

February 27, 2020

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 2019 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 <u>Final Report 2019 Water Quality Monitoring Data</u> 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. 2019 was the 13th year monitoring was conducted since the license was issued, but is the 8th year of submittal by RWE on the behalf of the Licensee.

Monitoring was conducted on April 29, July 23, and August 13, 2019. No issues were encountered during the 2019 monitoring season. All data has been given to the DNR to be entered into the SWIMS Data Base. The draft report was sent to the agencies by an attachment to an email on November 26, 2019 for review and comment. Cheryl Laatsch of the DNR did send a reply of "thank you" after the data was sent. The next scheduled monitoring event will be conducted in 2020.

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 bkreuscher@rwehydro.com.

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

Mr. Jason Kreuscher Vice President, Operations

Attachment:

Final Report 2019 Water Quality Monitoring Data

Correspondence

Cc:

Ms. Cheryl Laatsch, WDNR

Mr. Nick Utrup, USFWS

Report

2019 Water Quality Monitoring Data

for the

Danbury Hydroelectric Project

FERC Project #9184

Flambeau Hydro, LLC

Yellow River, Burnett County, Wisconsin

Respectfully Submitted by:

Angie Stine



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

Phone: 906-822-7889

Summary Danbury Hydroelectric Project - FERC #9184

2019 marked the thirteenth year of water quality sampling under 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. Monitoring was conducted on April 29, July 23, and August 13, 2019. This document contains all of the associated records for the 2019 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 Danbury Hydroelectric Project is shown in Figure 1 indicating the water quality sampling location.

Monitoring results for 2019 are shown in Table 1. No unusual Temperature (Figure 2) or Dissolved Oxygen (Figure 3) readings were observed in May but in July the D.O. was below 5.0 mg/L the 18.5 feet and in August the D.O. was below 5.0 mg/L at 7.0 feet with 4.87 mg/L. The Secchi depths are shown in Figure 4.

In general, the weather (temperature and rainfall) during 2019 monitoring season appeared slightly warmer in May, June, and July, & August, with lower than normal precipitation in January, March, April, June, July and August, and normal to high precipitation in the months of October, December, February, May, and September (Table 2).

Ice-Out occurred between Yellow River sometime during the week beginning April 22, 2019. The Ice-Out sampling event occurred on April 29, 2019. River flow, based on the Danbury Hydroelectric Project records, was approximately 380 cubic feet per second. Sampling occurred between 1320 and 1340. 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 April 30, 2019. White Water Associates, Inc. issued a laboratory report on May 21, 2019. 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 123 cubic feet per second during the July 23, 2019 sampling event. Sampling occurred between 1349 and 1402. Samples were taken without incident. No unusual Temperature readings were observed but the D.O. was below 5.0 mg/L at 18.5 feet (4.55 mg/L). Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on July 23, 2019. White Water Associates, Inc. issued a laboratory report on August 27, 2019. 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 123 cubic feet per second during the August 13, 2019 sampling event. Sampling occurred between 1450 and 1503. Samples were taken without incident. No unusual Temperature readings were observed but the D.O. was below 5.0 mg/L at 7 feet (4.87 mg/L). Samples for laboratory analysis were delivered to White Water

Associates, Inc. laboratory in Amasa, MI on August 15, 2019. White Water Associates, Inc. issued a laboratory report on September 13, 2019. No unusual levels of Chlorophyll *a*, True Color, or Total Phosphorus were noted in the laboratory reports.

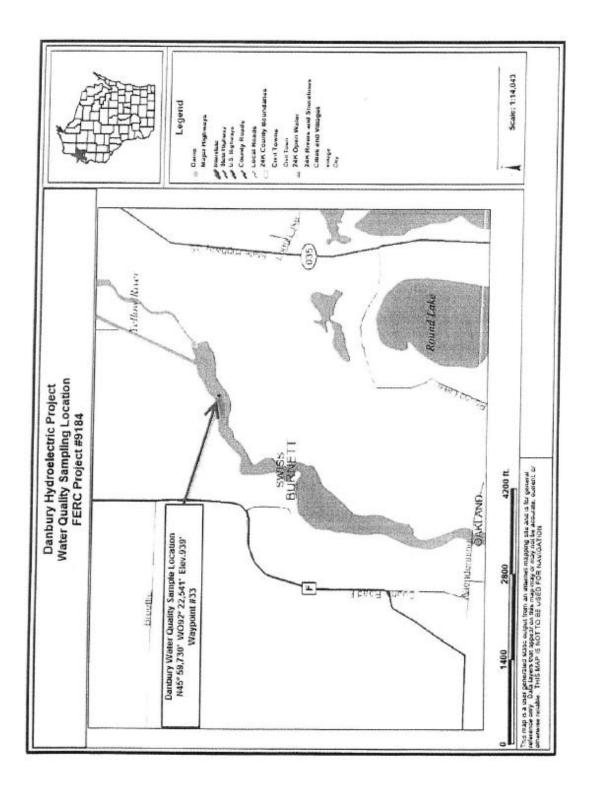
A summary of a comparison between the 2011 thru 2019 (Table 3) sampling results are as follows:

