Renewable World Energies

December 2, 2013

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

RE: Danbury Hydroelectric Project
FERC Project Number 9184
Flambeau Hydro LLC
Final Report 2013 Water Quality Monitoring Data

Dear Ms. Bose:

On behalf of Flambeau Hydro LLC, "Flambeau" (Licensee), Renewable World Energies, LLC (RWE) is submitting a copy of the *Final Report 2013 Water Quality Monitoring Data* for the Danbury Hydroelectric Project. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on September 5, 2006. This report is submitted as a requirement of that License pursuant to License Article 401 WQC, Condition K. 2012 was the sixth year monitoring was conducted since the license was issued, but is the 2nd year of submittal by RWE on the behalf of the Licensee.

Monitoring was conducted on May 8, July 10, and August 7, 2013. The only issue encountered was some below standard D O measurements taken on the July 10th and August 7 dates. Agencies were notified by e-mails dated July 10, 2013 and August 8, 2013 of the issues. The draft report was sent to the agencies by letter dated October 4, 2013 for review and comment. Correspondence was received from WDNR on October 8, 2013. Correspondence was received from WDNR on October 8, 2013. WDNR comments were "Thanks for the report. The data looks good." "Recommendation: We would like RWE to obtain a SWIMS ID, and enter the monitoring data into the statewide database." I spoke to Ms. Cheryl Laatsch (WDNR) by phone about this request and indicated it was our position that we had provided the data and WDNR was welcome to do what they needed. She later informed RWE that the report was forwarded to Ms. Jennifer Filbert of WDNR (SWIMS ID Program) and that she had what was needed. They had entered all the data and all was well. Following all these conversations RWE obtained a SWIMS ID number in case it is needed in the future. No response was received from the USFWS. The next scheduled monitoring event will be conducted in 2014.

Corporate Office
P.O. Box 264
100 S. State Street
Neshkoro, WI 54960
Fax: 920-293-4100

Phone: 855-99HYDRO
(855-994-9376)
www.renewableworldenergies.com

Administrative Office
1001 Stephenson Street
Norway, MI 49870
Fax: 906-563-9344

If you have any questions concerning this submittal, please contact Mr. Gary Rast at the Renewable World Energies, LLC offices @ 855-994-9376 Ext 105. He can also be reached by e-mail at grast@rwehydro.com.

Sincerely,
Renewable World Energies, LLC
Agent for Licensee

for Gary Rast
Mr. Jason Kreuscher
Vice President, Operations

Attachment: Final Report 2013 Water Quality Monitoring Data – December 2, 2013

Cc: Ms. Cheryl Laatsch, WDNR
Mr. Nick Utrup, USFWS
RWE, Corporate

Final Report

2013 Water Quality Monitoring Data
(Per License Article 401 WQC, Condition K)

For the

Danbury Hydroelectric Project
FERC Project # 9184
Flambeau Hydro, LLC

Yellow River
Burnett County, WI

Respectfully Submitted by:

Renewable World Energies, LLC
100 State Street – P.O. Box 264
Neshkoro, Wisconsin 54960

Final – December 2, 2013

Table of Contents

Summary

2013 marked the sixth year of water quality sampling under the FERC License issued on September 5, 2006 to Flambeau Hydro, LLC for the Danbury Hydroelectric Project – FERC Project # 9184 and specifically License Article 401 WQC, Condition K.

Ice-Out occurred on the Yellow River during the week beginning April 28, 2013. The Ice-Out sampling event occurred on May 8, 2013. River flow, based on Danbury Hydroelectric Project records, was approximately 123 cubic feet per second. Sampling occurred between 10:30 a.m. and 10:48 a.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on May 9, 2013. Northern Lake Service, Inc. issued a laboratory report on May 23, 2013. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Danbury Hydroelectric Project records, was approximately 187 cubic feet per second during the July 10, 2013 sampling event. Sampling occurred between 13:30 pm. and 12:50 pm. Samples were taken without incident. No abnormal Temperature readings were observed. However, below standard D.O. readings were encountered at the 1.5 meter level (4.84) and dropped continually all the way to the .5 meter above bottom level (4.37). Agencies were notified by e-mail on July 10, 2013. Samples for laboratory analysis were delivered to Northern Lake Service, Inc. in Crandon, WI on July 11, 2013. Northern Lake Service, Inc. issued a laboratory report on July 15, 2013. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on Danbury Hydroelectric Project records, was approximately 144 cubic feet per second during the August 7, 2013 sampling event. Sampling occurred between 1:30 p.m. and 2:05 p.m. Samples were taken without incident. No unusual Temperature readings were observed. However, below standard D.O. measurements were encountered beginning at the 5 meter level (4.96) and continued on down to the .5 meter above bottom level (1.9) Samples for laboratory analysis were delivered to Northern Lake Service, Inc in Crandon, WI on August 8, 2013. Northern Lake Service, Inc. issued a laboratory report on August 14, 2013. No unusual levels of Chlorophyll a, True Color, or Total Phosphorus were noted in the laboratory reports.

In general, the weather (temperature and rainfall) during the 2013 monitoring season appeared cooler in April/May with higher than normal precipitation in the months of April/May/June. Temperatures in June/July/August were about 1to5 degrees higher than normal but precipitation was about 50% below normal for July/August. **(Refer to 2013 Monthly Temperature and Precipitation Table page 7)**

A summary of a comparison between the 2011 thru 2013 **(Refer to 2013 Danbury Project Sampling Comparison Table 2011-2013 page 8)** sampling results are as follows:

1. Water Clarity – Decreased in May and Increased July/August
2. Chlorophyll a – Increased in May and Decreased July/August
3. Color – Remained Same in May/July and Decreased in August

4. Total Phosphorus – Increased in May/August and Remained Same in July
5. Overall, D.O. – Decreased
6. Water Temperatures – Increased in May and Decreased July/August

Correspondence from the agencies during 2010 indicated they would prefer that notifications of incidents be by e-mail only and that telephone contacts are not needed. All other correspondence can be found on page 13, **Appendix D**. The next scheduled Water Quality monitoring at the Danbury Hydroelectric Project is set to take place in 2014 beginning with the Ice-Out sampling event.

