

February 20, 2019

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

RE: Clam River Hydroelectric Project FERC Project Number 9185 Flambeau Hydro LLC Final Report 2018 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 2018 Water Quality Monitoring Data* for the Clam River Hydroelectric Project. The Federal Energy Regulatory Commission "FERC" issued a License to Flambeau on July 24, 2006. This report is submitted as a requirement of that License pursuant to License Article 401 WQC, Condition K. 2018 was the 11th year monitoring was conducted since the license was issued, but is the 7th year of submittal by RWE on the behalf of the License.

Monitoring was conducted on May 8, July 17, and August 20, 2018. No unusual temperature or dissolved oxygen readings were observed in April or July, but in July the D.O. was below 5.0 mg/L at 18 feet and in August the D.O. was below 5.0 mg/L at 4 feet. The draft report was sent to the agencies by an attachment to an email on December 5, 2018 for review and comment. No comments were received relating to the Clam River report. The next scheduled monitoring event will be conducted in 2019.

If you have any questions concerning this submittal, please contact Brian Kreuscher at the Renewable World Energies, LLC offices @ 855-994-9376 Ext 230. He can also be reached by e-mail at <u>bkreuscher@rwehydro.com</u>.

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



Sincerely, Renewable World Energies, LLC Agent for Licensee

12:16

Mr. Jason Kreuscher Vice President, Operations

Attachment: Final Report 2018 Water Quality Monitoring Data Correspondence

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

Report

2018 Water Quality Monitoring Data (Per License Article 401 WQC, Condition K)

for the

Clam River Hydroelectric Project

FERC Project #9185

Flambeau Hydro, LLC

Clam River, Burnett County, Wisconsin

Respectfully Submitted by:

Angie Stine



429 River Lane, P.O. Box 27 Amasa, Michigan 49903

Phone: 906-822-7889

Summary Clam River Hydroelectric Project - FERC #9185

2018 marked the eleventh year of water quality sampling under FERC License issued on July 24, 2006 to Flambeau Hydro, LLC for the Clam River Hydroelectric Project – FERC Project # 9185 and specifically Appendix A Section 401 K. Monitoring was conducted on May 8, July 17, and August 20, 2018. This document contains all of the associated records for the 2018 monitoring along with summary figures and tables in four appendices: (1) Appendix A (Figures 1-4), (2) Appendix B (Tables 1-3), (3) Appendix C (sampling logs by date), and (4) Appendix D (laboratory reports and chains of custody).

A map of the Clam River Hydroelectric Project is shown in Figure 1 indicating the water quality sampling location.

Monitoring results for 2018 are shown in Table 1. No unusual Temperature (Figure 2) or Dissolved Oxygen (Figure 3) readings were observed in May or July but in July the D.O. was below 5.0 mg/L at 18 feet and in August the D.O. was below 5.0 mg/L at 4 feet. The Secchi depths are shown in Figure 4.

In general, the weather (temperature and rainfall) during 2018 monitoring season appeared slightly warmer in May, June, and July, & August, with lower than normal precipitation in November, December, January, February, March, April and June, and normal to high precipitation in the months of October, February, June, July, and August (Table 2).

Ice-Out occurred on the Clam River sometime during the week beginning May 1, 2018. The Ice-Out sampling event occurred on May 8, 2018. River flow, based on the Clam River Hydroelectric Project records, was approximately 719 cubic feet per second. Sampling occurred between 11:00 a.m. and 11:20 a.m. Samples were taken without incident. No unusual D.O. or Temperature readings were observed. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on May 9, 2018. White Water Associates, Inc. issued a laboratory report on June 5, 2018. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on the Clam River Hydroelectric Project records, was approximately 293 cubic feet per second during the July 17, 2018 sampling event. Sampling occurred between 11:34 a.m. and 11:45 a.m. Samples were taken without incident. No unusual Temperature readings were observed. The D.O. went below 5.00 mg/L at 18.0 feet (4.64 mg/L). The 0.5 ft above bottom D.O. was 0.07 mg/L. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on July 18, 2018. White Water Associates, Inc. issued a laboratory report on August 6, 2018. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

River flow, based on the Clam River Hydroelectric Project records, was approximately 156 cubic feet per second during the August 20, 2018 sampling event. Sampling occurred between 9:35 a.m. and 9:54 a.m. Samples were taken without incident. No unusual Temperature readings were observed. The D.O. went below 5.00 mg/L at 4 feet (4.89 mg/L). The 0.5 ft above bottom D.O. was 0.07 mg/L. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on August

22, 2018. White Water Associates, Inc. issued a laboratory report on September 4, 2018. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