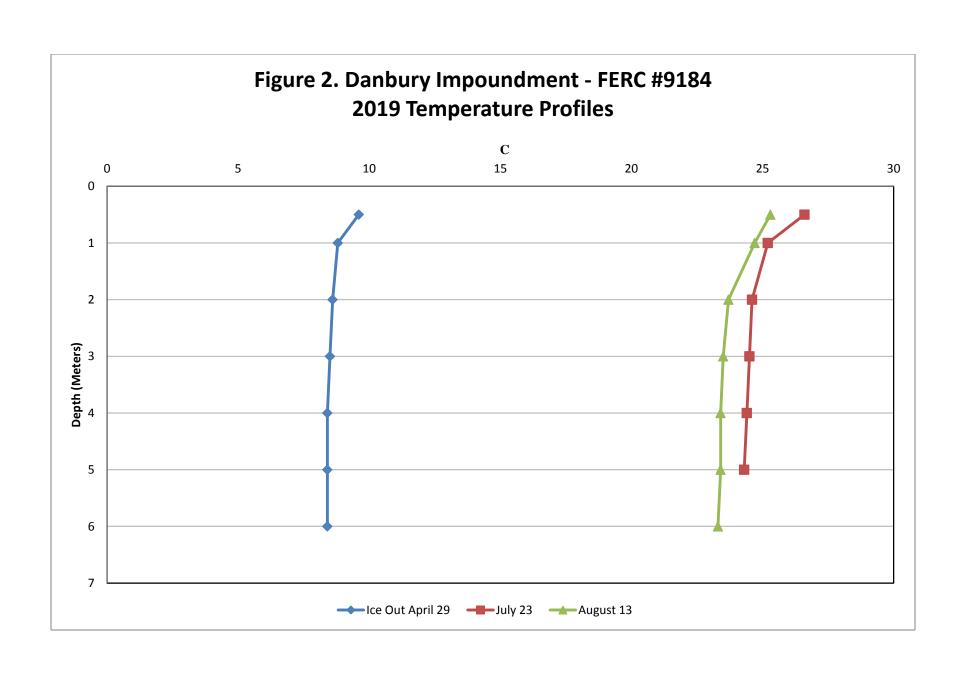
- 1. Water Clarity Secchi Increased Ice Out and July
- 2. Chlorophyll a Decreased Ice Out, increase July and August
- 3. Color Increased Ice Out and August, decreased July and August
- 4. Total Phosphorus Decreased Ice Out and July, increase August
- 5. Overall, D.O. –Increased Ice Out, July, and August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

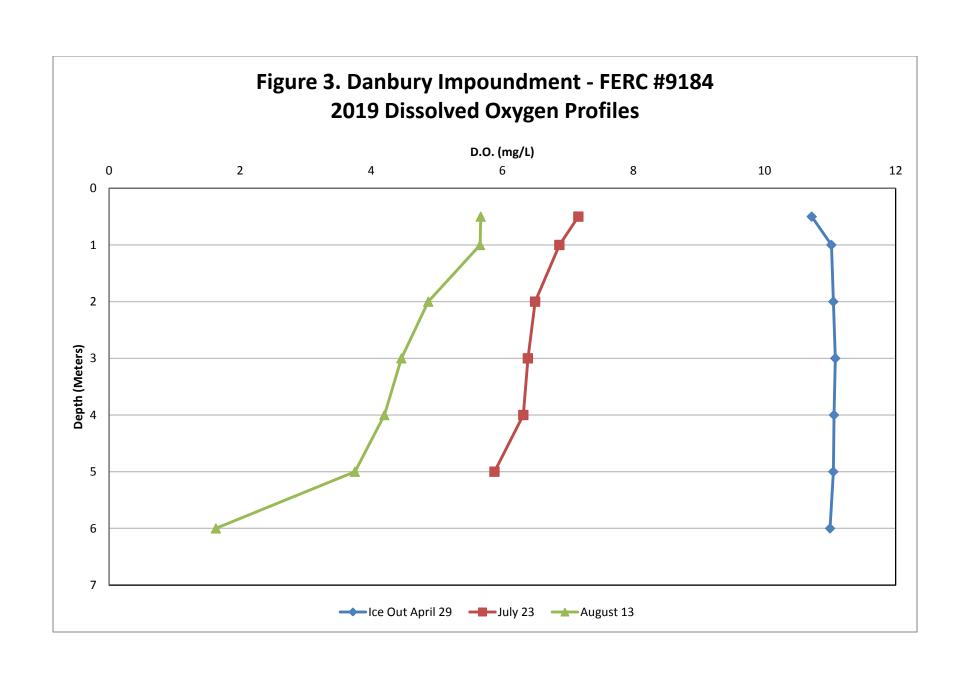
The next scheduled Water Quality Monitoring at the Danbury Hydroelectric Project is set to take place in 2020 beginning with the Ice-Out sampling event.

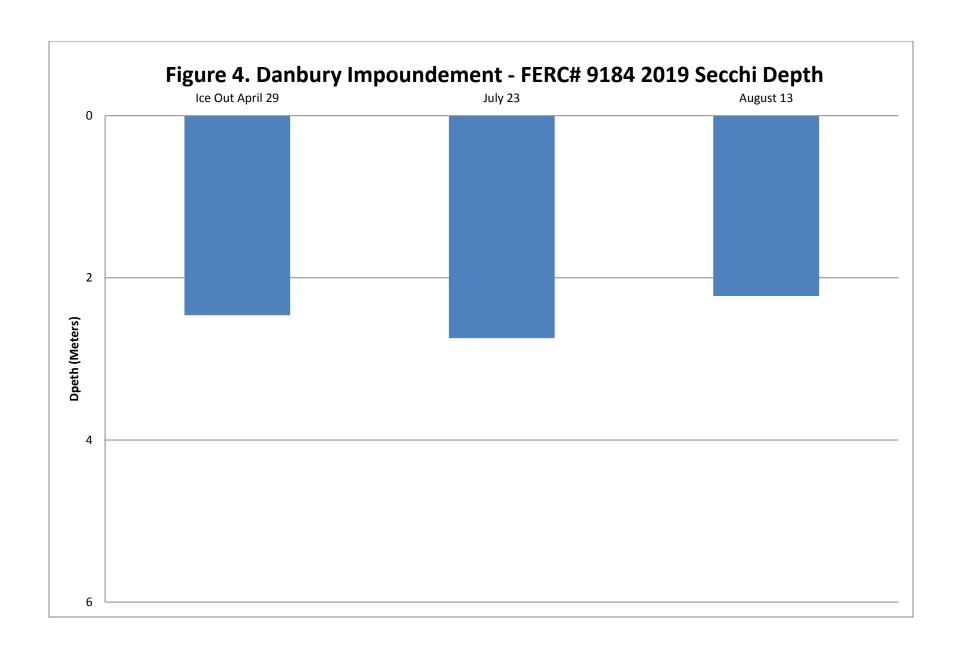
Appendix A – Danbury Hydroelectric Project Figures