2013
Sampling Results
Table

Danbury Hydroelectric Project - FERC Project # 9184
2013 Water Quality Sampling Data

	May 8, 2013	July 10, 2013	August 7, 2013
Project Flow (c.f.s.)	123	187	144

Dissolved Oxygen

	May 8, 2013			July 10, 2013			August 7, 2013		
	Time	D.O. (mg/L)	Water Temp. (°C)	Time	D.O. (mg/L)	Water Temp. (°C)	Time	D.O. (mg/L)	Water Temp. (°C)
0.5 meter below surface	10:42 AM	11.05	11.6	12:40 PM	5.24	25.1	1:55 PM	6.33	22.7
1 meter below surface	10:43 AM	11.09	11.0	12:41 PM	5.01	24.8	1:56 PM	6.00	22.4
2 meter below surface	10:44 AM	11.19	10.6	12:43 PM	4.79	24.5	1:57 PM	5.73	22.0
3 meter below surface	10:45 AM	11.17	10.5	12:45 PM	4.71	24.4	1:58 PM	5.42	21.8
4 meter below surface	10:46 AM	11.15	10.3	12:47 PM	4.58	24.3	1:59 PM	5.24	21.7
5 meter below surface	10:47 AM	11.17	10.3	12:49 PM	4.42	24.7	2:00 PM	4.96	21.6
6 meter below surface	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
.5 meter above bottom	10:48 AM	11.09	10.20	8:52 AM	4.37	24.1	2:05 PM	1.90	19.6

Secchi Disk

Meters below surface

May 8, 2013		July 10, 2013		August 7, 2013	
Time	Depth (mtr)	Time	Depth (mtr)	Time	Depth (mtr)
10:33 AM	2.00	12:30 PM	2.50	1:35 PM	2.80

Chlorophyll a

1 meter below surface

May 8, 2013		July 10, 2013		August 7, 2013	
Time	ug/L	Time	ug/L	Time	ug/L
10:35 AM	9.60	12:32 PM	1.70	1:45 PM	4.80

Color (True)

1 meter below surface

May 8, 2013			July 10, 2013			August 7, 2013		
Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD
10:37 AM	25.0	5.0*	12:34 PM	40.0	5.0*	1:47 PM	35.0	5.0*

Total Phosphorus

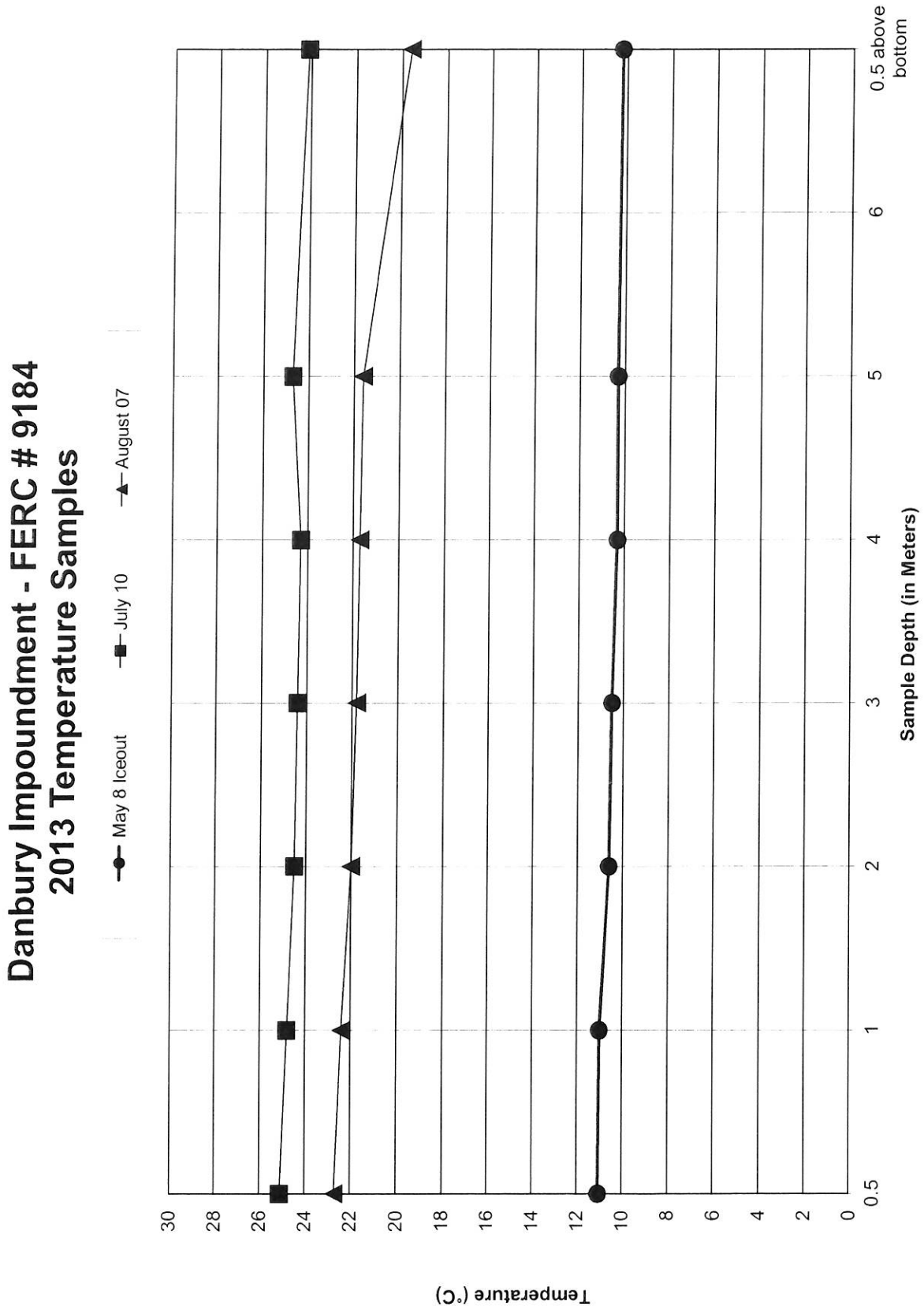
	May 8, 2013			July 10, 2013			August 7, 2013		
	Time	mg/L	LOD	Time	mg/L	LOD	Time	mg/L	LOD
1 meter below surface	10:38 AM	0.036	0.0070*	12:35 PM	0.062	0.0070*	1:50 PM	0.060	0.0070*
1 meter above bottom	10:40 AM	0.034	0.0070*	12:37 PM	0.065	0.0070*	1:52 PM	0.120	0.0070*