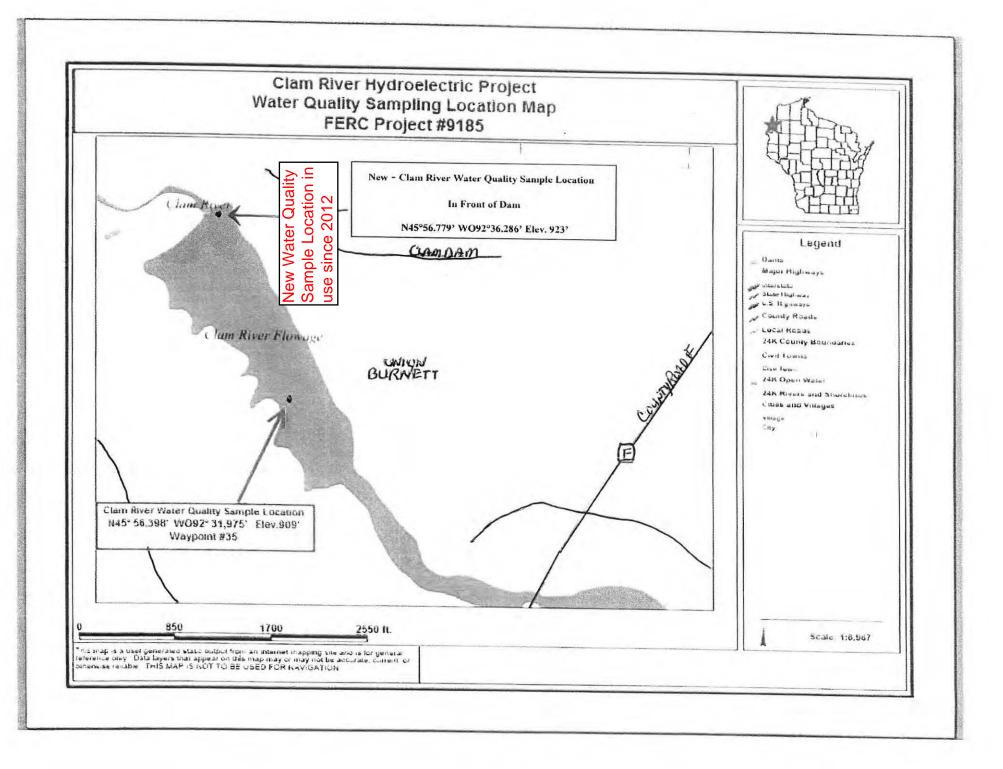
A summary of a comparison between the 2012 thru 2018 (Table 3) sampling results are as follows:

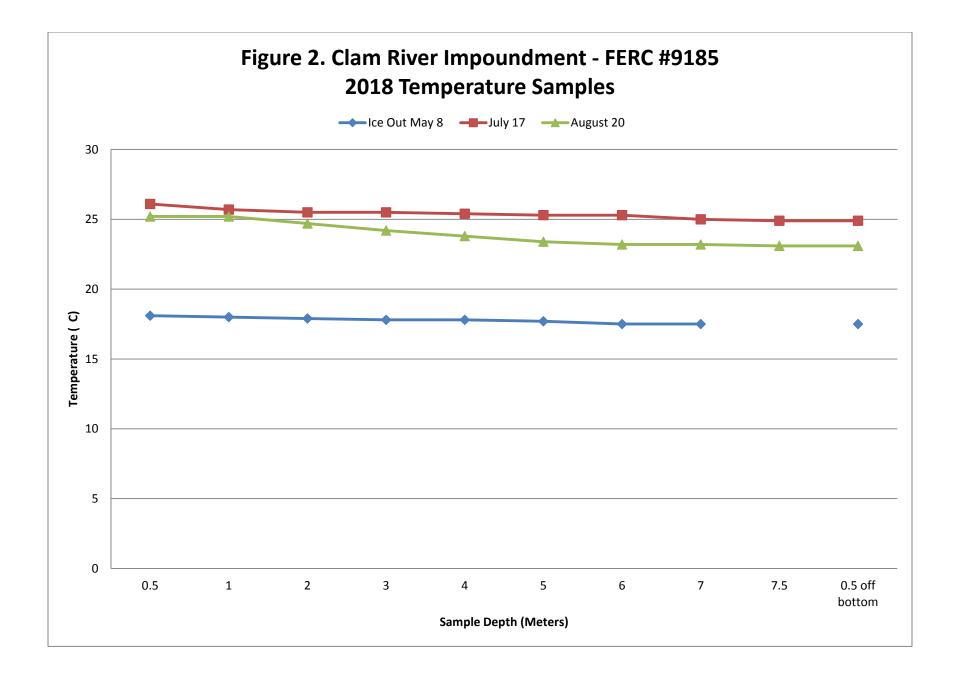
- 1. Water Clarity Secchi Decreased Ice Out, July and August
- 2. Chlorophyll a Increased Ice Out, July and August
- 3. Color Increased Ice Out, July and August
- 4. Total Phosphorus Increased Ice Out, July and August
- 5. Overall, D.O. Decreased Ice Out and July and increased in August
- 6. Water Temperatures Increased Ice Out, July & August

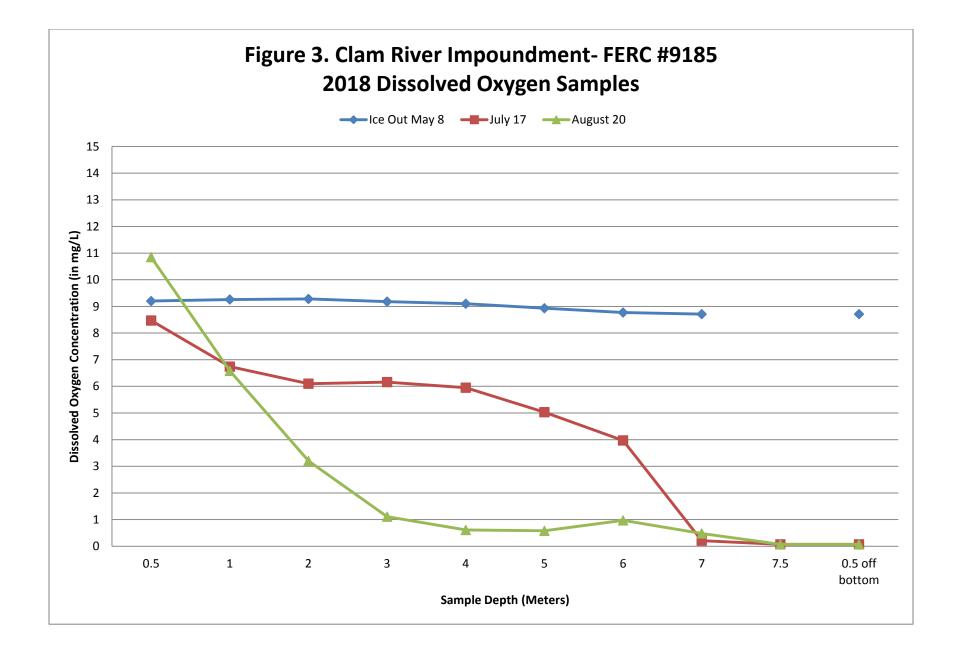
The next scheduled Water Quality Monitoring at the Clam River Hydroelectric Project is set to take place in 2019 beginning with the Ice-Out sampling event.

