Renewable World Energies

January 31, 2018

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 2017 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 2017 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. 2017 was the tenth year monitoring was conducted since the license was issued, but is the 6th year of submittal by RWE on the behalf of the Licensee.

Monitoring was conducted on April 12, July 19, and August 15, 2017. No unusual temperature or dissolved oxygen readings were observed in April or July, but in August the D.O. was below 5.0 mg/L at 25.5 feet. The draft report was sent to the agencies by an attachment to an email on November 17, 2017 for review and comment. The WI DNR did comment that they would like the new sampling location that has been used since 2012, to reflect that it changed in 2012. A note was added in Figure 1 to reflect this. The next scheduled monitoring event will be conducted in 2018.

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

Corporate Office
P.O. Box 264
100 S. State Street
Neshkoro, WI 54960
Phone: 855-99HYDRO
Fax: 920-293-4100
www.renewableworldenergies.com

Sincerely,
Renewable World Energies, LLC
Agent for Licensee

For Mr. Jason Kreuscher
Vice President, Operations

Attachment: Final Report 2017 Water Quality Monitoring Data
Correspondence

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

Final Report

2017 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

WHITE WATER ASSOCIATES, INC.

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

Phone: 906-822-7889

Summary Clam River Hydroelectric Project – FERC #9185

2017 marked the tenth 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 April 12, July 19, and August 15, 2017. This document contains all of the associated records for the 2017 monitoring along with summary figures and tables in five appendices: (1) Appendix A (Figs 1-4), (2) Appendix B (Tables 1-3), (3) Appendix C (sampling logs by date), (4) Appendix D (lab reports and chains of custody), and (5) Agency Comments.

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

Monitoring results for 2017 are shown in Table 1. No unusual Temperature (Figure 2) or Dissolved Oxygen (Figure 3) readings were observed in April or July but in August the D.O. was below 5.0 mg/L at 25.5 feet. The Secchi depths are shown in Figure 4.

In general, the weather (temperature and rainfall) during 2017 monitoring season appeared slightly warmer in May, June, and July, & August, with lower than normal precipitation in October, March, and September, and normal to high precipitation in the months of April, May, July, July, and August (Table 2).

Ice-Out occurred on the Clam River sometime during the week beginning April 3, 2017. The Ice-Out sampling event occurred on April 12, 2017. River flow, based on the Clam River Hydroelectric Project records, was approximately 229 cubic feet per second. Sampling occurred between 10:40 a.m. and 10:56 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 April 13, 2017. White Water Associates, Inc. issued a laboratory report on April 27, 2017. 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 322 cubic feet per second during the July 19, 2017 sampling event. Sampling occurred between 10:12 a.m. and 10:26 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 July 20, 2017. White Water Associates, Inc. issued a laboratory report on September 21, 2017. 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 184 cubic feet per second during the August 15, 2017 sampling event. Sampling occurred between 10:25 a.m. and 10:35 a.m. Samples were taken without incident. No unusual Temperature readings were observed. The D.O. went below 5.00 mg/L at 25.5 feet (4.63 mg/L). The 0.5 ft above bottom D.O. was 4.90 mg/L. Samples for laboratory analysis were delivered to White Water Associates, Inc. laboratory in Amasa, MI on

August 16, 2017. White Water Associates, Inc. issued a laboratory report on September 14, 2017. 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 2017 (Table 3) sampling results are as follows:

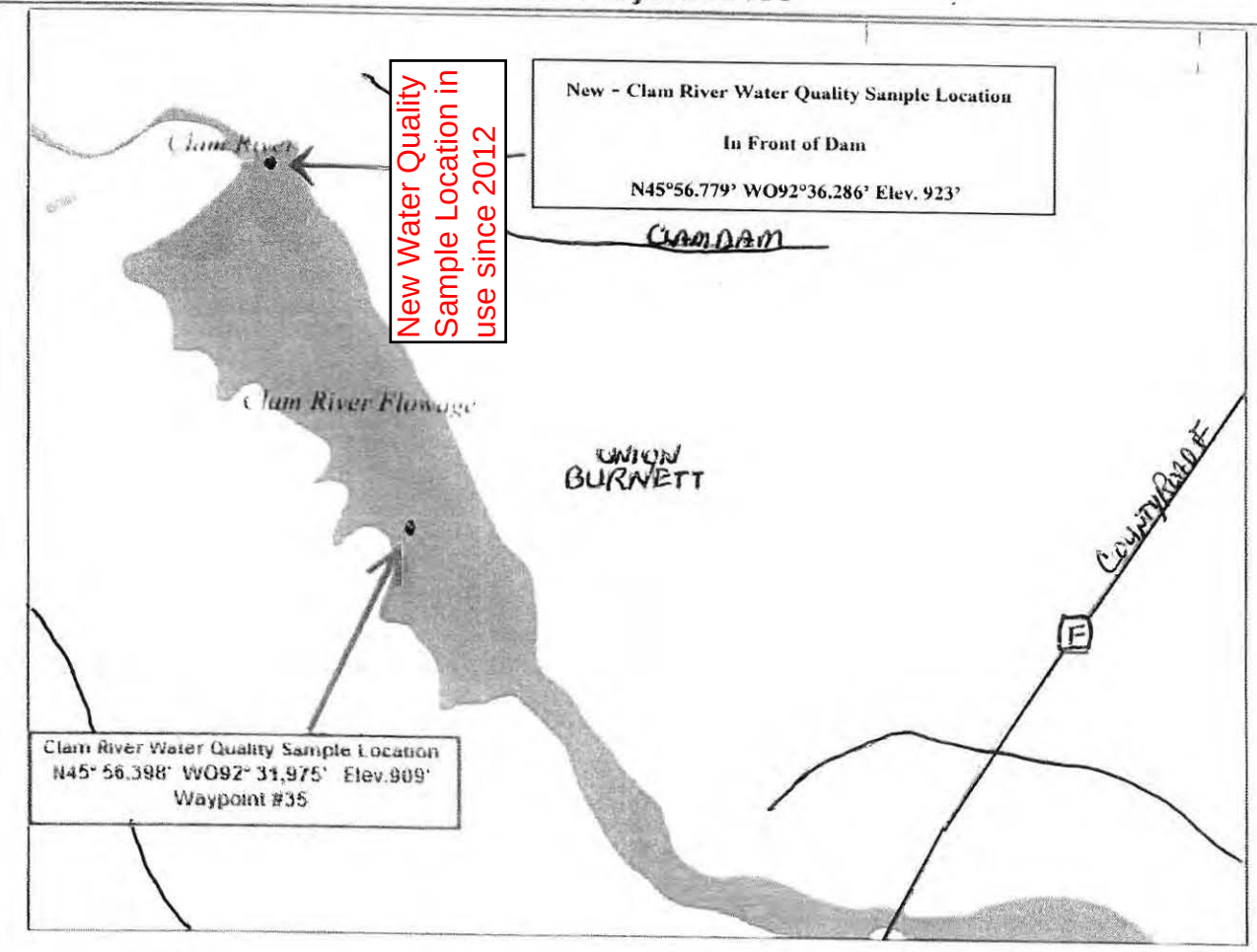
1. Water Clarity – Secchi Decreased Ice Out, Increased July and August
2. Chlorophyll a – Increased Ice Out, Decreased July and August
3. Color – Decreased Ice Out, July & August
4. Total Phosphorus – Decreased Ice Out, July & August
5. Overall, D.O. – Decreased Ice Out, July & August
6. Water Temperatures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

The next scheduled Water Quality Monitoring at the Clam River Hydroelectric Project is set to take place in 2018 beginning with the Ice-Out sampling event.

Appendix A – Clam River Hydroelectric Project Figures

Figure 1. Clam River Hydroelectric Project Map (next page)

Clam River Hydroelectric Project
Water Quality Sampling Location Map
FERC Project #9185