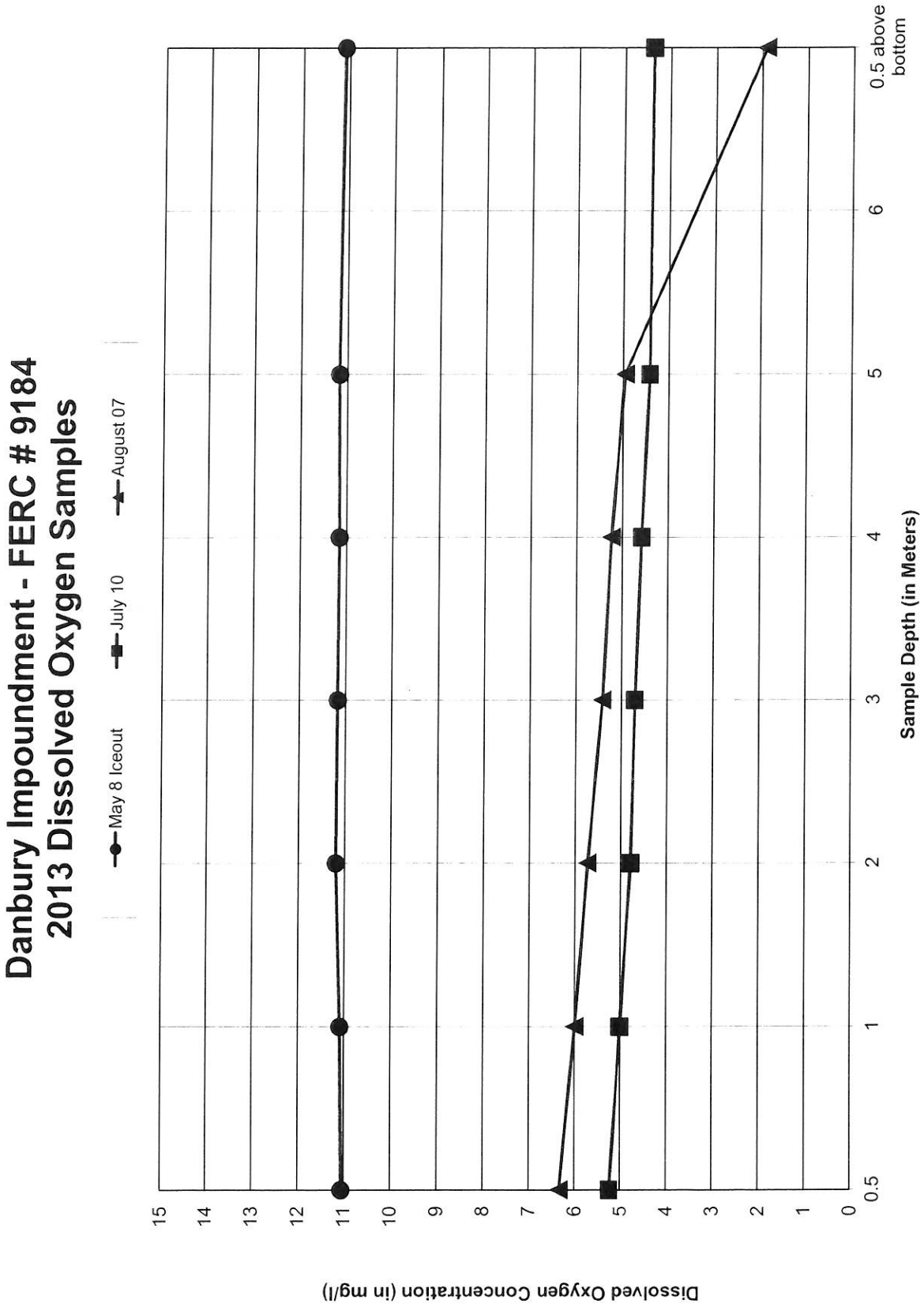
*** Considered Reporting Limits**

2013

Graphed Data

Temperature and Dissolved Oxygen





2013
Monthly
Temperature and Precipitation
Table

2013 Water Year Monthly Temperature and Precipitation for Danbury, Wisconsin

Month	Highest Temp.	Lowest Temp.	Average Temp.	Departure From Normal	Heating Degree Days	Normal Degree Days	Total Precip.	Total Snowfall	Normal Precip.	% of Normal Precipitation
October-12	74	22	42.5	-0.7	691	678	1.34	1.1	2.85	47%
November-12	53	0	30.9	2.1	1015	1088	1.33	10.1	2.09	64%
December-12	48	-7	18.4	3.6	1438	1556	1.44	13.2	1.21	119%
January-13	42	-21	12.1	1.9	1631	1691	1.39	9.2	0.96	145%
February-13	38	-22	14.6	-0.5	1405	1399	1.16	19.1	0.81	70%
March-13	53	-13	21.8	-4.1	1333	1200	2.04	25.8	1.49	137%
April-13	68	8	34.4	-5.2	908	762	5.04	50.8	2.43	207%
May-13	80	27	49.5	-1.9	471	426	3.71	Trace	3.23	115%
June-13	87	37	61.6	1.5	146	179	4.54	0.0	4.23	107%
July-13	94	47	67.8	2.0	47	63	1.73	0.0	3.85	45%
August-13	94	43	69.0	4.7	27	86	1.98	0.0	3.70	54%
September-13	88	37	59.9	4.3	168	298	1.26	0.0	4.11	31%

Source: NOAA/Duluth, MN

2013
Danbury
Sampling Comparison Table
2011—2013

Danbury
Project Sampling Comparison Table
2011 Thru Current Year

Year	Month	Secchi Depth (m)	Chlorophyll a ug/l	Color (True) C.P.U. Units	Total Phosphorus Below Surface mg/l	Total Phosphorus Above Bottom mg/l	Low D.O. mg/l	High D.O. mg/l	Low Water Temp. °C	High Water Temp. °C
2011	April	1.95	4.70	20.00	0.030	0.030	12.19	11.94	7.30	7.50
2012	April	2.80	1.70	25.00	0.030		11.93	12.69	10.30	10.60
2013	May	2.00	9.60	25.00	0.036	0.034	11.05	11.19	10.20	11.60
Minimum	April/May	1.95	1.70	20.00	0.030	0.030	11.05	11.19	7.30	7.50
Maximum	April/May	2.80	9.60	25.00	0.036	0.034	12.19	12.69	10.30	11.60
Average	April/May	2.25	5.33	23.33	0.032	0.032	11.72	11.94	9.27	9.90
2011	July	1.80	6.10	25.00	0.066	0.063	0.26	7.35	19.40	24.40
2012	July	1.90	6.90	40.00	0.062	0.061	2.96	7.04	26.10	26.70
2013	July	2.50	1.70	40.00	0.062	0.065	4.37	5.24	24.10	25.10
Minimum	July	1.80	1.70	25.00	0.062	0.061	0.26	5.24	19.40	24.40
Maximum	July	2.50	6.90	40.00	0.066	0.065	4.37	7.35	26.10	26.70
Average	July	2.07	4.90	35.00	0.063	0.063	2.53	6.54	23.20	25.40
2011	August	1.50	16.00	50.00	0.054	0.052	1.64	6.03	22.30	23.50
2012	August	2.65	40.00	0.06	0.056	0.056	5.44	6.06	21.40	22.00
2013	August	2.80	4.80	35.00	0.060	0.120	1.90	6.33	19.60	22.70
Minimum	August	1.50	4.80	0.06	0.054	0.052	1.64	6.03	19.60	22.00
Maximum	August	2.80	40.00	50.00	0.060	0.120	5.44	6.33	22.30	23.50
Average	August	2.32	20.27	28.35	0.057	0.076	2.99	6.14	21.10	22.73