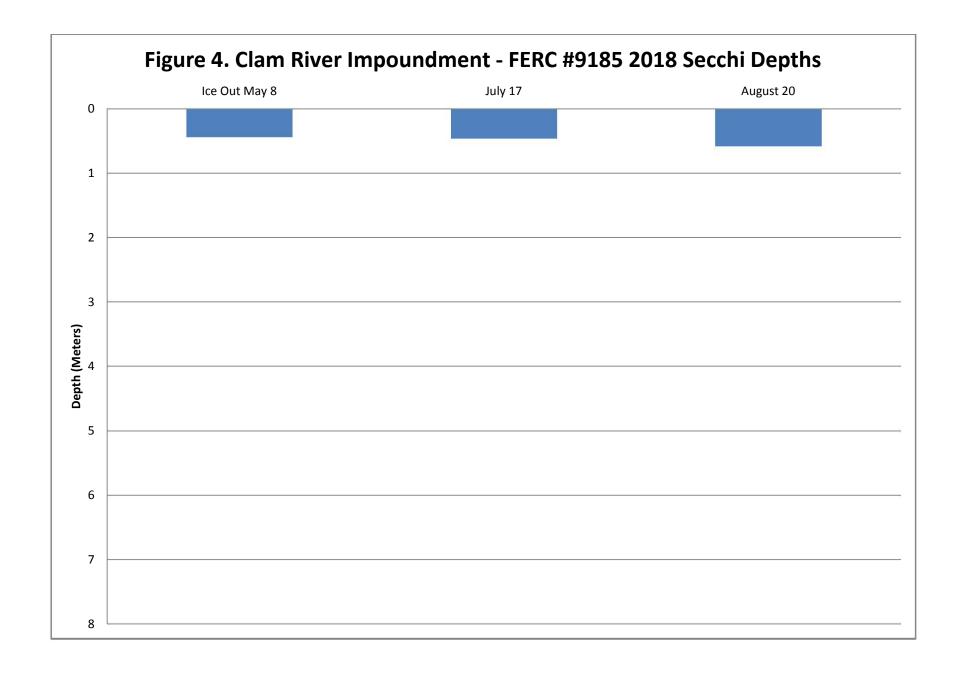
Appendix A – Clam River Hydroelectric Project Figures

Figure 1. Clam River Hydroelectric Project Map









Appendix B – Clam River Hydroelectric Project Tables

	Ice Out May 8, 2018		July 17, 2018			August 20, 2018			
Project Flow (c.f.s)	719		293			156			
Dissolved Oxygen	Time	D.O.	Water Temp.	Time	D.O.	Water Temp.	Time	D.O.	Water Temp.
		(mg/L)	(°C)		(mg/L)	(°C)		(mg/L)	(°C)
0.5 meter below surface	11:03:57	9.20	18.1	11:43:56	8.47	26.1	9:33:52	10.85	25.2
1 meter below surface	11:04:24	9.26	18.0	11:46:33	6.74	25.7	9:39:04	6.58	25.2
2 meter below surface	11:04:50	9.28	17.9	11:49:27	6.10	25.5	9:42:10	3.20	24.2
3 meter below surface	11:05:18	9.18	17.8	11:50:39	6.16	25.5	9:45:01	1.11	24.2
4 meter below surface	11:06:17	9.10	17.8	11:52:11	5.95	25.4	9:47:55	0.61	23.8
5 meter below surface	11:06:52	8.93	17.7	11:54:42	5.03	25.3	9:50:27	0.58	23.4
6 meter below surface	11:07:34	8.77	17.5	11:57:43	3.97	25.3	9:51:58	0.97	23.2
7 meter below surface	11:08:46	8.71	17.5	12:00:52	0.21	25.0	9:53:10	0.48	23.2
8 meter below surface									
0.5 meter above bottom	11:09:34	8.71	17.5	12:02:20	0.07	24.9	9:54:09	0.07	23.1
Secchi Disk	Time	Depth		Time	Depth		Time	Depth	
		(m)			(m)			(m)	
Meters below surface	11:06	0.44		11:45	0.46	1	9:46	0.58	
Chlorophull a	Time		T	Time		Γ	Time		
Chlorophyll a	Time	μg/L	-	Time	μg/L	-	Time	μg/L	
1 meter below surface	11:15	22		11:36	26		9:35	20	
Color (True)	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD
1 meter below surface	11:15	25	5*	11:36	30	5*	9:35	30	5*
Total Phosphorus	Time	mg/L	LOD	Time	mg/L	LOD	Time	mg/L	LOD
1 meter below surface	11:15	0.053	0.008*	11:36	0.090	0.008*	9:35	0.067	0.008*
1 meter above bottom	11:15	0.055	0.008*	11:41	0.093	0.008*	9:39	0.074	0.008*
*Considered Method Dete	ection Limit	N/A = Not A	pplicable	·		.			•

Table 1. Clam River Hydroelectric Project – FERC Project # 9185: 2018 Water Quality Sampling Data