Legend

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

Scale: 1:8,967

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

Figure 2. Clam River Impoundment - FERC #9185
2017 Temperature Samples

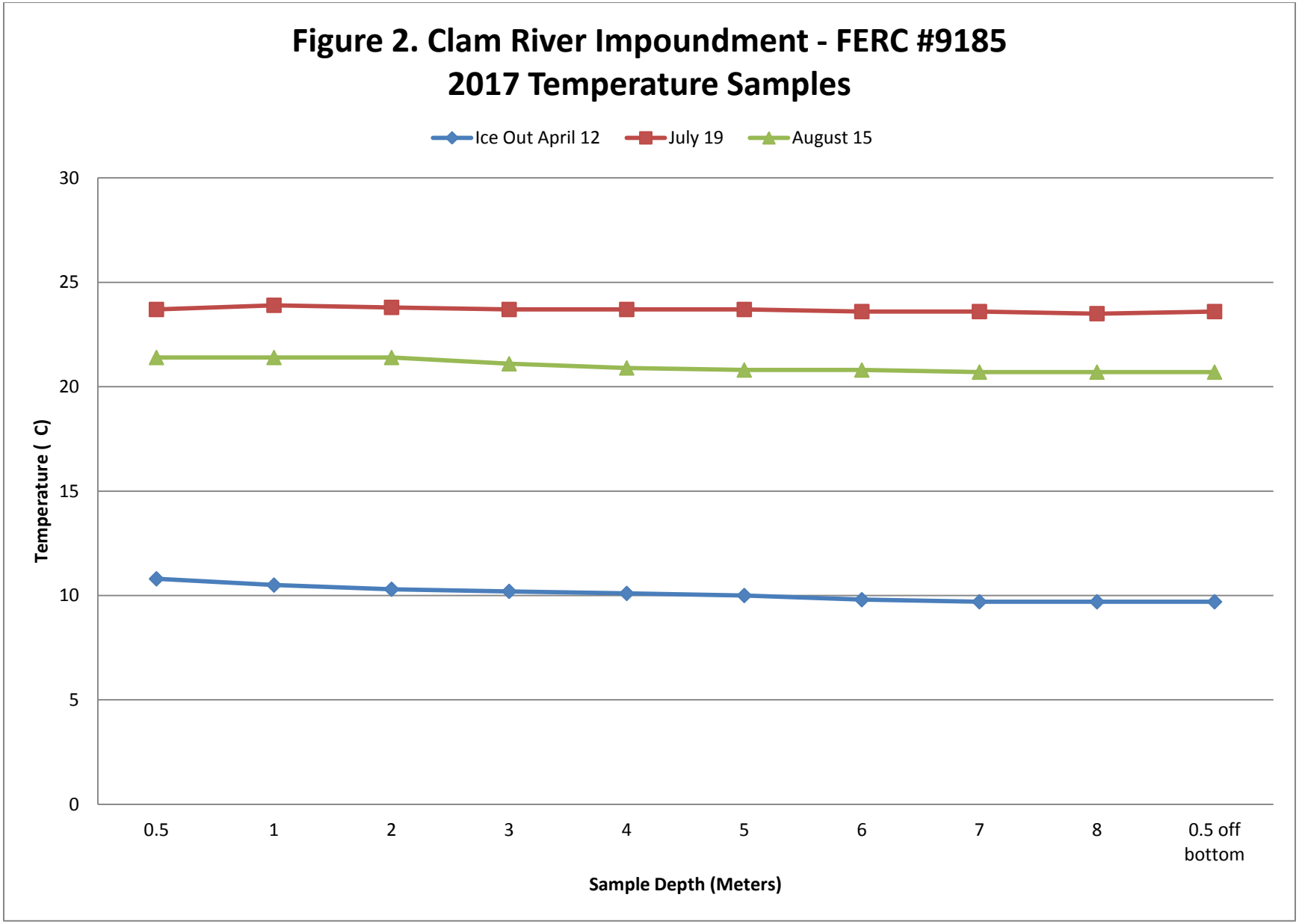
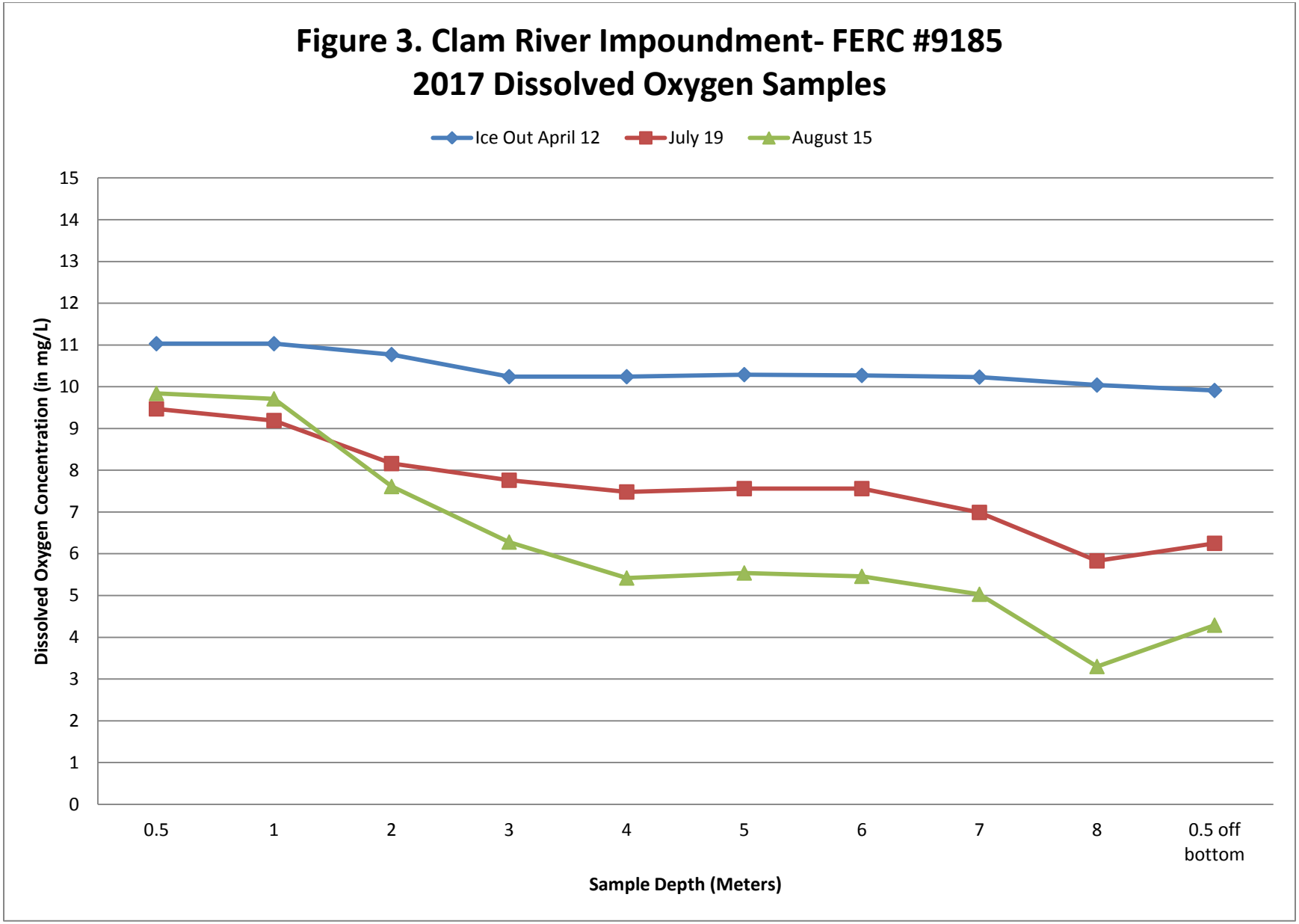