Figure 1. Danbury Hydroelectric Project Map









Appendix B - Danbury Hydroelectric Project Tables

Table 1. Danbury Hydroelectric Project – FERC Project # 9184: 2019 Water Quality Sampling Data

	Ice	Out April 2	9, 2019	July 23, 2019		,	August 13, 2019		
Project Flow (c.f.s)		380 123			123				
Dissolved Oxygen	Time	D.O. (mg/L)	Water Temp.	Time	D.O. (mg/L)	Water Temp.	Time	D.O. (mg/L)	Water Temp.
0.5 meter below surface	13:26:44	10.72	9.6	13:50:54	7.16	26.6	14:52:28	5.67	25.3
1 meter below surface	13:27:53	11.02	8.8	13:53:29	6.87	25.2	14:53:45	5.66	24.7
2 meter below surface	13:28:41	11.05	8.6	13:55:09	6.55	24.7	14:55:21	5.08	23.8
3 meter below surface	13:29:26	11.08	8.5	13:56:44	6.43	24.5	14:57:19	4.59	23.6
4 meter below surface	13:30:25	11.06	8.4	13:58:41	6.28	24.4	14:59:04	4.38	23.5
5 meter below surface	13:31:29	11.05	8.4	14:00:13	6.30	24.4	15:00:28	4.04	23.4
6 meter below surface	13:32:41	11.00	8.4	14:02:03	5.66	24.3	15:03:42	1.63	23.3
0.5 meter above bottom	13:33:10	10.98	8.3	14:02:53	4.55	24.2	15:03:56	2.89	23.4
Secchi Disk	Time	Depth (m)		Time	Depth (m)		Time	Depth (m)	
Meters below surface	13:40	2.46	-	13:50	2.743		14:53	2.23	
	- *	. /1		- *	. /1	1	 -		
Chlorophyll a	Time	μg/L	_	Time	μg/L		Time	μg/L	
1 meter below surface	13:32	9.70		13:53	3.50		14:53	4.50	
Color (True)	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD	Time	C.P.U. Units	LOD
1 meter below surface	13:32	25.00	5*	13:53	15.00	5*	14:53	25.00	5*
Total Phosphorus	Time	mg/L	LOD	Time	mg/L	LOD	Time	mg/L	LOD
1 meter below surface	13:32	0.021	0.008*	13:53	0.045	0.008*	14:53	0.045	0.008*
1 meter above bottom	13:27	0.028	0.008*	13:58	0.044	0.008*	15:03	0.046	0.008*
*Considered Method Dete	ection Limit	N/A = Not A	pplicable			•		•	

Table 2. 2018/19 Water Year Monthly Temperature and Precipitation for Danbury, Wisconsin

				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 - 18	66	26	41.0	-2.2	738	678	4.67	1.5	2.85	72
November - 18	44	-7	23.2	-5.6	1247	1088	1.67	12.2	2.09	75
December - 18	44	-9	21.6	6.8	1338	1556	1.77	19.8	1.21	78
January – 19	40	-31	7.6	-2.6	1772	1699	0.80	10.4	0.96	70
February – 19	31	-19	10.6	-4.5	1515	1399	1.88	36.4	0.81	73
March – 19	58	-19	24.9	-1.0	1237	1210	1.19	6.7	1.49	64
April – 19	74	16	40.2	0.06	737	762	2.19	6.5	2.43	65
May – 19	82	28	49.3	-2.1	478	426	3.87	13.3	3.23	65
June – 19	87	40	61.7	1.6	126	179	4.10	0.00	4.23	64
July – 19	89	49	71.1	5.3	4	63	2.63	0.00	3.85	66
August – 19	87	46	66.1	1.8	44	86	2.51	0.00	3.70	66
September - 19	83	37	59.6	4.0	172	298	5.76	0.00	4.11	74

Source: NOAA/Duluth, MN

	Table	3. Danb	ury Project	Sampling C	omparison 1	Table: 2012	Thru Cur	rent Year	•	
Year	Month	Secchi	Chlorophyll a	Color (True)	Total	Total	Low D.O.	High D.O.	Low Water	High Water
		Depth			Phosphorus	Phosphorus			Temp.	Temp.
		meters	μg/L	C.P.U. Units	Below Surface	Above	mg/L	mg/L	° C	° C
					mg/L	Bottom mg/L				
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
2014	June	2.00	5.50	30.00	0.026	0.026	10.42	10.62	7.90	8.70
2015	April	2.10	11.00	20.00	0.045	0.033	10.32	10.43	11.00	13.40
2016	March	2.23	9.50	15.00	0.020	0.020	12.36	12.64	3.40	3.70
2017	April	2.50	7.10	10.00	0.010	0.012	11.08	11.19	8.40	10.00
2018	May	2.53	7.80	20.00	0.028	0.025	9.82	13.39	13.00	16.30
2019	April	2.46	9.70	25.00	0.021	0.028	10.72	11.08	8.30	9.60
Minimum	March-June	2.00	1.70	10.00	0.010	0.012	9.82	10.43	3.40	3.70
Maximum	March-June	2.80	11.00	30.00	0.045	0.034	12.36	13.39	13.00	16.30
Average	March-June	2.33	7.74	21.25	0.027	0.025	10.96	11.65	9.06	10.49
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
2014	July	2.20	3.30	50.00	0.044	0.044	6.85	20.80	7.86	22.00
2015	July	1.80	5.10	25.00	0.058	0.043	6.24	7.50	22.50	23.50
2016	July	2.38	10.00	20.00	0.022	0.022	5.72	6.77	25.30	27.50
2017	July	2.90	6.30	20.00	0.046	0.032	3.02	6.63	7.86	22.00
2018	July	1.80	14.00	20.00	0.067	0.064	2.87	6.64	25.50	28.00
2019	July	2.74	3.50	15.00	0.045	0.044	5.66	7.16	26.60	24.20
Minimum	July	1.80	1.70	15.00	0.022	0.022	2.87	5.24	7.86	22.00
Maximum	July	2.90	14.00	50.00	0.067	0.065	6.85	20.80	26.60	28.00
Average	July	2.28	6.35	28.75	0.051	0.047	4.71	8.47	22.51	25.33
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
2014	August	1.60	4.50	50.00	0.063	0.052	4.20	5.18	23.40	24.20
2015	August	2.20	7.60	30.00	0.042	0.036	5.89	8.02	23.10	25.40
2016	August	3.02	5.20	20.00	0.037	0.040	2.18	4.15	24.70	26.80
2017	August	3.40	11.00	20.00	0.034	0.034	5.25	6.27	21.00	23.00
2018	August	3.20	2.10	25.00	0.076	0.079	1.50	2.70	23.90	25.80
2019	August	2.23	4.50	25.00	0.045	0.046	1.63	5.67	23.40	25.30
Minimum	August	1.60	2.10	0.06	0.034	0.034	1.50	2.70	19.60	22.00
Maximum	August	3.40	40.00	50.00	0.076	0.120	5.89	8.02	24.70	26.80
Average	August	2.64	9.96	25.63	0.052	0.058	3.50	5.55	22.56	24.40