				Departure	Heating	Normal				
Month	Highest	Lowest	Average	From	Degree	Degree	Total	Total	Normal	% of Normal
	Temp.	Temp.	Temp.	Normal	Days	Days	Precip.	Snowfall	Precip.	Precipitation
October - 17	75	23	45.6	2.4	594	678	3.40	11.1	2.85	74
November - 17	47	-5	25.7	-3.1	1170	1088	1.31	10.5	2.09	80
December - 17	43	-26	10.5	-4.3	1683	1556	0.83	13.4	1.21	80
January – 18	45	-22	11.0	10.2	1666	1699	0.63	44.1	0.96	76
February – 18	43	-17	10.3	15.1	1526	1399	1.73	24.2	0.81	68
March – 18	48	-4	26.1	0.2	1197	1210	0.44	5.1	1.49	64
April – 18	71	2	32.8	-6.8	958	762	1.39	18.5	2.43	58
May – 18	92	29	57.7	6.3	259	426	2.21	0.00	3.23	59
June – 18	85	40	61.8	1.7	125	179	4.64	0.00	4.23	71
July – 18	89	49	69.1	3.3	6	63	3.28	0.00	3.85	70
August – 18	91	48	67.5	3.2	35	86	3.86	0.00	3.70	76
September - 18	81	30	59.1	3.5	219	298	3.51	0.00	4.11	75

Table 2. 2017/18 Water Year Monthly Temperature and Precipitation for Clam River, Wisconsin

Source: NOAA/Duluth, MN

	Table 3. Clam River Project Sampling Comparison Table: 2012 Thru Current Year								r	
Year	Month	Secchi Depth	Chlorophyll a	Color (True)	Total Phosphorus	Total Phosphorus	Low D.O.	High D.O.	Low Water Temp.	High Water Temp.
		meters	μg/L	C.P.U. Units	Below Surface	Above	mg/L	mg/L	° C	° C
			P-87 -		mg/L	Bottom mg/L		8/ -		•
2012	April	0.80	13.00	55.00	0.031	*	11.72	15.68	9.60	10.90
2013	May	1.00	17.00	70.00	0.069	0.069	10.91	12.16	10.10	14.20
2014	June	1.10	8.60	70.00	0.041	0.042	9.14	9.40	11.50	12.70
2015	April	1.50	13.00	25.00	0.049	0.039	8.45	11.93	9.90	14.40
2016	March	1.19	11.00	15.00	0.040	0.040	10.91	12.09	3.90	4.80
2017	April	1.30	15.00	10.00	0.024	0.025	9.91	11.03	9.70	10.80
2018	May	0.44	22.00	25.00	0.053	0.055	8.71	9.28	17.50	18.10
Minimum	March-June	0.44	8.60	10.00	0.024	0.025	8.45	9.28	3.90	4.80
Maximum	March-June	1.50	22.00	70.00	0.069	0.069	11.72	15.68	17.50	18.10
Average	March-June	1.05	14.23	38.57	0.044	0.045	9.96	11.56	10.31	12.27
2012	July	1.10	13.00	50.00	0.042	0.050	0.04	12.33	24.80	28.70
2013	July	1.20	23.00	70.00	0.064	0.067	0.97	7.22	23.70	24.10
2014	July	0.80	18.00	50.00	0.056	0.055	7.06	12.44	20.40	22.50
2015	July	1.10	12.00	35.00	0.061	0.043	7.48	9.77	22.00	23.10
2016	July	0.88	44.00	30.00	0.043	0.043	0.70	11.31	24.40	26.60
2017	July	1.00	15.00	25.00	0.033	0.075	5.83	9.47	23.50	23.90
2018	July	0.46	26.00	30.00	0.090	0.093	0.07	8.47	24.90	26.10
Minimum	July	0.46	12.00	25.00	0.033	0.043	0.04	7.22	20.40	22.50
Maximum	July	1.20	44.00	70.00	0.090	0.093	7.48	12.44	24.90	28.70
Average	July	0.93	21.57	41.43	0.056	0.061	3.16	10.14	23.39	25.00
2012	August	0.70	43.00	70.00	0.067	0.066	5.01	12.77	21.20	22.40
2013	August	0.50	48.00	100.00	0.110	0.098	3.78	12.47	20.40	21.90
2014	August	0.60	34.00	50.00	0.081	0.075	4.91	10.13	22.70	24.20
2015	August	0.50	120.00	40.00	0.076	0.043	5.50	16.91	22.60	24.70
2016	August	0.70	61.00	25.00	0.050	0.053	0.16	14.89	22.80	25.30
2017	August	1.00	11.00	20.00	0.034	0.034	3.30	9.84	20.70	21.40
2018	August	0.58	20.00	30.00	0.067	0.074	0.07	10.85	23.10	25.50
Minimum	August	0.50	11.00	20.00	0.034	0.034	0.07	9.84	20.40	21.40
Maximum	August	1.00	120.00	100.00	0.110	0.098	5.50	16.91	23.10	25.50
Average	August	0.65	48.14	47.86	0.069	0.063	3.25	12.55	21.93	23.63

*no sample taken

Appendix C – Clam River Impoundment Project Sampling Logs

IMPOUNDMENT SAMPLING LOG
Water Quality Study Location Clam River
Hydroelectric Project – FERC # <u>9185</u>
Date: 5-8-2018
Pre-Sampling Data:
HWL 898,67 TWL 865,30 CFS 719
Sample Location: WQ2 N45° 54,779 W092° 36286' Performed by:
Time: 1/100Barometer:
Air Temp: <u>58</u> °d Wind Speed: <u>NWIMpH</u>
Sky Conditions: 100 Clur 5
Precipitation within Last 24 Hours: $_\chi D$
D.O. Meter Calibration:
Instrument Model Used: HQ40D
Were the batteries changed? 🗖 Yes 🛱 No
If yes, when were they changed:
Battery Status: 40 % Charge
Calibration Method: Factory
Sampling Depth Profile: Measured depth to bottom of impoundment:Feet
Secchi Depth (<u>+</u> 0.1)
Time ///DC (Mekis: 4.3 Feet