Figure 3. Clam River Impoundment- FERC #9185
2017 Dissolved Oxygen Samples



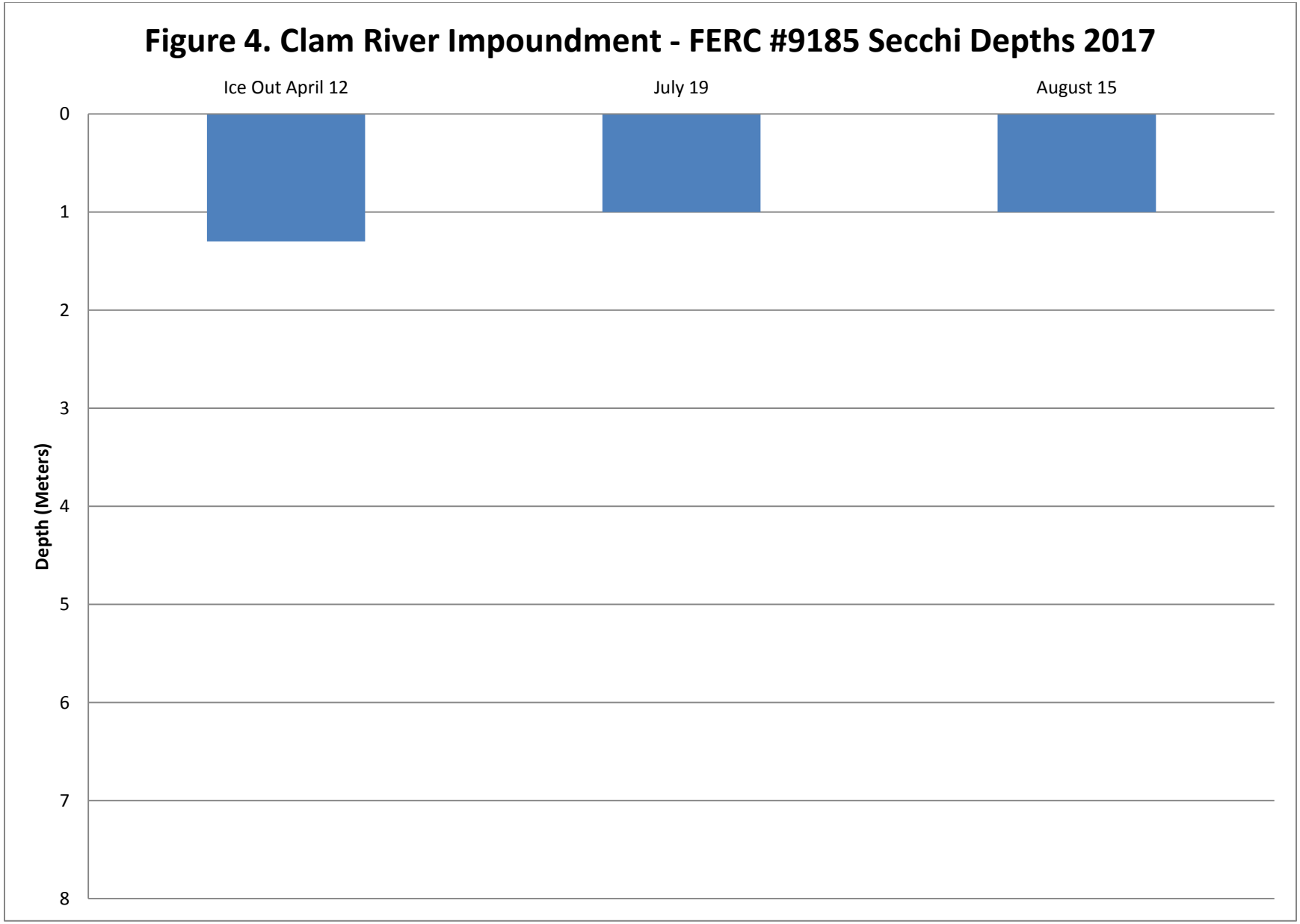


Figure 4. Clam River Impoundment - FERC #9185 Secchi Depths 2017
Ice Out April 12
July 19
August 15
0
1
2
3
4
5
6
7
8
Depth (Meters)