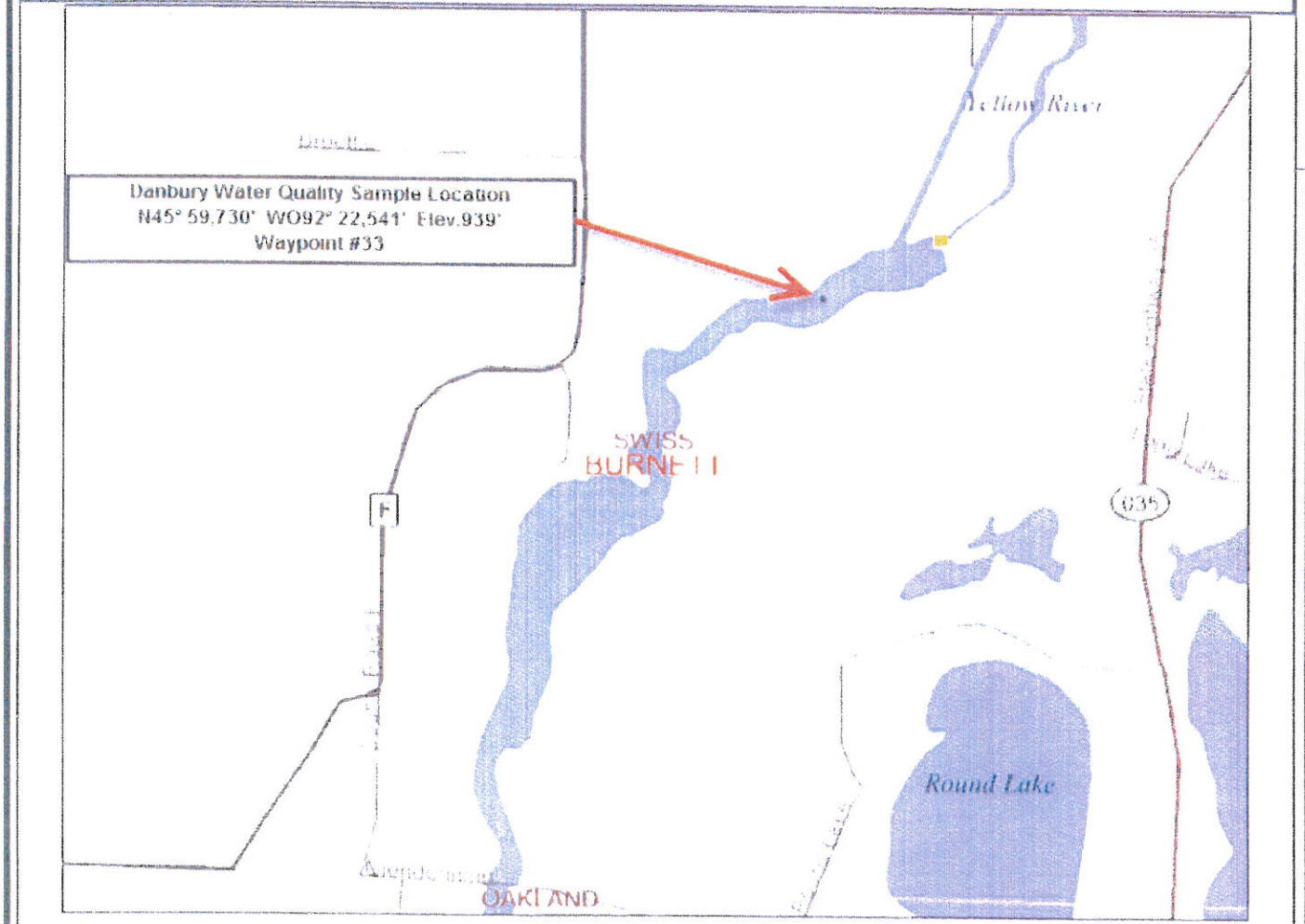
No Sample

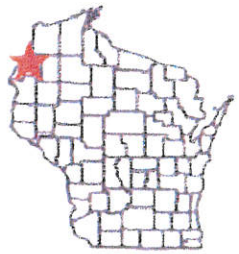
Danbury Hydroelectric Project

Sampling Location

Map

Danbury Hydroelectric Project
Water Quality Sampling Location
FERC Project #9184





Legend

- Dams
- Major Highways
- Interstate
- State Highway
- U.S. Highways
- County Roads
- Local Roads
- 24K County Boundaries
- Civil Towns
- Civil Town
- 24K Open Water
- 24K Rivers and Shorelines
- Cities and Villages
- Village
- City

Scale: 1:14,043

This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION

Appendix A

May 8, 2013 Sampling Documents (Ice-Out)

IMPOUNDMENT SAMPLING LOG

2013 Water Quality Study - Danbury Hydroelectric Project - FERC #9184

HWL 928.20 TWL 898.90 Date: 5/8/13

Pre-Sampling Data: PROJECT FLOW = 123 CFS

Time: 10:30 Barometer: 30.02 Air Temp: 18.8 °C Wind Speed: W 6MPH

Sky Conditions: OVERCAST, SOME SUN, SLIGHT BREEZE

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration: Instrument Model Used: Hach HQ40d

Were The Batterys Changed? X Yes ☐ No If Yes, When Changed: APRIL 2013

Battery Status: 90% Charge

Calibration Time: APRIL 2013 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 5.6 Meter

Secchi Disk Depth: (±0.1 Meter) 2.0 Meter Time: 10:33

Chlorophyll a (1 Meter Below Surface)

Lab Sample I.D.# : 20130508 / A

Time	Quantity (ml)	Filtered
10:35	1000	NO

True Color (1 Meter Below Surface)

Lab Sample I.D.# : 20130508 / B

Time	Quantity (ml)
10:37	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
.5 Mtr Below Surface	10:42	11.05	11.6
1 Meter	10:43	11.09	11.0
2 Meter	10:44	11.19	10.6
3 Meter	10:45	11.17	10.5
4 Meter	10:46	11.15	10.3
5 Meter	10:47	11.17	10.3
6 Meter			
7 Meter			
8 Meter			
.5 Mtr Above Bottom	10:48	11.09	10.2

Phosphorus

Lab Sample I.D.# : 20130508 / C

(1 Meter Below Surface)

Time	Preserved?
10:38	H_2SO_4

Lab Sample I.D.# : 20130508 / D

(1 Meter Above Bottom)