Comments:

(3 feet belov Lab Sample I.D		-	ntal sampler)
Time (1;)5	Quantity	(ml)	Filtered
	1000		In Lab
Preservative		MgC	O ₃

True Color (3 feet below surface horizontal sampler) Lab Sample I.D. # : Time: 川ゴビ

Total	l Phosphorus				
(3 feet below surface horizontal sampler)					
Lab Sample I.D. # :					
Time 11:15 Preservative					
H ₂ SO ₄					

Total Phosphorus					
(3 feet above bottom horizontal sampler)					
Lab Sample I.D. # :	ل.				
Time / 1,70	Preservative				
H ₂ SO ₄					

D.	D.O. and Temperature Profile							
Depth	Time	D.O.	Temperature					
(Meters)		(mg/L)	° C					
0.5 below	1	<i>•</i>						
surface	11:03:57	- 9,20	18,1					
.1	11:14:24	9.21.	18.D					
2	11:04:50	9,28	17.9					
3	11:05:18	9:18	17.8					
4	11.06.17	9.10	17.8					
5	11:06.52	8,93	17.7					
6	11:67:34	8,77	17.5					
7	11:18:26	8.71	17.5					
8								
0.5 above	11.66 . 20	02,	17 2					
bottom	//;09:34	8,71	17.7					

*If D.O. is below 5.0 mg/L notify agency and measure D.O. at 1.0 foot intervals if <5.0 mg/L.



IMPOUNDMENT SAMPLING LOG
Water Quality Study Location Clum Kurth
Hydroelectric Project – FERC # 9185
Date: 7-18
Pre-Sampling Data:
HWL 589, 76 TWL 864,04 CFS 293
Sample Location: <u>1145° 54, 779 (2092' 7, 28</u> 4
Performed by: Amar Stine - Wamboe Lyan
Time: <u>//, 37</u> Barometer: <u>30, /</u>
Air Temp: $\underline{H}^{\circ}\mathbf{c}$ Wind Speed: <u>NVE 2mpH</u>
Sky Conditions: So Clouds
Precipitation within Last 24 Hours: \cancel{NO}
D.O. Meter Calibration:
Instrument Model Used: HQ40D
Were the batteries changed? 🔲 Yes 🕎 No
If yes, when were they changed:
Battery Status: (6 ()% Charge
Calibration Method: Factory
Sampling Depth Profile: Measured depth to
bottom of impoundment: <u>25</u> Feet
Secchi Depth (± 0.1)
Time // //5 / / 5 (Feet
0.44 M
Comments:

1

Chlorophyll a (3 feet below surface horizontal sampler) Lab Sample I.D. #: Time Quantity (ml) Filtered 1000 In Lab 11.36 Preservative MgCO₃

True Color (3 feet below surface horizontal sampler) Lab Sample I.D. # : Time: 11,36

	Phosphorus ace horizontal sampler)
Lab Sample I.D. # :	
Time 11, 36	Preservative
j,	H ₂ SO ₄

Total Phosphorus					
(3 feet above bottom horizontal sampler)					
Lab Sample I.D. # :					
Time //,4/	Preservative				
H ₂ SO ₄					

D.(O. and Ter	nperature	Profile
Depth	Time	D. O .	Temperature
(Meters)		(mg/L)	° C
0.5 below	1125-54	GIL	
surface	11:35:58	9,16	27.1
1	11:36:51	6,92	24.0
2	11:37:39	6.33	25,7
3	11.38.11	6.14	25,6
4	11:38:45	5.99	25.5
5	11; 39,20	5.49	25.4
6	11.40,25	4.46	2513
7			Ť
8			
0.5 above			
bottom			

*If D.O. is below 5.0 mg/L notify agency and measure D.O. at 1.0 foot intervals if <5.0 mg/L.



Clam River

7-17-2018

*D.	O. and Te	emperature	Profile
Depth	Time	D.O.	Temperature
(Feet)		(mg/L)	° C
0.5 below	1		
surface	11,213;50	-8,47	26.1
1	1144;25	7.78	25,9
2	1,43,38	7.64	25.8
3	1146.33	6,74	25,7
4	11,47:15	6,43	25,6
5	11,47:5	6 4,60	296
6	11:48.30	6,41	25,6
7	11.49:27	6.10	25,5
8	11:49:50	6.11	25.5
9	11:50:15	6,13	25,5
10	11,50:39	6.16	25.5
11	11:57:03	6,15	25.4
12	11;51;5-	16,1	25,4
13	11:52:11	5,45	25,4
14	11:52:42	593	25.4
15	11:53:04	5,86	25.4
16	11,53:58	5,20	25,3
17	11:54:42	5,03	25,3
18	11:55:57	4,64	25.3
19	11:56:48	1/131	25.3
20	11:57:4	3.97	25,3
21	11:58:17	3,83	25,3
22	11:59:31	1,58	25,1
23	2:00,52	0,21	25.0
24	12:01:42	- II A	24,9
25	12:02:06	6,07	24,9
0.5 above bottom	12:02.21	6.67	2419



IMPOUNDMENT SAMPLING LOG
Water Quality Study Location Clam Run
Hydroelectric Project – FERC #
Date: 8-20-18
Pre-Sampling Data:
HWL 898, 61. TWL 863,10 CFS 156
HWL <u>898, 61</u> , TWL <u>863,10</u> CFS <u>156</u> Sample Location: <u>N45⁰ 57, 779 6087</u> °
Performed by:
Time: <u>9,35</u> Barometer: <u>30</u>
Air Temp: 70 of Wind Speed: N3mplt
Sky Conditions: 100 Clouds
Precipitation within Last 24 Hours:
D.O. Meter Calibration:
Instrument Model Used: HQ40D
Were the batteries changed? 🗖 Yes 🙀 No
If yes, when were they changed:
Battery Status: 90 % Charge
Calibration Method: Factory
Sampling Depth Profile: Measured depth to bottom of impoundment: <u>25</u> Feet
Secchi Depth (<u>+</u> 0.1)
Time 9, 9/
0,58 M