Appendix B – Clam River Hydroelectric Project Tables

Table 1. Clam River Hydroelectric Project – FERC Project # 9185: 2017 Water Quality Sampling Data

	Ice Out April 12, 2017			July 19, 2017			August 15, 2017		
Project Flow (c.f.s)	229			322			184		
Dissolved Oxygen	**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	10:40:52	11.03	10.8	10:14:23	9.47	23.7	10:26:43	9.84	21.4
1 meter below surface	10:41:32	11.03	10.5	10:15:34	9.19	23.9	10:27:29	9.71	21.4
2 meter below surface	10:42:27	10.77	10.3	10:17:04	8.16	23.8	10:28:23	7.61	21.4
3 meter below surface	10:43:27	10.24	10.2	10:18:22	7.76	23.7	10:30:42	6.28	21.1
4 meter below surface	10:44:08	10.24	10.1	10:19:04	7.48	23.7	10:31:39	5.42	20.9
5 meter below surface	10:45:12	10.29	10.0	10:19:45	7.56	23.7	10:32:35	5.54	20.8
6 meter below surface	10:46:33	10.27	9.8	10:20:18	7.56	23.6	10:33:10	5.46	20.8
7 meter below surface	10:47:09	10.23	9.7	10:20:57	6.99	23.6	10:33:51	5.03	20.7
8 meter below surface	10:48:09	10.04	9.7	10:22:05	5.83	23.5	10:34:46	3.30	20.7
0.5 meter above bottom	10:49:34	9.91	9.7	10:23:57	6.25	23.6	10:35:40	4.29	20.7
Secchi Disk	**Time**	**Depth (m)**		**Time**	**Depth (m)**		**Time**	**Depth (m)**	
Meters below surface	10:56	1.3		10:26	1		10:34	1	
Chlorophyll *a*	**Time**	**µg/L**		**Time**	**µg/L**		**Time**	**µg/L**	
1 meter below surface	10:46	15		10:15	15		10:28	11	
Color (True)	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**	**Time**	**C.P.U. Units**	**LOD**
1 meter below surface	10:48	10	5*	10:15	25	5*	10:28	20	5*
Total Phosphorus	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**	**Time**	**mg/L**	**LOD**
1 meter below surface	10:48	0.024	0.008*	10:15	0.046	0.008*	10:28	0.034	0.008*
1 meter above bottom	10:43	0.025	0.008*	10:18	0.032	0.008*	10:26	0.034	0.008*
*Considered Method Detection Limit N/A = Not Applicable									

Table 2. 2016/17 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 - 16	74	30	47.6	4.4	531	678	1.55	Trace	2.85	75
November - 16	70	10	40.2	11.4	735	1088	2.60	8.1	2.09	78
December - 16	39	-21	15.9	1.1	1512	1556	2.07	21.3	1.21	79
January – 17	45	-22	16.0	5.8	1511	1699	1.16	15.5	0.96	78
February – 17	52	-11	22.5	7.4	1185	1399	1.80	14.1	0.81	73
March – 17	59	-29	26.3	0.4	1193	1210	1.05	5.3	1.49	67
April – 17	70	23	42.2	2.6	678	762	3.02	1.9	2.43	68
May – 17	75	32	50.3	-1.1	446	426	4.11	0.8	3.23	68
June – 17	88	18	60.9	0.8	131	179	5.21	0.00	4.23	71
July – 17	86	48	65.3	-0.5	53	63	4.11	0.00	3.85	77
August – 17	82	46	61.5	-2.8	117	86	7.23	0.00	3.70	79
September - 17	83	37	58.6	3.0	212	298	3.55	0.00	4.11	81

Source: NOAA/Duluth, MN

Table 3. Clam River Project Sampling Comparison Table: 2011 Thru Current Year										
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 mg/L**	**Above Bottom mg/L**	**mg/L**	**mg/L**	**° C**	**° C**
2011	April	0.87	17.00	40.00	0.073	0.066	11.58	11.88	9.30	9.40
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
Minimum	March/April/June	0.80	8.60	10.00	0.024	0.025	8.45	9.40	3.90	4.80
Maximum	March/April/June	1.50	17.00	70.00	0.073	0.069	11.72	15.68	11.50	14.40
Average	March/April/June	1.11	13.51	40.71	0.047	0.047	10.37	12.02	9.14	11.03
2011	July	0.70	62.00	80.00	0.110	0.083	5.11	14.32	25.20	27.10
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
Minimum	July	0.70	12.00	25.00	0.033	0.043	0.04	7.22	20.40	22.50
Maximum	July	1.20	62.00	80.00	0.110	0.083	7.48	14.32	25.20	28.70
Average	July	0.97	26.71	48.57	0.058	0.059	3.88	10.98	23.43	25.14
2011	August	0.90	34.00	100.00	0.061	0.066	2.13	10.35	21.60	22.90
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
Minimum	August	0.50	11.00	20.00	0.110	0.034	0.16	9.84	20.40	21.40
Maximum	August	1.00	120.00	100.00	0.110	0.098	5.50	16.91	22.80	25.30
Average	August	0.70	50.14	57.86	0.068	0.062	3.54	12.48	21.71	23.26