^{*}no sample taken

Appendix C – Danbury Impoundment Project Sampling Logs

INTOUNDINIENT SAINTPLING LOG
Water Quality Study Location Danburg
Hydroelectric Project – FERC# 9184
Date: 4-29-19
Pre-Sampling Data:
HWL929,90 TWL 890,35 CFS 380
Sample Location: <u>M5 9,730</u> w 92' 22.54/
Performed by: Stine Gimor
Time: 13,70 Barometer: 29,99
Air Temp: 42 of Wind Speed: EsmpH
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: <u>95</u> % Charge
Calibration Method: Factory
Sampling Depth Profile: Measured depth to bottom of impoundment: Meters
Secchi Depth (± 0.1)
Time $/3.40$ 8.7 Feet λ Meters

/4.54	Chloroph	-	
(1 Meter belo	w surface	norizo	ontal sampler)
Time Quantity (ml) Filtered			
13:32	1000		In Lab
Preservative		MgC	03 none

	True Color
(1 Me	eter below surface horizontal sampler)
Time	13.32

Total Phosphorus (1 Meter below surface horizontal sampler)					
Time 13.32 Preservative					
H ₂ SO ₄					

Total Phosphorus						
(1 Meter above bottom horizontal sampler)						
Time 13:27	Preservative					
H ₂ SO ₄						

O. and Tem	perature l	Profile
Time	D.O.	Temperature
	(mg/L)	° C
	/a)	a /
13.26:44	10,72	9.6
13.27.5	11:02	8,8
13.28.41	11:05	8.6
13:29.26	11:08	8.5
13:30.25	11:06	814
13:31,29	11:05	8.4
	11:00	844
		£2.
12.23.11	10 60	8.3
12, 50.10	10.18	0.3
	Time 13.26:44 13.28.41 13.29.26 13.30.25 13.31.29 13:31,29	(mg/L) 13.26:44

*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.

Comments:

Crane



INPOUNDMENT SAMPLING LOG
Water Quality Study Location Dayburg
Hydroelectric Project – FERC #
Date: 7, 23-2019
Pre-Sampling Data:
HWL 924 30 TWL 884.95 CFS 123
Sample Location: NY5°54,730
W92 12,54
Performed by: 13: Y9 Barometer: 30,15
Time: 13: 49 Barometer: 20.15
Air Temp: 60 °C Wind Speed: (NNW 7mp)
Sky Conditions:
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: 80 % Charge
Calibration Method: Factory
Sampling Depth Profile: Measured depth to
bottom of impoundment:
Secchi Depth (± 0.1)
Time (3,5) 9 Feet Meters
1 443

(1 Meter belo	Chloroph w surface	•	ontal sampler)	
Time 3,5 Quantity (ml) Filtered				
	1000		In Lab	
Preservative		MgC	O ₃	

	True Color
(1 M	eter below surface horizontal sampler)
Time	13:53

(1 Meter below surfa	osphorus ce horizontal sampler)
Time 13.53	Preservative
	H ₂ SO ₄

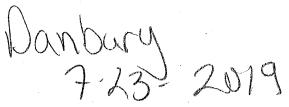
Total Ph	osphorus
(1 Meter above botto	m horizontal sampler)
Time 13.55	Preservative
	H₂SO ₄

D.	O. and Tem	perature F	Profile
Depth	Time	D.O.	Temperature
(Meters)		(mg/L)	°C
0.5 below	1		
surface			
1			
`2			
3			-
4			
5			· c
6		^	10.1
7		IM	Back
8			
0.5 above			
bottom			
4		1	

*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.

Comments:





			*
*D.	O. and Te	mperature	Profile
Depth	Time	D.O.	Temperature
(Feet)		(mg/L)	°C
0.5 below		0.11.	24.6
surface	B.D.31	7.16	
. 1	13:5170	7.06	25.9
. 2	1352:43	695	153
3 🖊	13:53.29	(.87	25,2
4	3:54.06	6,75	24,9
5	13:5 73	6,60	24,7
6 •	13:55.09	6,55	24.9
7	13:55138	6,50	246
8	15,56,0	645	29,6
9 .	13 SLETY	1,43	24,5
10	13.57,4	4.39	24.5
11	17:51:14	6,34	14,5
12 •	135641	6.28	24.4
13	13:59.1	1632	24.4
14	13:59:4	6.32	84,4
15 •	C. 00.19	630	41,4
16	140041	593	24.3
17	12,10:11	5,86	34.3
18 \	14:01:02	5,66	243
19			
20			
21 %			
22			
23			
. 24 🛚			
25			
0.5 above	1402:	3 4/6	041
bottom `	1114.1	イフック	1112

IMPOUNDMENT SAMPLING LOG
Water Quality Study Location Our Vury
Hydroelectric Project – FERC # 9184
Date: 8-13-2019
Pre-Sampling Data:
HWL [29,1) TWL 889,95 CFS 123
Sample Location: <u>N 45° 59, 175</u>
W92 22.541
Performed by: Angiesthe Emma
Time: 14:50 Barometer: 30.0
Air Temp: 16 % Wind Speed: WWW 5
Sky Conditions: 100 Clands
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:% Charge
Calibration Method: Factory
Sampling Depth Profile: Measured depth to bottom of impoundment: 17.5 Meters 84
Secchi Depth (± 0.1)
Time 4.8. Feet 2.4 Meters