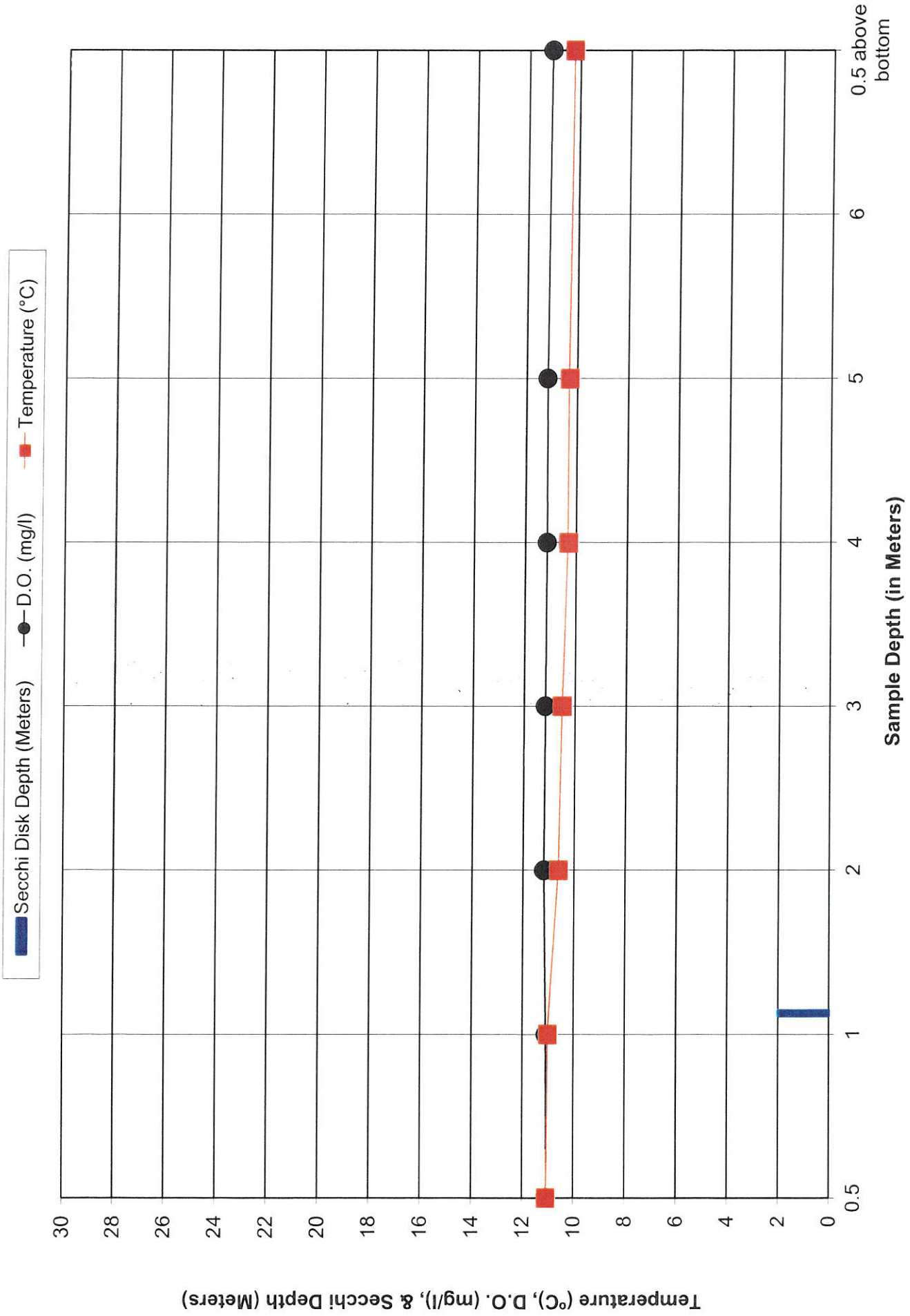
Time	Preserved?
10:40	H_2SO_4

Sample Location: N45° 59.730' W92° 22.541'

Comments: ELEVATION IS STILL @ WINTER OPERATION LEVEL. YELLOW LAKE & HWL @ DAM TO INCREASE 2.1 FT AFTER NOTE OF TAE-OUT

Performed By: GARY RAST + NORB REHDER Gary Rast

Danbury Impoundment - FERC # 9184
May 8, 2013 Iceout Sampling Event



NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

NLS Project: 196685
NLS Customer: 102823
Phone: 855 994 9376

Client: Renewable World Energies
Attn: Gary Rast
100 State Street
P.O. Box 264
Neshkoro, WI 54960

Project: Danbury

201305081A NLS ID: 718334
COC: 153588:1 Matrix: SW
Collected: 05/08/13 10:35 Received: 05/09/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					05/21/13	10200-H	721026460
Lab filtration for Chlorophyll	yes					05/10/13	NA	721026460

201305081B NLS ID: 718335
COC: 153588:2 Matrix: SW
Collected: 05/08/13 10:37 Received: 05/09/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	25	C.P U.	1	5.0*		05/09/13	SM 2120-B 20ed	721026460

201305081C NLS ID: 718336
COC: 153588:3 Matrix: SW
Collected: 05/08/13 10:38 Received: 05/09/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.036	mg/L	1	0.0070*		05/10/13	SM 4500P-E 20ed	721026460

201305081D NLS ID: 718337
COC: 153588:4 Matrix: SW
Collected: 05/08/13 10:40 Received: 05/09/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.034	mg/L	1	0.0070*		05/10/13	SM 4500P-E 20ed	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

RECEIVED
MAY 28 2013

Northern Lake Service, Inc.
Chlorophyll Results

Customer: Renewable World Energies
Project: 196685
Danbury

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
718334	201305081A	7.8	2.5	9.6	0.6	1.4

CC a = Corrected Chlorophyll a
Pheo a = Pheophytin a
TC a = Trichromatic Chlorophyll a
TC b = Trichromatic Chlorophyll b
TC c = Trichromatic Chlorophyll c
Units = ug/L for Water, ug/cm² for periphyton samplers

*: The complex calculations used to differentiate the various chlorophyll species magnify error at low concentrations and sometimes produce negative values, which are reported as 0.0 on this report.

Appendix B

July 10, 2013 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2013 Water Quality Study - Danbury Hydroelectric Project - FERC #9184

HWL- 929.26
TWL- 899.40

Date: 7-10-13

Pre-Sampling Data: CFS-187

Time: 12:30 Barometer: 30.04 Air Temp: 23.33 °C Wind Speed: N13MPH G20MPH

Sky Conditions: PARTLY CLOUDY

Precipitation within Last 24 Hours: NO

D.O. Meter Calibration: Instrument Model Used: Hach HQ40d

Were The Batterys Changed? ☐ Yes ☒ No If Yes, When Changed: _____

Battery Status: 75 % Charge

Calibration Time: APRIL 2013 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 6.1 Meter

Secchi Disk Depth: (E0.1 Meter) 2.5 Meter Time: 12:30

Chlorophyll a (1 Meter Below Surface)

Lab Sample I.D.#: 07102013 / A

Time	Quantity (ml)	Filtered
12:32	1000 mL	NO

True Color (1 Meter Below Surface)

Lab Sample I.D.#: 07102013 / B

Time	Quantity (ml)
12:34	250 mL

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
.5 Mtr Below Surface	12:40	5.24	25.1
1 Meter	12:41	5.01	24.8
2 Meter	12:43	4.79	24.5
3 Meter	12:45	4.71	24.4
4 Meter	12:47	4.58	24.3
5 Meter	12:49	4.42	24.1
6 Meter			
7 Meter			
8 Meter			
.5 Mtr Above Bottom	12:50	4.37	24.1

Phosphorus

Lab Sample I.D.#: 07102013 / C
(1 Meter Below Surface)

Time	Preserved?
12:35	H_2SO_4

Lab Sample I.D.#: 07102013 / D
(1 Meter Above Bottom)