*no sample taken

Appendix C – Clam River Impoundment Project Sampling Logs

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Clam River

Hydroelectric Project – FERC # 9185

Date: 4-12-2017

Pre-Sampling Data:

HWL 898.68 TWL 896.380 CFS 229

Sample Location: 1162

N45° 36.779' W092° 36.286'

Performed by: Ashini T Plummer

Time: 10:40 Barometer: 30.3

Air Temp: 47°F Wind Speed: SE 4 mph

Sky Conditions: 90 Clouds

Precipitation within Last 24 Hours: 0

D.O. Meter Calibration:

Instrument Model Used: HQ40D

Were the batteries changed? ☐ Yes ☒ No

If yes, when were they changed: _____

Battery Status: 95 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 8.5 Meters

Secchi Depth (± 0.1)		
Time 10:56	4.4 Feet	1.3 Meters

Chlorophyll *a* * (1 Meter below surface horizontal sampler)		
Time	Quantity (ml)	Filtered
10:48	1000	In Lab
Preservative	$MgCO_3$	

True Color (1 Meter below surface horizontal sampler)
Time 10:48

Total Phosphorus (1 Meter below surface horizontal sampler)	
Time 10:48	Preservative
	H_2SO_4

Total Phosphorus (1 Meter above bottom horizontal sampler)	
Time 10:43	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	10:40:52	11.03	10.8
1	10:41:32	11.03	10.5
2	10:42:27	10.77	10.3
3	10:43:27	10.24	10.2
4	10:44:08	10.24	10.1
5	10:45:12	10.29	10.0
6	10:46.33	10.27	9.8
7	10:47.09	10.23	9.7
8	10:48:09	10.04	9.7
0.5 above bottom	10:49:34	9.91	9.7

*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.

Comments:

2 Loons

3 Eagles

5 Common Mergansers

2 Wood Ducks

WHITE WATER ASSOCIATES, INC.

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Clam River

Hydroelectric Project – FERC # 9185

Date: 7-19-17

Pre-Sampling Data:

HWL 898.68 TWG 864.20 CFS 322

Sample Location: N45° 56.779'
W092° 36.286'

Performed by:
Stine Haag

Time: 10:12 Barometer: 30.1

Air Temp: 79 °C °F Wind Speed: SE 5 mph

Sky Conditions: Clear

Precipitation within Last 24 Hours: no

D.O. Meter Calibration:

Instrument Model Used: HQ40D

Were the batteries changed? ☐ Yes ☒ No

If yes, when were they changed: _____

Battery Status: 75% % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 7.5 Meters

Secchi Depth (± 0.1)				
Time	10:26	Feet	1	(Meters)

Comments:

Chlorophyll *a* * (1 Meter below surface horizontal sampler)		
Time	Quantity (ml)	Filtered
10:15	1000	In Lab
Preservative	$MgCO_3$	

True Color (1 Meter below surface horizontal sampler)
Time 10:15

Total Phosphorus (1 Meter below surface horizontal sampler)	
Time 10:15	Preservative
	H_2SO_4

Total Phosphorus (1 Meter above bottom horizontal sampler)	
Time 10:18	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	10:14:23	9.47	23.7
1	10:15:34	9.19	23.9
2	10:17:04	8.16	23.8
3	10:18:22	7.76	23.7
4	10:19:04	7.48	23.7
5	10:19:45	7.56	23.7
6	10:20:18	7.56	23.6
7	10:20:57	6.99	23.6
8 7.5	10:22:05	5.83	23.5
0.5 above bottom	10:23:57	6.25	23.6

*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.

WHITE WATER ASSOCIATES, INC.

IMPOUNDMENT SAMPLING LOG

Water Quality Study Location Clam River

Hydroelectric Project – FERC # 9185

Date: 8-15-17

Pre-Sampling Data:

HWL 898.70 TWL 863.40 CFS 184

Sample Location: N45° 9.779
W092° 32.286'

Performed by: Stine Haag

Time: 10:25 Barometer: 30

Air Temp 64 °F Wind Speed: 0 mph

Sky Conditions: 100 clouds

Precipitation within Last 24 Hours: yes

D.O. Meter Calibration:

Instrument Model Used: HQ40D

Were the batteries changed? ☐ Yes ☒ No

If yes, when were they changed: _____

Battery Status: 75 % Charge

Calibration Method: Factory

Sampling Depth Profile: Measured depth to bottom of impoundment: 7.5 Meters

Secchi Depth (± 0.1)		
Time 10:34	Feet /	Meters

Chlorophyll *a* * (1 Meter below surface horizontal sampler)		
Time 10:28	Quantity (ml)	Filtered
	1000	In Lab
Preservative	$MgCO_3$	