	Chloroph	ıyll a	
(1 Meter belo	w surface	horizo	ontal sampler)
Time/4,53	Quantity	(ml)	Filtered
	1000		In Lab
Preservative		MgC	O ₃

True Color	
(1 Meter below surface horizontal sampler)	-
Time 14:53	

	Total	Phosphorus
(1 N	leter below su	rface horizontal sampler)
Time	14,53	Preservative
		H ₂ SO ₄

Total	Phosphorus
(1 Meter above bo	ottom horizontal sampler)
Time 1503	Preservative
	H₂SO ₄

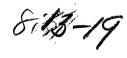
D.	O. and Tem	perature F	Profile
Depth	Time	D.O.	Temperature
(Meters)	-	(mg/L)	°C.
0.5 below	~		
surface			
1			
2			
3			
4			
5			.6
6			
7			
8			
0.5 above			***************************************
bottom			

*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.

Comments:



Danburg



*D.	O. and Te	mperature	Profile
Depth	Time	D.O.	Temperature
(Feet)		(mg/L)	° C
0.5 below	11 / 25	(()	200
surface *	14,52,28	5.47	25,3
1	14:52:55	5,64	25,2
2	14:53:19	5,66	24,9
3 0	14:53.45	5166	24.7
4	14:54:0	9 5,62	24.4
5	1431:44	15,33	24.1
6 6	14:5:21	5,08	23.8
7	14:54.13	4.83	23.7
8	14.1.48	4,72	23,4
9 6	14.57,19	4.59	23,6
10	14:57:55	446	23.5
11	14:58 50	4.45	23.5
12	4.5.04	4.38	13.5
13	1930	4.20	23.4
14 14;	59,49	4.08	23.4
15 15	110.28	4,04	23.4
16 15	101:35	3375	234
17 15	102.40	3.75	23,4
0 18 17:	5-150343	1,67	23.5
19	<u>.</u>		
20			
21			
22			
23			
24			
25			
0.5 above	1, -1, 2×4	2 89	2211
bottom	19.03.36	2,89	23,4

Appendix D – Danbury Hydroelectric Project Lab Reports and Chains of Custody

Cover Page

ANALYTICAL REPORT



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

Client: RWE			WWA Job #: 82237
Project:	Monitoring		
Date Received:	4/30/2019	Date Reported:	5/21/2019
Sample Number	Client Sample ID	Date Sampled	Sample Matrix
82237-001	Clam River Surface	04/30/19	Water
82237-002	Clam River Bottom	04/30/19	Water
82237-003	Danbury Surface	04/29/19	Water
82237-004	Danbury Bottom	04/29/19	Water

Cover Page..continued

ANALYTICAL REPORT



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

Client: RWE WWA Job #: 82237

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

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without the written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

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

ANALYTICAL REPORT



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

Client: RWE

WWA Job #: 82237

Project:

Monitoring

Date Received:

4/30/2019

Date Reported:

5/21/2019

Sample Results

Sample No. / ID / Description /	Matrix Result	Flags	Units	Date/Time	Method	MDL	Analyst	
82237-001 / Clam River Surfac	e / Water							
General Chemistry Paramete	ers							
Chlorophyll a	5.2		mg/m3	5/1/2019 14:50	10200H	NA	NA	CA
Color	40		CU	5/1/2019 11:40	2120B	5	5	AH
Total Phosphorus LL (t)	0.032	J	mg/L	5/15/2019 12:36	365.4	0.008	0.050	NK
82237-002 / Clam River Botton	n / Water							
General Chemistry Paramete	ers							
Total Phosphorus LL (t)	0.047	J	mg/L	5/15/2019 12:36	365.4	0.008	0.050	NK
82237-003 / Danbury Surface /	Water							
General Chemistry Parameter	ers							
Chlorophyll a	9.7		mg/m3	5/1/2019 14:50	10200H	NA	NA	CA
Color	25		CU	5/1/2019 11:40	2120B	5	5	AH
Total Phosphorus LL (t)	0.021	J	mg/L	5/15/2019 12:38	365.4	0.008	0.050	NK
82237-004 / Danbury Bottom /	Water							
General Chemistry Paramet	ers							
Total Phosphorus LL (t)	0.028	J	mg/L	5/15/2019 12:38	365.4	0.008	0.050	NK.





Client: RWE Number of coolers: 1 Project name: Monitoring Courier/shipper: WWA 1. Custody seals/original packing tape were intact (if applicable). 2. Samples are in good condition, i.e. not broken or leaking. 3. Samples were received within holding times. 4. Samples were received on ice (ice in direct contact with the samples). 5. Temperature of the samples was between 0-6°C. Temp.: -1 NOTE: Samples not between 0-6°C that are received at the laboratory on the day of sample collections do not require client notification. 6. Samples matched the Chain of Custody (COC). 7. Proper containers were used. 8. Samples were collected in White Water lab containers. 9. There is adequate sample volume for requested analyses and QC. 10. For water VOC samples, headspace is less than the size of a pea. 11. Samples are preserved to the proper pH. Sample bottles and preservation are noted in LIMS Sample Container Section. 12. The COC is signed. (either Sampler or Relinquished by) 13. Sub-sampling (SS) is required. Bottles created are noted in sample containers section of log-in form. 14. For Dissolved Analysis (when applicable), samples were filtered in the lab. 15. For soil VOCs, methanol preserved with methanol in the lab. 17. Client contact is necessary. Provide documentation below.	Project No.:		82237	Date logged in.: 4/30/2019	Login person's initials: E					
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☐ 16. For Soil VOCs, samples were preserved with methanol in the lab.	•	14. For D	issolved Anal	ysis (when applicable), samples	s were filtered in the lab.					
		15. For so	oil VOCs, met	thanol preserved samples were	received.					
☐ 17. Client contact is necessary. Provide documentation below.		16. For S	oil VOCs, san	uples were preserved with meth	nanol in the lab.					
		17. Clien	t contact is ne	cessary. Provide documentation	n below.					