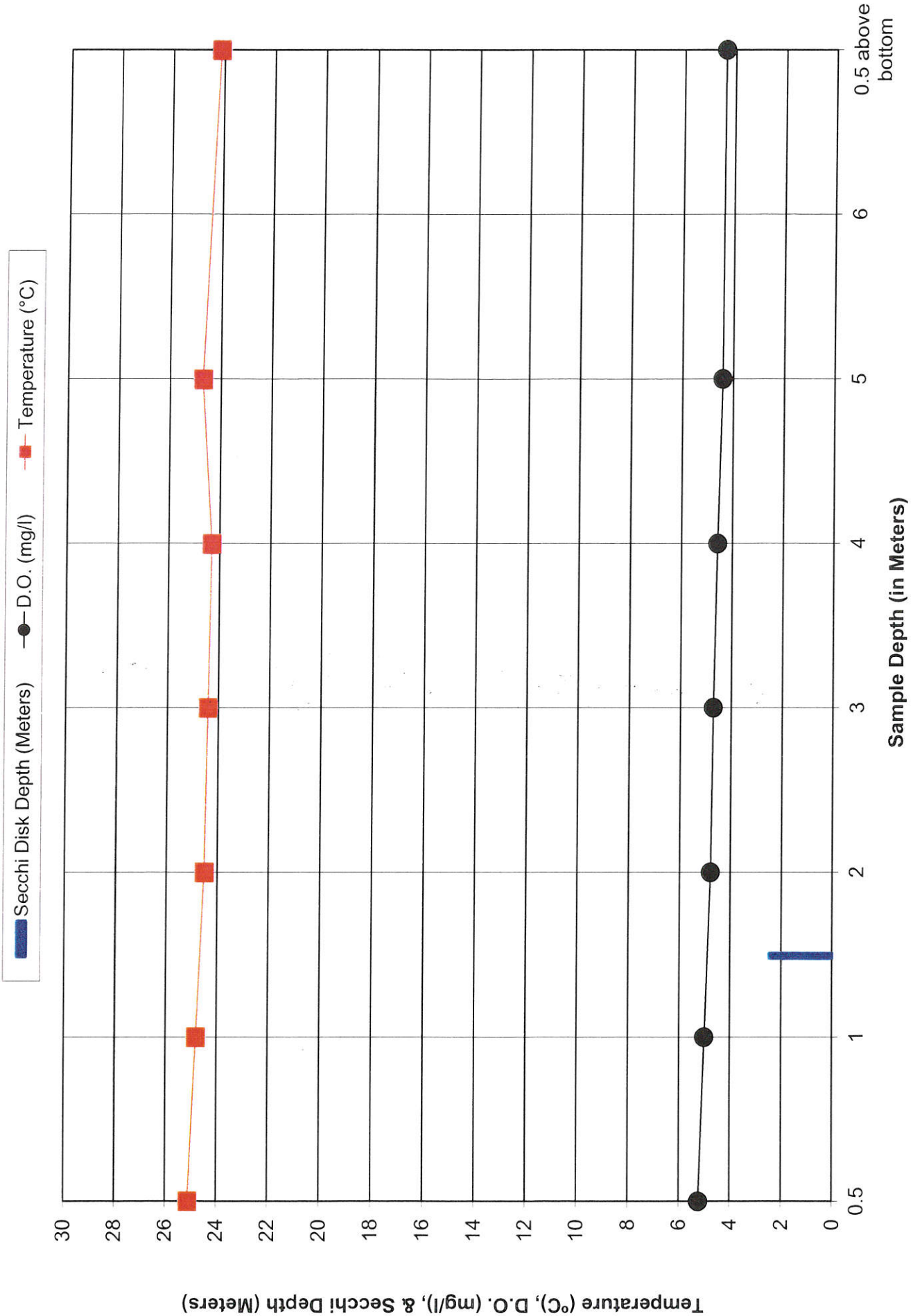
Time	Preserved?
12:37	H_2SO_4

Sample Location: N45° 59.730' W92° 22.541'

Comments: 12:42 1.5 - 4.84 24.6° 12:44 2.5 - 4.74 24.5° 12:46 3.5 - 4.58 24.3° 12:48 4.5 - 4.57 24.2°

Performed By: ANETA R. & GARY R.

Danbury Impoundment - FERC # 9184
July 10, 2013 Sampling Event



NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

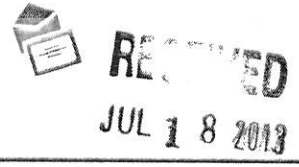
ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 07/15/13 Code: NNNN-S Page 1 of 1

NLS Project: 200451
NLS Customer: 102823
Phone: 855 994 9376

Client: Renewable World Energies
Attn: Gary Rast
100 State Street
P.O. Box 264
Neshkoro, WI 54960



Project: Danbury

071020131A NLS ID: 730236
COC: 162641:1 Matrix: SW
Collected: 07/10/13 12:32 Received: 07/11/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					07/12/13	10200-H	721026460
Lab filtration for Chlorophyll	yes					07/11/13	NA	721026460

071020131B NLS ID: 730237
COC: 162641:2 Matrix: SW
Collected: 07/10/13 12:34 Received: 07/11/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	40	C.P.U.	1	5.0*		07/11/13	SM 2120-B 20ed	721026460

071020131C NLS ID: 730238
COC: 162641:3 Matrix: SW
Collected: 07/10/13 12:35 Received: 07/11/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.062	mg/L	1	0.0070*		07/11/13	SM 4500P-E 20ed	721026460

071020131D NLS ID: 730239
COC: 162641:4 Matrix: SW
Collected: 07/10/13 12:37 Received: 07/11/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.065	mg/L	1	0.0070*		07/11/13	SM 4500P-E 20ed	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

Northern Lake Service, Inc.
Chlorophyll Results

Customer: Renewable World Energies
Project: 200451
Danbury

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
730236	071020131A	1.6	0.018	1.7	0.098	0.22

CC a = Corrected Chlorophyll a
Pheo a = Pheophytin a
TC a = Trichromatic Chlorophyll a
TC b = Trichromatic Chlorophyll b
TC c = Trichromatic Chlorophyll c
Units = ug/L for Water, ug/cm² for periphyton samplers

*: The complex calculations used to differentiate the various chlorophyll species magnify error at low concentrations and sometimes produce negative values, which are reported as 0.0 on this report.

Appendix C

August 7, 2013 Sampling Documents

IMPOUNDMENT SAMPLING LOG

2013 Water Quality Study - Danbury Hydroelectric Project - FERC #9184

HWL - 929.34

Date: 8/7/13

Pre-Sampling Data: TWL - 899.20 CFS - 144

Time: 1:30 Barometer: 29.98 Air Temp: 22 °C Wind Speed: NW 8MPH

Sky Conditions: FAIR, CLEAR, BRIGHT SUNSHINE

Precipitation within Last 24 Hours: YES

D.O. Meter Calibration: Instrument Model Used: Hach HQ40d

Were The Batterys Changed? ☐ Yes ☒ No If Yes, When Changed: _____

Battery Status: 85% Charge

Calibration Time: APRIL 2013 Method: Factory

Sampling Depth Profile: Measured Depth to Bottom of the Impoundment: 6.3 Meter

Secchi Disk Depth: (E0.1 Meter) 2.8 Meter Time: 1:35

Chlorophyll a (1 Meter Below Surface)

Lab Sample I.D.# : 08072013 - 1A

Time	Quantity (ml)	Filtered
1:45	1000	NO

True Color (1 Meter Below Surface)

Lab Sample I.D.# : 08072013-1B

Time	Quantity (ml)
1:47	250

D.O. Sample Data

Depth	Time	D.O. (mg/l)	°C
.5 Mtr Below Surface	1:55	6.33	22.7
1 Meter	1:56	6.00	22.4
2 Meter	1:57	5.73	22.0
3 Meter	1:58	5.42	21.8
4 Meter	1:59	5.24	21.7
5 Meter	2:00	4.96	21.6
6 Meter			
7 Meter			
8 Meter			
.5 Mtr Above Bottom	2:05	1.9	19.6