True Color (1 Meter below surface horizontal sampler)
Time 10:28

Total Phosphorus (1 Meter below surface horizontal sampler)	
Time 10:28	Preservative
	H_2SO_4

Total Phosphorus (1 Meter above bottom horizontal sampler)	
Time 10:26	Preservative
	H_2SO_4

D.O. and Temperature Profile			
Depth (Meters)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	10:26:43	9.89	21.4
1	10:27:29	9.71	21.4
2	10:28:23	8.61	21.4
3	10:30:42	6.28	21.1
4	10:31:39	5.42	20.9
5	10:32:35	5.54	20.8
6	10:33:10	5.46	20.8
7	10:33:51	5.03	20.7
~~8~~ 7.5	10:34:46	3.30	20.7
0.5 above bottom	10:35:40	4.29	20.7

*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.

Comments:
One Bald Eagle, Blue Heron, Bald eagle perched tree
Red Tail Fox at Landing
One painted turtle

WHITE WATER ASSOCIATES, INC.

Clam River
8-15-2017

*D.O. and Temperature Profile			
Depth (Feet)	Time	D.O. (mg/L)	Temperature °C
0.5 below surface	10:37.08	9.72	21.7
1	10:37.52	9.89	21.6
2	10:38.18	9.86	21.6
3	10:38.42	9.78	21.6
4	10:39.50	8.27	21.5
5	10:40.19	8.34	21.5
6	10:41.08	8.53	21.5
7	10:42.39	7.15	21.4
8	10:43.16	7.39	21.5
9	10:44.58	6.31	21.4
10	10:46.20	5.53	21.2
11	10:46.44	5.78	21.0
12	10:47.25	5.78	21.0
13	10:48.05	5.07	20.9
14	10:48.29	5.13	20.9
15	10:49.06	5.20	20.4
16	10:49.40	5.06	20.2
17	10:50.37	5.02	20.8
18	10:51.13	5.16	20.8
19	10:51.47	5.31	20.8
20	10:52.08	5.34	20.7
21	10:52.35	5.24	20.7
22	10:53.17	5.15	20.7
23	10:53.42	5.09	20.7
24	10:54.04	5.12	20.7
25	10:54.29	5.05	20.7
~~0.5 above bottom~~	10:55.58	4.63	20.7

25.5 feet

a little above Bottom 10:56.32 4.90 20.7

WHITE WATER ASSOCIATES, INC.

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

ANALYTICAL REPORT

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

Cover Page

Client: RWE **WWA Job #:** 68748

Project: Monitoring

Date Received: 4/14/2017 **Date Reported:** 4/27/2017

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
68748-001	Clam River	04/12/17	Water
68748-002	Clam River	04/12/17	Water
68748-003	Danbury	04/12/17	Water
68748-004	Danbury	04/12/17	Water

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

Cover Page..continued

Client: RWE **WWA Job #:** 68748

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: Bobby J. Deems

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

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.

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

Client: RWE **WWA Job #:** 68748

Project: Monitoring

Date Received: 4/14/2017 **Date Reported:** 5/5/2017

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date	Method	MDL	MQL
68748-001 / Clam River / Surface / Water							
General Chemistry Parameters							
chlorophyll a	15		mg/m3	4/20/2017	10200H	NA	NA
Color	10		CU	4/14/2017	2120B	5	5
Total Phosphorus LL (t)	0.024	J	mg/L	4/19/2017	365.4	0.008	0.050
68748-002 / Clam River / Bottom / Water							
General Chemistry Parameters							
Total Phosphorus LL (t)	0.025	J	mg/L	4/19/2017	365.4	0.008	0.050
68748-003 / Danbury / Surface / Water							
General Chemistry Parameters							
chlorophyll a	7.1		mg/m3	4/20/2017	10200H	NA	NA
Color	10		CU	4/14/2017	2120B	5	5
Total Phosphorus LL (t)	0.010	J	mg/L	4/19/2017	365.4	0.008	0.050
68748-004 / Danbury / Bottom / Water							
General Chemistry Parameters							
Total Phosphorus LL (t)	0.012	J	mg/L	4/19/2017	365.4	0.008	0.050

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)

Version 160504

Job # (WWA office use): 68748

CHAIN-OF-CUSTODY RECORD

WHITE WATER ASSOCIATES, INC.

429 River Lane, P.O. Box 27
Amasa, Michigan 49903
Phone: (906) 822-7889, Fax -7977
Web: white-water-associates.com

CLIENT NAME / BILL TO	EMAIL ADDRESS
RWE	
ADDRESS	TELEPHONE
CITY / STATE / ZIP	CONTRACT / PO / PROJECT NAME / WSSN#
	Monitoring
SAMPLER NAME (print first/last name)	COUNTY OF LOCATION / PAGE (Indicate if more than one page of COC records used)
Angie Stine	PAGE 1 OF 1
SAMPLER'S SIGNATURE	Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.