COMMENTS/CORRECTIVE ACTION

CLIENT RESPONSE

Note: If hold time, volume, and received on ice or temperature criteria are not met when required by the method, results may not be able to be used for regulatory purposes. Check with your reporting agency for more information.

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Jay 5/2/19 Version 160504

Job # (WWA office use): \$2237 CHAIN-OF-CUSTODY RECORD

instructions provided by client or conditions of receipt noted by WWA lab staff. Also note any Jnless otherwise noted, drinking water report copies are sent to Packing: Ice 1/ Cooler 1/ REMARKS (Note any special Instructions to White Water MDEQ and Health Dept. Send my report by: residual chlorine.) email Web: white-water-associates.com mai Phone: (906) 822-7889, Fax -7977 Light | NSPS | Client | Other | UDD | D ASSOCIATES, INC. WHITE WATER ANALYSIS TYPE REQUESTED (Attach list if neeeded) Comments/Sample temp. on receipt: 429 River Lane, P.O. Box 27 そのともと Amasa, Michigan 49903 Time: > Date: 17 Indicate if more than one page of COC records used Date: CONTAINERS / PRESERVATIVES Va Thio upon arrival and indicate total number of Check off preservatives for each bottle bottles. WWA database contains bottle HOsN\oAnZ ИаОН PINK-CUSTOMER Ю CONTRACT / PO / PROJECT NAME / WSSN# HCI preservation details **EONH** Monitoring × H2SO4 euoN COUNTY OF LOCATION Other: Received by: Received by SAMPLE MATRIX llos CANARY - W/ SAMPLES EMAIL ADDRESS Sed, TELEPHONE suoeupA 7 \times Y 1.24 Time: Time: Drinking water Date: 7-3079 TIME 4-24-4 1332 am Riversurad 4-3619 1003 4-29-44 13.24 る。方式です Date: ZIP DATE STATE WHITE - RETURN W/ REPORT SAMPLER NAME (print first/last name) Containers for each sample may SAMPLE ID AND LOCATION am Riva Bottom lanburn Sur Race be combined on one line. Knowing Bottom SAMPLER'S SIGNATURE CLIENT NAME / BILL TO Relinquished by: Relinquished by: ADDRESS CIT

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Cover Page

ANALYTICAL REPORT



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

Client: RWE			WWA Job #: 84251
Project:	Monitoring		Market Control of the
Date Received:	7/25/2019	Date Reported:	8/27/2019
Sample Number	Client Sample ID	Date Sampled	Sample Matrix
84251-001	Clam River Surface	07/23/19	Water
84251-002	Clam River Bottom	07/23/19	Water
84251-003	Danbury Surface	07/23/19	Water
84251-004	Danbury Bottom	07/23/19	Water

Cover Page...continued





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

Client: RWE

WWA Job #: 84251

Comments (if any):

Key to Laboratory Flags:

- *: RPD/RSD 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.
- P: A manual peak selection or manual integration was performed to correct an erroneous software selection.
- N: For reporting results that are non-target analytes, when requested by client for Mass Spec reporting.
- T: Tentatively Identified Compound.

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

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without the written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

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:

DNR Lab Certification Number: 999971280

MI EGLE Certification Number: 9306 DoD-ELAP Accreditation Number: 65802

ISO/IEC 17025:2005 Accredited

ANALYTICAL REPORT



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

Client: RWE

WWA Job #: 84251

Project:

Monitoring

Date Received:

7/25/2019

General Chemistry Parameters

Total Phosphorus LL (t)

Date Reported:

8/27/2019

Sample Results										
Sample No. / ID / Description / Ma	ntrix Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst		
84251-001 / Clam River Surface / Water										
General Chemistry Parameters										
Chlorophyll a	36		mg/m3	7/25/2019 15:20	10200H	NA	NA	CA		
Color	25		CU	7/25/2019 13:00	2120B	5	5	GG		
Total Phosphorus LL (t)	0.057		mg/L	8/20/2019 12:36	365.4	0.008	0.050	NK		
84251-002 / Clam River Bottom /	Water									
General Chemistry Parameters										
Total Phosphorus LL (t)	0.058		mg/L	8/20/2019 12:38	365.4	0.008	0.050	NK		
84251-003 / Danbury Surface / V	Vater									
General Chemistry Parameters										
Chlorophyll a	3.5		mg/m3	7/25/2019 15:20	10200H	NA	NA	CA		
Color	15		CU	7/25/2019 13:00	2120B	5	5	GG		
Total Phosphorus LL (t)	0.045	J	mg/L	8/20/2019 12:39	365.4	0.008	0.050	NK		
84251-004 / Danbury Bottom / W	Vater									

mg/L

8/20/2019 12:40

365.4

0.044

0.008 0.050

NK

Login Checklist



Pro	ject No.:	84251	Date logged in.: 7/25/2019	Login person's initials: ER								
Clie	ent:	RWE		Number of coolers: 1								
Pro	ject name:	Monitoring		Courier/shipper: WWA								
V	1. Custody	seals/original	packing tape were intact (if ap	plicable).								
V	2. Samples are in good condition, i.e. not broken or leaking.											
V	3. Samples were received within holding times. NOTES on #4:											
V	4. Samples	s were receive	d on ice (in direct contact with t	he samples).								
V	5. Temperature of the samples was between 0-6°C. Temp.:											
	NOTE: Samples not between 0-6°C that are received at the laboratory on the day of sample collections do not require client notification.											
V	6. Samples matched the Chain of Custody (COC).											
V	7. Proper containers were used.											
✓	8. Samples	s were collecte	ed in White Water lab container	s.								
V	9. There is	s adequate san	nple volume for requested analy	ses and QC.								
	10. For wa	iter VOC sam	ples, headspace is less than the s	size of a pea.								
✓			ed to the proper pH. Sample bot Container Section.	ttles and preservation are								
✓	12. The C	OC is signed.	(either Sampler or Relinquished	by)								
		mpling (SS) is log-in form.	s required. Bottles created are n	oted in sample containers								
V	14. For Di	ssolved Analy	rsis (when applicable), samples v	vere filtered in the lab.								
	15. For so	il VOCs, meth	nanol preserved samples were re	ceived.								
	16. For So	oil VOCs, sam	ples were preserved with metha	nol in the lab.								
	17. Client contact is necessary. Provide documentation below.											
C	COMMENT	S/CORRECT	IVE ACTION									

CLIENT RESPONSE

Note: If hold time, volume, and received on ice or temperature criteria are not met when required by the method, results may not be able to be used for regulatory purposes. Check with your reporting agency for more information.