Chlorophyll a(3 feet below surface horizontal sampler)Lab Sample I.D. #:TimeQuantity (ml)Filtered9;351000In LabPreservativeMgCO3

 True Color

 (3 feet below surface horizontal sampler)

 Lab Sample I.D. # :

 Time: 9, 35

	Phosphorus ace horizontal sampler)
Lab Sample I.D. # :	/
Time 9,35	Preservative
	H ₂ SO ₄

	osphorus
(3 feet above bottor	n horizontal sampler)
Lab Sample I.D. # :	
Time 9,39	Preservative
	H₂SO₄

D.(O. and Tei	mperature	Profile
Depth	Time	D.O.	Temperature
(Meters)	-	(mg/L)	°C
0.5 below			
surface			
1			
2			
3			
4			
5			
6			
7			
8			
0.5 above			
, bottom			
*If D.O. is b	elow 5.0	mg/L notify	agency and -

TIT D.O. is below 5.0 mg/L notify agency and $\frac{1}{7}$ measure D.O. at 1.0 foot intervals if <5.0 mg/L. On Back



Comments:

Clam River 8-20-18

*D.	O. and Te	mperature	Profile
Depth	Time	D.O.	Temperature
(Feet)		(mg/L)	°C
0.5 below		11	25-2
surface	133:54	10.85	1017
1	9:35.59	10,50	25.5
2	9.37.44	7,63	25.3
3	9,39,84	6,58	25.2
4	9.40:6	\$ 4,89	25.0
5	940:52	3.67	24.9
6	9,41,35	3.34	24,8
7	7:42:10	3.20	24,7
8	9:42:59	2.65	24,6
9	14158	1,98	24,3
10	9,45:01	111	24.2
11	946:35	1.43	24.1
12	1,47:67	1.20	24.0.
13	9:47:55	0161	23.8
14	9.48:29	1,03	23,6
15	9:44.1X.	6.60	23,5
16	9:59.59	0,49	23,4
17	h.50.12	0,58	23.4
18	1:50:54	0.75	23.3
19	9:51.23	0,71	23.3
20	63158	0,97	23.2
21	9:52:26	0,98	23.2
- 22	9:52:50	6178	23.2
23	9:53:10	6.48	23.2
24	9:53:42	0,27	23.2
25	9.54124	6,07	23.1
0.5 above	Caul	6.0	101
bottom	1,54,00	0,07	<u> よう, [</u>

Sent enail 10:02 Brion V. Dean P.

WHITE WATER Associates, Inc.

Appendix D – Clam River Hydroelectric Project Lab Reports and Chains of Custody



429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

	(Cover Page	
Client: RWE			WWA Job #: 75737
Project: Date Received:	Monitoring 5/9/2018	Date Reported:	6/5/2018
Sample Number	Client Sample ID	Date Sampled	Sample Matrix
75737-001	Clam River Surface	05/08/18	Water
75737-002	Clam River Bottom	05/08/18	Water
75737-003	Danbury Surface	05/08/18	Water
75737-004	Danbury Bottom	05/08/18	Water

ANALYTICAL REPORT



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Cover Page..continued

Client: RWE

WWA Job #: 75737

Comments (if any):

Key to Laboratory Flags:

- *: RPD exceeds limits.
- B: The analyte was found in the associated blank as well as in the sample.
- J: The quantitation is an estimated value because the result is less than the sample quantitation limit but greater than the detection limit.
- M: A matrix effect was present.
- Q: Batch QC data associated with the analysis does not meet the stated objectives
- H: Indicates analytical holding time exceedance.
- U: The analyte was analyzed for, but not detected.
- P: A manual peak selection or manual integration was performed to correct an erroneous software selection.

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid) For coliform, Negative = No coliform bacteria detected, Positive = Coliform bacteria detected

Sample Types: S = Solids, DW = Drinking water, D = Dissolved, T = Total, TC = TCLP extract, SP = SPLP extract

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I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and White Water Associates Standard Operating Procedures. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this Final Report is authorized by White Water Associates management, as is verified by the following signature.

Approved By:

WI DNR Lab Certification Number: 999971280 MI DEQ Certification Number: 9306 DoD-ELAP Accreditation Number: 65802 ISO/IEC 17025:2005 Accredited



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Client: RWE					WWA Jo	b #: 75737			
Project:	Monitoring			******	<u> </u>				
Date Received:	5/9/2018			Date Repo	orted: 6/5/2018				
		Sa	mple	Results					
Sample No. / ID /	Description / Ma	trix Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
75737-001 / Clan	n River Surface /	Water							
General Chem	istry Parameters								
Chlorophyll a	·	22		mg/m3	6/1/2018 8:30	10200H	NA	NA	CA
Color		25		CU	5/10/2018 13:10	2120B	5	5	AH
Total Phosphorus	s LL (t)	0.053		mg/L	5/25/2018 16:51	365.4	0.008	0.050	NK
75737-002 / Clan	n River Bottom /	Water							
General Chem	istry Parameters								
Total Phosphorus	s LL (t)	0.055		mg/L	5/25/2018 16:52	365.4	0.008	0.050	NK
75737-003 / Dan	bury Surface / W	ater							
General Chem	istry Parameters								
Chlorophyll a		7.8		mg/m3	6/1/2018 8:30	10200H	NA	NA	CA
Color		20		CU	5/10/2018 13:10	2120B	5	5	AH
Total Phosphorus	s LL (t)	0.028	J	mg/L	5/25/2018 16:54	365.4	0.008	0.050	NK
75737-004 / Dan	bury Bottom / W	ater							
General Chem Total Phosphoru	istry Parameters s LL (t)	0.025	J	mg/L	5/25/2018 16:54	365.4	0.008	0.050	NK