Phosphorus

Lab Sample I.D.# : 08072013-1C

(1 Meter Below Surface)

Time	Preserved?
1:50	H_2SO_4

Lab Sample I.D.# : 08072013-1D

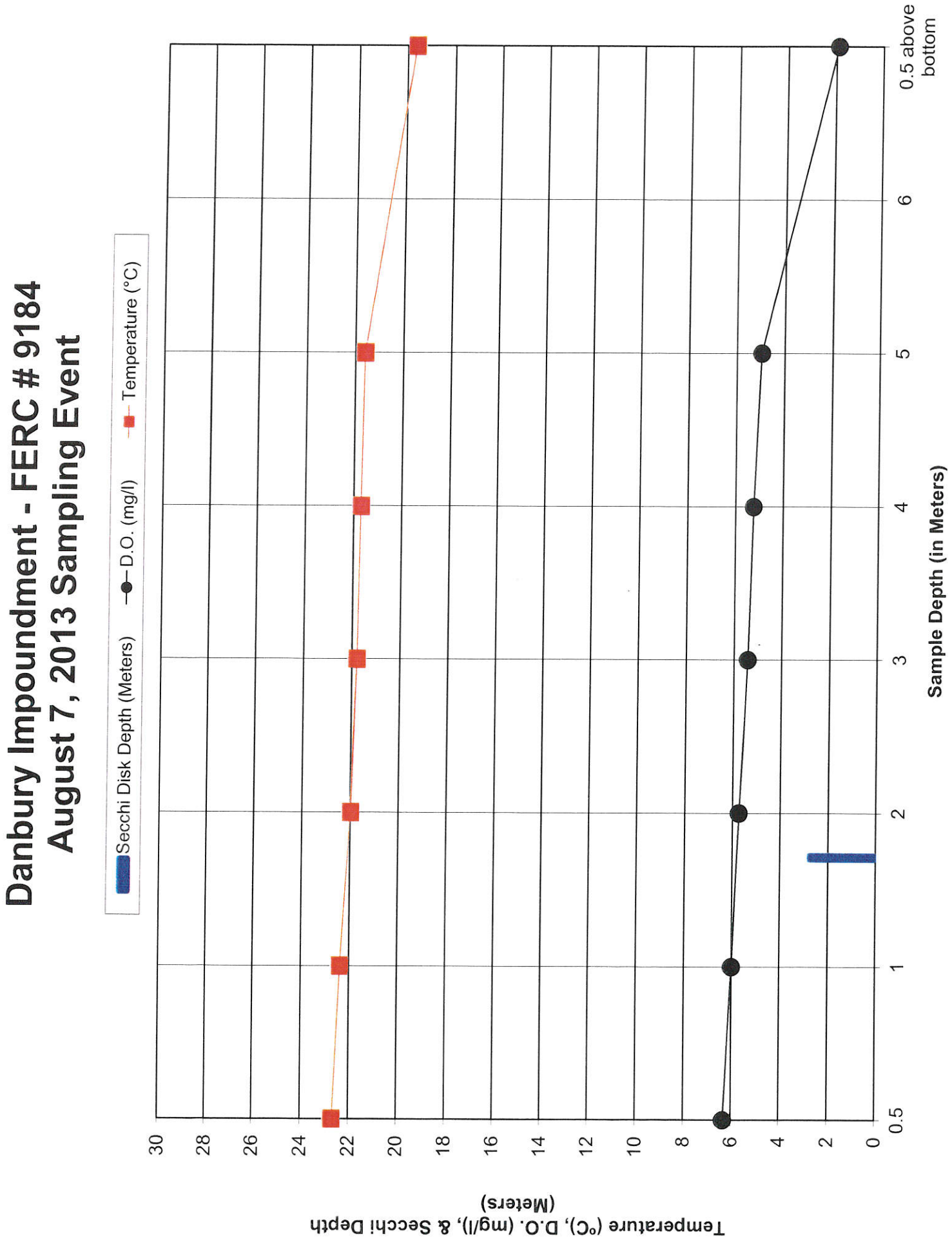
(1 Meter Above Bottom)

Time	Preserved?
1:52	H_2SO_4

Sample Location: N45° 59.730' W92° 22.541'

Comments: 2:01 4.5 - 5.01 21.6°

Performed By: GARY RAST & BILL RICHARD


Danbury Impoundment - FERC # 9184
August 7, 2013 Sampling Event
Secchi Disk Depth (Meters)
D.O. (mg/l)
Temperature (°C)
Temperature (°C), D.O. (mg/l), & Secchi Depth (Meters)
Sample Depth (in Meters)
0.5 above bottom
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
0.5
1
2
3
4
5
6

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph: (715)-478-2777 Fax: (715)-478-3060

ANALYTICAL REPORT

WDNR Laboratory ID No. 721026460
WDATCP Laboratory Certification No. 105-330
EPA Laboratory ID No. WI00034

Printed: 08/14/13 Code: NNNN-S

Client: Renewable World Energies
Attn: Gary Rast
100 State Street
P.O. Box 264
Neshkoro, WI 54960

NLS Project: 202230
NLS Customer: 102823
Phone: 855 994 9376

Project: Danbury

08072013-1A NLS ID: 735912
COC: 151379:1 Matrix: SW
Collected: 08/07/13 13:45 Received: 08/08/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	see attached					08/13/13	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/08/13	NA	721026460

08072013-1B NLS ID: 735913
COC: 151379:2 Matrix: SW
Collected: 08/07/13 13:47 Received: 08/08/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Color, APHA (true)	35	C.P.U.	1	5.0*		08/08/13	SM 2120-B 20ed	721026460

08072013-1C NLS ID: 735914
COC: 151379:3 Matrix: SW
Collected: 08/07/13 13:50 Received: 08/08/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.060	mg/L	1	0.0070*		08/13/13	SM 4500P-E 20ed	721026460

08072013-1D NLS ID: 735915
COC: 151379:4 Matrix: SW
Collected: 08/07/13 13:52 Received: 08/08/13

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Phosphorus, tot. as P	0.12	mg/L	1	0.0070*		08/13/13	SM 4500P-E 20ed	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution.

LOD = Limit of Detection LOQ = Limit of Quantitation ND = Not Detected (< LOD) 1000 ug/L = 1 mg/L
DWB = Dry Weight Basis NA = Not Applicable %DWB = (mg/kg DWB) / 10000
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

Northern Lake Service, Inc.
Chlorophyll Results

Customer: Renewable World Energies
Project: 202230
Danbury

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
735912	08072013-1A	4.4	0.32	4.8	0.0*	0.38

CC a = Corrected Chlorophyll a
Pheo a = Pheophytin a
TC a = Trichromatic Chlorophyll a
TC b = Trichromatic Chlorophyll b
TC c = Trichromatic Chlorophyll c
Units = ug/L for Water, ug/cm^2 for periphyton samplers

*: The complex calculations used to differentiate the various chlorophyll species magnify error at low concentrations and sometimes produce negative values, which are reported as 0.0 on this report.