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91/201/201/201/201/201/201/201/201/201/20	Version 160504	WHITE WATER	, INC.	Phone: (906) 822-7889, Fax -7977 Web: white-water-associates.com		Instructions to White Water Send my report by:	email —— mail	Unless otherwise noted, drinking	MDEQ and Health Dept.	REMARKS (Note any special instructions provided by client or	conditions of receipt noted by WWA lab staff. Also note any residual chlorine.)													Packing: Ice Cooler		UPS□ FedEx□ USPS□ Client□ Other WW (A
		WA	ASSOCIATES,	one: (906 b: white-	ANALYSIS TYPE REQUESTED (Attach list if neeeded)																			sceipt:		lient□
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							Indicate if more than one page of COC records used	tte er of tte	VES	(oidT &N													Date:	Date:	
	8						Indicat one p	Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.	CONTAINERS / PRESERVATIVES	gOH	N\oAnZ															
	CHAIN-OF-CUSTODY RECORD				歩			es for e ate tota se conta	RESE		HOßN											_	_	_		MER
	/ RE				CONTRACT / PO / PROJECT NAME / WSSN#		P P	ervative nd indic databas etails.	RS/P		HCI HNO3													-		PINK - CUSTOMER
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					σ)		st nam S				Jay	اجتسا													7	W/ RE
	Job # (WWA office use):	CLIENT NAME / BILL TO	A 8 M	SS			SAMPLER NAME (print first/last name)	SIGNATUR		SAMPLE ID AND LOCATION	Containers for each sample may be combined on one line.	n Riversurface	am Riva Bottom	antourn Surface	Kinhury Bottom									Relinquished by:	Relinguished by:	WHITE - RETURN W/ REPORT
) # qof	CLIENT		ADDRESS	CITY		SAMPLE	SAMPLER'S		SAME	Contair be c	Clam	2 Clam		كنسب									Relinqui	Reling	

Cover Page

ANALYTICAL REPORT



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

Client: RWE		WWA Job #: 84706							
Project:	Monitoring		***************************************						
Date Received:	8/15/2019	Date Reported:	9/13/2019						
Sample Number	Client Sample ID	Date Sampled	Sample Matrix						
84706-001	Clam River Surface	08/13/19	Water						
84706-002	Clam River Bottom	08/13/19	Water						
84706-003	Danbury Surface	08/13/19	Water						
84706-004	Danbury Bottom	08/13/19	Water						

Cover Page..continued

ANALYTICAL REPORT



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Client: RWE

WWA Job #: 84706

Comments (if any):

Key to Laboratory Flags:

- *: RPD/RSD 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.
- P: A manual peak selection or manual integration was performed to correct an erroneous software selection.
- N: For reporting results that are non-target analytes, when requested by client for Mass Spec reporting.
- T: Tentatively Identified Compound.

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

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without the written approval of this laboratory. The Chain of Custody is attached.

This report satisfies the requirements of your project but has not been prepared to comply with NELAP reporting requirements.

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 EGLE Certification Number: 9306 DoD-ELAP Accreditation Number: 65802

ISO/IEC 17025:2005 Accredited

ANALYTICAL REPORT



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

Client: RWE

WWA Job #: 84706

Project:

Monitoring

Date Received:

8/15/2019

Date Reported:

9/13/2019

Sample Results										
Sample No. / ID / Description /	Matrix Result	Flags	Units	Date/Time	Method	MDL	MQL.	Analys		
84706-001 / Clam River Surfac	e / Water									
General Chemistry Paramete	ers									
Chlorophyll a	92		mg/m3	8/22/2019 15:10	10200H	NA.	NA	AH		
Color	45		CU	8/15/2019 13:45	2120B	5	5	AH		
Total Phosphorus LL (t)	0.090		mg/L	8/20/2019 13:20	365.4	0.008	0.050	NK		
84706-002 / Clam River Botton	1 / Water									
General Chemistry Paramete	ers									
Total Phosphorus LL (t)	0.065	M	mg/L	8/20/2019 13:22	365.4	0.008	0.050	NK		
84706-003 / Danbury Surface /	Water									
General Chemistry Paramete	ers									
Chlorophyll a	4.5		mg/m3	8/22/2019 15:10	10200H	NA	NA	AH		
Color	25		CU	8/15/2019 13:45	2120B	5	5	AH		
Total Phosphorus LL (t)	0.045	J	mg/L	8/20/2019 13:23	365.4	0.008	0.050	NK		
84706-004 / Danbury Bottom /	Water									
General Chemistry Paramet	ers									