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit, ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)

CLIENT NAME / BILL TO RWE ADDRESS		/				SS															VV As	H SC	DCI.	EV AT	IVA ES	ATER , INC.
ADDRESS				EPHO	JNE														ane, P. higan		c 27				•	6) 822-7889, Fax -7977 -water-associates.com
CITY GAMPLER NAME (print first/last na		ZIP	Ŵ	\sqrt{O}	n i	07 F ۲۵		\wedge		-		1		ite if mo		ANA	LYSI	S TYF	PE RE	QUES	TED ((Attao	ch list i	fnee	eded	Instructions to White Wa Send my report by: email
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Lam River Bottom	٤١	11:20		X					$ \chi $						1		X									
Danbury Surface	11	13.55	1	X				X	X						3	\times	X	X						\square		
Dunbury Bottom	11	13:59		X					X								Х									
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Relinquished by: Ryan Warmbor		Date:	Tim		Rec	eived	by:							Date	ə:		Time):	Comn	nents/	Samp	ole tei	mp. or	ı rece	ipt:	Packing: Ice



429 River Lane • PO Box 27 Amasa, MI 49903 • Ph (906) 822-7889 • Fax -7977

WWA Job #: 77697
orted: 8/6/2018
pled Sample Matrix
Water
Water
Water
Water

. **D**

WWA Job #: 77697



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Cover Page..continued

Client: RWE

Comments (if any):

Key to Laboratory Flags:

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- M: A matrix effect was present.
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Sample Types:

S = Solids, DW = Drinking water, D = Dissolved, T = Total, TC = TCLP extract, SP = SPLP extract

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Client: RWE				WWA Jo	b #: 77697			
Project:	Monitoring							
Date Received:	7/18/2018		Date Repo	orted: 8/6/2018				
		Samp	le Results					
Sample No. / ID /	Description / Ma	trix Result Flag	gs Units	Date/Time	Method	MDL	MQL	Analyst
77697-001 / Clan	n River / Surface	/ Water						
General Chem	istry Parameters							
Chlorophyll a		26	mg/m3	7/27/2018 13:45	10200H	NA	NA	CA
Color		30	CU	7/19/2018 14:00	2120B	5	5	AH
Total Phosphorus	s LL (t)	0.090	mg/L	8/3/2018 10:27	365.4	0.008	0.050	NK
77697-002 / Clan	n River / Bottom	/ Water						
General Chem	istry Parameters							
Total Phosphorus	s LL (t)	0.093	mg/L	8/3/2018 10:28	365.4	0.008	0.050	NK
77697-003 / Dan	bury / Surface / `	Water						
General Chem	istry Parameters							
Chlorophyll a		14	mg/m3	7/27/2018 13:45	10200H	NA	NA	CA
Color		20	CU	7/19/2018 14:00	2120B	5	5	AH
Total Phosphorus	s LL (t)	0,067	mg/L	8/3/2018 10:30	365.4	0.008	0.050	NK
77697-004 / Dan	bury/Bottom/V	Water						
General Chem	ustry Parameters							
Total Phosphoru	s LL (t)	0.064	mg/L	8/3/2018 10:31	365.4	0.008	0.050	NK

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit, ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)

Job # (WWA office use):	++6	04+	10144				F-C	US			REC		(D			1					W	H	TT	₹ \ /	۸Ĭ۸	16050 TER
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be combined on one line.			Drinking \	Aqueous	Sed.	Soil	Other:	None	H2SO4	HNO3	HCI	NaOH	ZnAc/NaOH	Na Thio	Total Number	Ch	TF	Co/								conditions of receipt noted b WWA lab staff. Also note any residual chlorine.)
Clam Kiver Surface,	717.18	1:36		X				X	Х						3	χ	Х	Х								
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Cover Page



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Client: RWE

WWA Job #: 78451

Project:	Monitoring			
Date Received:	8/22/2018	Date Reported:	9/4/2018	
Sample Number	Client Sample ID	Date Sampled	Sample Matrix	
78451-001	Clam River	08/20/18	Water	
78451-002	Clam River	08/20/18	Water	
78451-003	Danbury	08/19/18	Water	
78451-004	Danbury	08/19/18	Water	

Client: RWE

WWA Job #: 78451

Comments (if any):

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Sample Types:

S = Solids, DW = Drinking water, D = Dissolved, T = Total, TC = TCLP extract, SP = SPLP extract

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Approved By:

Shraffaag WI DNR Lab Cottificatio

WI DNR Lab Contribution Number: 999971280 MI DEQ Certification Number: 9306 DoD-ELAP Accreditation Number: 65802 ISO/IEC 17025:2005 Accredited



