Wildlife Service (FWS). Appendix 1 contains hard copies of the calibration records.

The following mitigation measures were implemented during the 2003 season:

High Falls

July 3, 2003 — Taintor gate was raised to provide an aeration flow. Agency personnel not notified because level was not yet in a non-compliant condition (5.0 Mg/L +/- 0.2 Mg/L) before mitigation measures were initiated.

September 11, 2003 — Taintor gate was raised to provide an aeration flow. Agency personnel not notified because level was not yet in a non-compliant condition (5.0 Mg/L +/- 0.2 Mg/L) before mitigation measures were initiated.

In reviewing the data, WPSC identified time periods where the maximum pH limit of 9.0 was exceeded. All of the high readings occurred during the following monitoring periods:

June 29 through July 3, 2003
07:00 July 11, through 11:00 July 11, 2003
September 30 through October 1, 2003

Since there has been no prior history of pH deviations at the project, WPSC investigated the pH data for validity. In comparing the calibration records for June 29 to July 11, 2003 included in Appendix 1 with the 2003-pH monitoring data, WPSC has determined, the readings were due to an intermittent error associated with the same monitoring device (Datasonde #36467). In comparing the calibration records for September 30 to October 1, 2003 included in Appendix 1 with the 2003-pH monitoring data, WPSC has determined, the readings were due to depletion of pH reference solution of Datasonde #36464. For the entire 2003 monitoring period, there were no sustained pH problems with this Datasonde #36464. Therefore, WPSC has determined the pH deviations are invalid and not an accurate representation of the quality of the water being released from the High Falls Hydroelectric Project. The error was not detected during calibration because of its intermittent nature. Datasonde #36467 will be returned to the manufacturer for repair, prior to returning it to service in the 2004 monitoring season. Datasonde #36464 will also be refurbished so that it will be ready for the 2004 monitoring season.

Please review the attached report and comment as soon as possible, but no later than thirty days from the date of this letter.

Should you have any questions regarding this material, please do not hesitate to call Shawn Puzen at (920) 433-1094. Thank you for your time and consideration.

Sincerely,

Patrick Ahrens
Environmental Chemist
Telephone: (920) 433-1391

Enc.

From: "Meronek, Thomas" <Thomas.Meronek@dnr.state.wi.us>
To: "Shawn C Puzen (E-mail)" <SPUZEN@wpsr.com>
Date: 2/16/04 12:45PM
Subject: High Falls Oxygen Monitoring Report

Dear Shawn:

I reviewed the High Falls Report of DO monitoring report for 2003 (letter from Patrick Ahrens, Feb. 12). I was pleased to see the 100% compliance. I believe the system we decided upon to control DO problems is working.

I have no other comments.

Thanks. Tom.

Tom

Thomas G. Meronek
Fisheries Biologist
Wisconsin Department of Natural Resources
Peshtigo Service Center
101 North Ogden Road
P.O. Box 208
Peshtigo, WI 54157
Phone: 715-582-5052
Fax: 715-582-5005
Email: meront@dnr.state.wi.us

CC: "Boronow, George" <George.Boronow@dnr.state.wi.us>

Patrick Ahrens - Re: High Falls Water Quality Monitoring Report

From: <Larry_Thompson@fws.gov>
To: "Shawn C Puzen" <SPUZEN@wpsr.com>
Date: 2/25/2004 11:55 AM
Subject: Re: High Falls Water Quality Monitoring Report
CC: "Patrick Ahrens" <PAHRENS@wpsr.com>, <Janet_Smith@fws.gov>

February 25, 2004

Mr. Shawn Puzen
Environmental Consultant
Wisconsin Public Service Corporation
700 N. Adams Street
Green Bay, Wisconsin 54307-9002

RESPONSE TO REQUEST FOR COMMENTS ? DISSOLVED OXYGEN MONITORING REPORT,
High Falls Hydroelectric Project, FERC No. 2595, Marinette County,
Wisconsin

Dear Mr. Puzen:

This responds to the request by the Wisconsin Public Service Corporation, dated February 12, 2004, for U.S. Fish and Wildlife Service (FWS) review of the 2003 Dissolved Oxygen Monitoring Report (report) for the High Falls Hydroelectric Project (project). The report pertains to Article 406 of the current project license and to the Order Amending Water Quality Monitoring Plans, issued April 30, 2002, by the Federal Energy Regulatory Commission.

The FWS has reviewed the report and the accompanying water quality data. It appears that in the two instances in 2003 when Taintor gates were raised at the project to mitigate for falling dissolved oxygen levels, the action successfully improved conditions. Thank you for your efforts to monitor and mitigate for potential water quality impairments at the project.

If you have not already done so, please also consult with the Wisconsin Department of Natural Resources regarding the results of the report.

If you have any questions regarding this matter, please call Larry Thompson at (920) 866-1736.

Larry Thompson
U.S. Fish and Wildlife Service
Green Bay Ecological Services Office
2661 Scott Tower Drive
New Franken, WI 54229
(920) 866-1736
FAX 866-1710