Login Checklist



ject No.:	84706	Date logged in.: 8/15/2019	Login person's initials: ER								
ent:	RWE		Number of coolers: 1								
ject name:	Monitoring		Courier/shipper: WWA								
1. Custody	seals/origina	l packing tape were intact (if ap	plicable).								
✓ 2. Samples are in good condition, i.e. not broken or leaking.											
3. Samples were received within holding times. NOTES on #4:											
4. Samples were received on ice (in direct contact with the samples).											
✓ 5. Temperature of the samples was between 0-6°C. Temp.:											
	-		the laboratory on the day								
6. Samples matched the Chain of Custody (COC).											
7. Proper containers were used.											
8. Samples	s were collecte	ed in White Water lab container	·s.								
9. There is	s adequate sar	nple volume for requested analy	yses and QC.								
10. For wa	nter VOC sam	ples, headspace is less than the	size of a pea.								
	•		ttles and preservation are								
12. The C	OC is signed.	(either Sampler or Relinquished	l by)								
		s required. Bottles created are n	noted in sample containers								
14. For Di	ssolved Analy	rsis (when applicable), samples v	were filtered in the lab.								
15. For so	il VOCs, metl	nanol preserved samples were re	eceived.								
16. For So	il VOCs, sam	ples were preserved with metha	nol in the lab.								
17. Client	contact is nec	essary. Provide documentation	below.								
	ent: 1. Custody 2. Samples 3. Samples 4. Samples 5. Temper NOTE: Sa of sample 6. Samples 7. Proper 8. Samples 9. There is 10. For wa 11. Sample 12. The Co 13. Sub-sa section of 14. For Di 15. For so 16. For So	ent: RWE oject name: Monitoring 1. Custody seals/origina 2. Samples are in good of the season of	ent: RWE oject name: Monitoring 1. Custody seals/original packing tape were intact (if ap 2. Samples are in good condition, i.e. not broken or leak 3. Samples were received within holding times. 4. Samples were received on ice (in direct contact with the samples was between 0-6°C. Tem NOTE: Samples not between 0-6°C that are received at of sample collections do not require client notification. 6. Samples matched the Chain of Custody (COC). 7. Proper containers were used. 8. Samples were collected in White Water lab container. 9. There is adequate sample volume for requested analy. 10. For water VOC samples, headspace is less than the 11. Samples are preserved to the proper pH. Sample bounded in LIMS Sample Container Section. 12. The COC is signed. (either Sampler or Relinquished.). 13. Sub-sampling (SS) is required. Bottles created are received.								

COMMENTS/CORRECTIVE ACTION

#3. 190815 8:50ER color received past hold time

CLIENT RESPONSE

Note: If hold time, volume, and received on ice or temperature criteria are not met when required by the method, results may not be able to be used for regulatory purposes. Check with your reporting agency for more information.

20200227-5152 FERC 2/27/2020 11:13:44 PDF (Unofficial) AM JCUH8/10/19 160504 Version Unless otherwise noted, drinking instructions provided by client or Packing: Ice Cooler water report copies are sent to REMARKS (Note any special conditions of receipt noted by WWA lab staff. Also note any Instructions to White Water MDEQ and Health Dept. Send my report by: residual chlorine.) email Web: white-water-associates.com mail Phone: (906) 822-7889, Fax -7977 UPS□ FedEx□ USPS□ Client□ Other WW/A ASSOCIATES, INC. WHITE WATER ANALYSIS TYPE REQUESTED (Attach list if neeeded) Comments/Sample temp. on receipt: 429 River Lane, P.O. Box 27 Amasa, Michigan 49903 8 Time: lime: × × 8-11-19 Indicate if more than one page of COC records used Date: CONTAINERS / PRESERVATIVES upon arrival and indicate total number of oldT BN Check off preservatives for each bottle bottles. WWA database contains bottle ZnAc/NaOH CHAIN-OF-CUSTODY RECORD ИаОН PINK - CUSTOMER OF. CONTRACT / PO / PROJECT NAME / WSSN# HCI preservation details. ниоз Monitoring × H2SO4 Mone Other: COUNTY OF LOCATION Received by: Received by: SAMPLE MATRIX CANARY - WI SAMPLES lios **EMAIL ADDRESS** Sed. TELEPHONE Time: ۲ ⊁ snoenb∀ メ Time: Drinking water 21219 Job # (WWA office use): $\cancel{R} + \cancel{R} + \cancel{R} = \cancel{R} + \cancel{R} + \cancel{R} = \cancel{R} + \cancel{R} + \cancel{R} = \cancel{R} + \cancel{R} + \cancel{R} + \cancel{R} = \cancel{R} + \cancel{R}$ TIME 7:18 14.53 15:03 400 Date: IP) am Riversurad 8-13-17 DATE _ STATE WHITE - RETURN W/ REPORT ____ <u>ب</u> SAMPLER NAME (print first/last name) Containers for each sample may SAMPLE ID AND LOCATION am River Bottom lantourn Sour face Linbury Bottom be combined on one line. SAMPLEK'S SIGNATURE CLIENT NAME / BILL TO Relinguished by: Relinquished by: ADDRESS CITY.

RE: Danbury (P-9184) Clam River (P-9185) Flambeau Upper (P-2640) Flambeau Lower (P-2421) Pixley (P-2395) Crowley (P-2473) Winter (P-2064) Water Quality data spreadsheet

Laatsch, Cheryl - DNR < Cheryl. Laatsch@wisconsin.gov>

Mon 12/2/2019 9:45 AM

To: Brian Kreuscher < bkreuscher@rwehydro.com>

Thank you

We are committed to service excellence.

Visit our survey at http://dnr.wi.gov/customersurvey 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: Brian Kreuscher < bkreuscher@rwehydro.com>

Sent: Monday, December 02, 2019 9:35 AM

To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Nick Utrup <nick_utrup@fws.gov> Subject: Danbury (P-9184) Clam River (P-9185) Flambeau Upper (P-2640) Flambeau Lower (P-2421)

Pixley (P-2395) Crowley (P-2473) Winter (P-2064) Water Quality data spreadsheet

All,

In years past I had been asked for this Excel spreadsheet with water quality monitoring data. The attached spreadsheet has data for the following projects each in their own tab: Upper, Lower, Pixley, Crowley, Winter, Danbury and Clam River.

Thanks

Brian Kreuscher

Renewable World Energies

Regulatory & Compliance

855-994-9376 x230

Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Brian Kreuscher

 bkreuscher@rwehydro.com>

Tue 11/26/2019 6:59 PM

To: Cheryl Laatsch <cheryl.laatsch@wisconsin.gov>; Nick Utrup <nick_utrup@fws.gov>

2 attachments (3 MB)

Danbury Water Quality Report 2019_COMPLETE.pdf; Clam River Water Quality Report 2019_COMPLETE.pdf;

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

20200227-5152 FERC PDF (Unofficial) 2/27/2020 11:13:44 AM	
Document Content(s)	
20-02-27 BRK DNB 2019 WQ To FERC ALL.PDF1-3	9