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Client: RWE				WWA Je	ob#: 78451													
Project:	Monitoring	**************************************																
Date Received:	8/22/2018		Date Re	Date Reported: 9/20/2018														
	g, a g a g a g a g a g a g a g a g a g a	Sam	ple Results	;				******										
Sample No. / ID /	′ Description / Ma	ntrix Result F	lags Units	Date/Time	Method	MDL	MQL	Analyst										
78451-001 / Clan	n River / Surface	e / Water																
General Chem	istry Parameters																	
Chlorophyll a	·	20	mg/m3	8/29/2018 15:30	10200H	NA	NA	CA										
Color		30	CU	8/23/2018 11:10	2120B	5	5	AH										
Total Phosphoru	s LL (t)	0.067	mg/L	8/31/2018 17:59	365.4	0.008	0.050	NK										
78451-002 / Clar	n River / Bottom	/ Water																
General Chem	ustry Parameters																	
Total Phosphoru		0.074	mg/L	8/31/2018 18:02	365.4	0.008	0.050	NK										
78451-003 / Dan	bury / Surface /	Water																
General Chem	ustry Parameters																	
Chlorophyll a		2.1	mg/m3	8/29/2018 15:30	10200H	NA	NA	CA										
Color		25	CU	8/23/2018 11:10	2120B	5	5	AH										
Total Phosphoru	s LL (t)	0.076	mg/L	8/31/2018 18:02	365.4	0.008	0.050	NK										
78451-004 / Dan	bury / Bottom /	Water																
General Chem Total Phosphoru	nistry Parameters s LL (t)	0.079	mg/L	8/31/2018 18:03	365.4	0.008	0.050	NK										

ND = Not Detected, MDL = Method Detection Limit, MQL = Method Quantitation Limit, ppm = mg/L (liquid) or mg/kg (solid), ppb = ug/L (liquid) or ug/kg (solid)

Iob # (WWA office use): CLIENT NAME / BILL TO RWE	10		EM/	AIL AI	DDRE	SS													4		W As	/ H sso	IT 5C1	Е \ (АТ	W A [ES	ATER 5, Inc.
DDRESS			TEL	EPHO	ONE											1									_	
																			-	P.O. Bo 49903						06) 822-7889, Fax -7977 e-water-associates.com
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be combined on one line.	DATE		Drinking	Aqueous	Sed.	Soil	Other:	None	H2SO4	HN03	HCI	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	5	F	Col								conditions of receipt noted b WWA lab staff. Also note an residual chlorine.)
Tum River Surfine	8-20-8	1935		χ				X	Х						3	X	Y	X								
Jum River Bottom				X					X						Ī		v	~								
andury Surface	8-19-18	13:57		X				X	X						3	X	x	X								
	.1	3:53							$\overline{\mathbf{v}}$						1			~								
Dunbury Bottom		10:00		$ \chi $					Ļ۸.								<u>×</u>									
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Brian Kreuscher

From:	Laatsch, Cheryl - DNR <cheryl.laatsch@wisconsin.gov></cheryl.laatsch@wisconsin.gov>
Sent:	Monday, December 10, 2018 11:57 AM
То:	Brian Kreuscher
Subject:	RE: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Correct with final is fine.

We are committed to service excellence. Visit our survey at <u>http://dnr.wi.gov/customersurvey</u> to evaluate how I did.

Cheryl Laatsch Statewide FERC Coordinator Bureau of Environmental Analysis and Sustainability Wisconsin Dept of Natural Resources N7725 Hwy 28 Horicon WI 53032 (T) 920-387-7869 (Fax) 920-387-7888 <u>Cheryl.laatsch@wisconsin.gov</u>



From: Brian Kreuscher <bkreuscher@rwehydro.com>
Sent: Monday, December 10, 2018 11:22 AM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Subject: Re: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Cheryl,

Apologies on that. Changing the date on that table must have been missed. Just as with the Clam River report on that same Table, it should say 2017-2018 Water Year Monthly Temperature. Do you need a corrected Draft report with this, or can this just be corrected with the Final submission.

Thanks

Brian Kreuscher

Renewable World Energies Regulatory & Compliance 855-994-9376 x230

From: Laatsch, Cheryl - DNR <<u>Cheryl.Laatsch@wisconsin.gov</u>> Sent: Monday, December 10, 2018 10:52 AM **To:** Brian Kreuscher **Subject:** FW: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Please double check the info that you sent to the Department. Was it 2017 or 2018? (See Craigs comments below)

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Visit our survey at <u>http://dnr.wi.gov/customersurvey</u> to evaluate how I did.

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



From: Roesler, Craig P - DNR
Sent: Monday, December 10, 2018 10:51 AM
To: Laatsch, Cheryl - DNR <<u>Cheryl.Laatsch@wisconsin.gov</u>>
Subject: RE: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Just one comment for the Danbury report. Table 2 is titled as 2016/17 water year – should be 2017/18.

From: Laatsch, Cheryl - DNR
Sent: Wednesday, December 5, 2018 1:34 PM
To: Roesler, Craig P - DNR < <u>Craig.Roesler@wisconsin.gov</u>
Subject: REVIEW REQUESTED: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Hi Craig - Here are the draft reports for Danbury and Clam. I will request the spreadsheets for the data to be entered into SWIMS. Please review and let me know if you have any concerns. I would appreciate if you could provide **comments before Dec 13**th (as I will be on medical leave). If you cannot meet this deadline, please let me know, so I can assign a person to watch for your response. Thanks

We are committed to service excellence. Visit our survey at <u>http://dnr.wi.gov/customersurvey</u> to evaluate how I did.

Cheryl Laatsch Statewide FERC Coordinator Bureau of Environmental Analysis and Sustainability Wisconsin Dept of Natural Resources N7725 Hwy 28 Horicon WI 53032



From: Brian Kreuscher <<u>bkreuscher@rwehydro.com</u>>
Sent: Wednesday, December 05, 2018 12:04 PM
To: Laatsch, Cheryl - DNR <<u>Cheryl.Laatsch@wisconsin.gov</u>>; Nick Utrup <<u>nick_utrup@fws.gov</u>>
Subject: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Cheryl and Nick,

Attached are the Draft Water Quality Reports for Danbury and Clam River. Please review and provide any comments you may have to me within 60 days for FERC submittal.

Thanks

Brian Kreuscher

Renewable World Energies Regulatory & Compliance 855-994-9376 x230