Appendix D

Agency Correspondence

Gary Rast

From: Gary Rast
Sent: Tuesday, October 08, 2013 10:52 AM
To: 'Laatsch, Cheryl - DNR'; Nick Utrup (nick_utrup@fws.gov)
Cc: Aneta Rietveld
Subject: RE: Danbury Draft 13 WQ

From: Laatsch, Cheryl - DNR [mailto:Cheryl.Laatsch@wisconsin.gov]
Sent: Tuesday, October 08, 2013 10:44 AM
To: Gary Rast; Nick Utrup (nick_utrup@fws.gov)
Cc: Aneta Rietveld
Subject: RE: Danbury Draft 13 WQ

Thanks for the report. The data looks good.

Recommendation: We would like RWE to obtain a SWIMS ID, and enter the monitoring data into the statewide database. This will reduce reporting needs, and provide better use of data across the state.

We can help you set up your account and upload the information. Please contact me to help get you set up.

Thanks

Cheryl Laatsch
Statewide FERC Coordinator
Wisconsin Dept of Natural Resources
N7725 Hwy 28
Horicon WI 53032
(T) 920-387-7869 (Fax) 920-387-7888
Cheryl.laatsch@wisconsin.gov

From: Gary Rast [mailto:grast@rwehydro.com]
Sent: Thursday, October 03, 2013 3:09 PM
To: Laatsch, Cheryl - DNR; Nick Utrup (nick_utrup@fws.gov)
Cc: Aneta Rietveld
Subject: Danbury Draft 13 WQ

Cheryl and Nick,

Attached is your copy of the 2013 Draft WQ Report including submittal letter for Danbury in electronic form as requested.

Gary

Renewable World Energies

COPY

October 4, 2013

Mr. Nick Utrup
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
2661 Scott Tower Drive
New Franken, WI 54229

Ms. Cheryl Laatsch
Statewide FERC Coordinator
Wisconsin Dept. of Natural Resources
N7725 HWY 28
Horicon, WI 53032

Re: Danbury Hydroelectric Project
FERC Project Number 9184
Flambeau Hydro LLC
Draft Report 2013 Water Quality Monitoring Data

Dear Agency:

Purpose

On behalf of Flambeau Hydro LLC "Flambeau" (Licensee), Renewable World Energies, LLC is submitting a copy of the *Draft Report 2013 Water Quality Monitoring Data* for the Danbury Hydroelectric Project. Furthermore, the Licensee is requesting your comments should you have any to offer on the report. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on September 5, 2006. 2013 was the sixth year that monitoring was conducted since the license was issued. The submitted report is a requirement of that License pursuant to License Article 401 WQC, Condition K. Nothing out of the ordinary was experienced during the monitoring season except as noted in the report.

Conclusion

The Federal Energy Regulatory Commission's regulations allow for a 30 day formal review and comment period. Thank you in advance for providing your responses in a timely manner so we can include your comments and recommendations, as appropriate, into our report.

Corporate Office
P.O. Box 264
100 S. State Street
Neshkoro, WI 54960
Fax: 920-293-4100

Phone: 855-99HYDRO
(855-994-9376)
www.renewableworldenergies.com

Administrative Office
1001 Stephenson Street
Norway, MI 49870
Fax: 906-563-9344

Renewable World Energies

If you have any questions concerning the report, please contact Mr. Gary Rast at the Renewable World Energies, LLC offices @ 855-994-9376 ext. 105, or by email at; grast@rwehydro.com.

Sincerely,
Renewable World Energies, LLC
Agent for Licensee

Gary Rast

For/ Mr. Jason Kreuscher
Vice President, Operations

Attachment: Draft Report 2013 Water Quality Monitoring Data - October 4, 2013

Cc: RWE, Corporate

Gary Rast

From: Gary Rast
Sent: Wednesday, July 10, 2013 7:56 PM
To: Laatsch, Cheryl - DNR (Cheryl.Laatsch@Wisconsin.gov); Nick Utrup (nick_utrup@fws.gov)
Cc: 'Jason Kreuscher'; Ben Richard; Shawn Wille; Aneta Rietveld; David Anderson
Subject: Below Standard DO AT Crowley, Clam River, And Danbury

Cheryl and Nick,

Performed the water quality sampling at the Flambeau projects on the 9th of July – Flambeau Upper/Flambeau Lower/Flambeau Pixley – All DO readings above 5.0 mg/l. However, the Flambeau Crowley project had DO readings below standard beginning at the 15' level of 4.91 mg/l and 24.8°C. Readings were then taken every 1' to 20' and then .5' above the bottom with DO dropping to a low of 3.83 mg/l and 24.3°C at .5' above the bottom.

Performed water quality sampling at the Clam River project on the 10th of July. DO dropped below standard at the 1 meter level with a reading of 4.90 mg/l and 24.1°C. Readings were taken every ½ meter to a depth of 7 meters and the .5 meters above the bottom. DO was the lowest at .5 meter above bottom with a reading of .97 mg/l and 23.7°C.

Performed water quality sampling at the Danbury project as well on the 10th of July. DO dropped below standard at the 1.5 meter level with a reading of 4.84 mg/l and 24.6°. Reading were taken every ½ meter to 5 meters and then .5 meters above bottom. Do was the lowest at the .5 meter above bottm with a reading of 4.37 mg/l and 24.1°C.

Full results will be provided in the year end Water Quality Monitoring Reports for each project.

Additional note: Winter project results from the 8th of July were all above standard.

Thanks

Gary

Gary Rast
Regulatory/Compliance Manager

Renewable World Energies

Renewable World Energies, LLC
100 S. State Street
P.O. Box 264
Neshkoro, WI 54960
Phone: 855-994-9376 Ext. 105
Fax: 920-293-4100
Cell: 920-570-0995
E-mail: grast@rwehydro.com

Gary Rast

From: Gary Rast
Sent: Wednesday, August 07, 2013 5:19 PM
To: Laatsch, Cheryl - DNR (Cheryl.Laatsch@Wisconsin.gov); Nick Utrup (nick_utrup@fws.gov)
Cc: 'Jason Kreuscher'; Ben Richard; 'nrehder@renewableworldenergies.com'
Subject: Clam River and Danbury Below Std DO

Cheryl and Nick,

Did the WQ at Clam River and Danbury. Experienced some below standard DO measurements. Danbury fell below standard at 5 meters (4.96) and fell even further at .5 meter above bottom (1.9).
Clam River fell below standard at 5 meters (4.94) and on down to (3.78) .5 meters above bottom.
Nothing else out of the ordinary. As always a full report at the end of the year. Thanks

Gary

Gary Rast
Regulatory/Compliance Manager

Renewable World Energies

Renewable World Energies, LLC
100 S. State Street
P.O. Box 264
Neshkoro, WI 54960
Phone: 855-994-9376 Ext. 105
Fax: 920-293-4100
Cell: 920-570-0995
E-mail: grast@rwehydro.com

Document Content(s)