Instructions to White Water
Send my report by:
____ email
____ mail

Unless otherwise noted, drinking water report copies are sent to 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.)

	SAMPLE ID AND LOCATION (Containers for each sample may be combined on one line.)	DATE	TIME	SAMPLE MATRIX: Drinking water	Aqueous	Sed.	Soil	Other:	CONTAINERS / PRESERVATIVES: None	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	ANALYSIS TYPE REQUESTED: Chl a (mg/m3)	TPhos	Color
1	Clam River Surface	4-12-17	10:46		X				X	X						3	X	X	X
2	Clam River Bottom	4-12-17	10:43		"				np	"						1		X	
3	Danbury Surface	4-12-17	12:48		"				X	"						3	X	X	X
4	Danbury bottom	4-12-17	12:42		"				np	"						1		X	
					(1)				(1)										

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Comments/Sample temp. on receipt:	Packing: Ice / Cooler
						2.7	
Relinquished by:	Date: 4-4-17	Time: 5:30 pm	Received by: (1)	Date: 4-4-17	Time: 1052		

WHITE - RETURN W/ REPORT CANARY - W/ SAMPLES PINK - CUSTOMER

UPS☐ FedEx☐ USPS☐ Client☐ Other WWA

ANALYTICAL REPORT

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

Cover Page

Client: RWE **WWA Job #:** 70827

Project: Monitoring

Date Received: 7/21/2017 **Date Reported:** 9/21/2017

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
70827-001	Clam River	07/19/17	Water
70827-002	Clam River	07/19/17	Water
70827-003	Danbury	07/19/17	Water
70827-004	Danbury	07/19/17	Water

ANALYTICAL REPORT

WHITE WATER ASSOCIATES, INC.

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

Cover Page..continued

Client: RWE **WWA Job #:** 70827

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

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

Client: RWE **WWA Job #:** 70827

Project: Monitoring

Date Received: 7/21/2017 **Date Reported:** 9/21/2017

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
70827-001 / Clam River / Surface / Water								
General Chemistry Parameters								
chlorophyll a	15		mg/m3	8/10/2017 14:30	10200H	NA	NA	WS
Color	25		CU	7/21/2017 14:00	2120B	5	5	AH
Total Phosphorus LL (t)	0.033	J	mg/L	8/1/2017 10:28	365.4	0.008	0.050	NK
70827-002 / Clam River / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.075		mg/L	8/1/2017 10:29	365.4	0.008	0.050	NK
70827-003 / Danbury / Surface / Water								
General Chemistry Parameters								
chlorophyll a	6.3		mg/m3	8/10/2017 14:30	10200H	NA	NA	WS
Color	20		CU	7/21/2017 14:00	2120B	5	5	AH
Total Phosphorus LL (t)	0.046	J	mg/L	8/1/2017 10:30	365.4	0.008	0.050	NK
70827-004 / Danbury / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.032	J	mg/L	8/1/2017 10:30	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)

Version 160504

Job # (WWA office use): 70827

CHAIN-OF-CUSTODY RECORD

WHITE WATER ASSOCIATES, INC.

429 River Lane, P.O. Box 27
Amasa, Michigan 49903
Phone: (906) 822-7889, Fax -7977
Web: white-water-associates.com

CLIENT NAME / BILL TO	EMAIL ADDRESS
RWE	
ADDRESS	TELEPHONE
CITY / STATE / ZIP	CONTRACT / PO / PROJECT NAME / WSSN#
	Monitoring
SAMPLER NAME (print first/last name)	COUNTY OF LOCATION / PAGE 1 OF 3 (Indicate if more than one page of COC records used)
SAMPLER'S SIGNATURE	

Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.

SAMPLE ID AND LOCATION (Containers for each sample may be combined on one line.)	DATE	TIME	SAMPLE MATRIX: Drinking water	Aqueous	Sed.	Soil	Other:	CONTAINERS / PRESERVATIVES: None	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	ANALYSIS TYPE REQUESTED: Chl a (uncorr)	Tphos	Color
1 Clam River Surface	7-19-17	10:15		X				X	X						3	X	X	X
2 Clam River Bottom	"	10:18													1		X	
3 Danbury Surface	"	12:43						X							3	X	X	X
4 Danbury Bottom	"	12:49													1		X	

Instructions to White Water
Send my report by:
____ email
____ mail

Unless otherwise noted, drinking water report copies are sent to 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.)

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	7-2017	5:03 p.m.			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
				7-21-17	1045

Comments/Sample temp. on receipt: 3.5

Packing: Ice ✓ Cooler ____

WHITE - RETURN W/ REPORT CANARY - W/ SAMPLES PINK - CUSTOMER

UPS☐ FedEx☐ USPS☐ Client☐ Other WWA

ANALYTICAL REPORT

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

Cover Page

Client: RWE **WWA Job #:** 71380

Project: Monitoring

Date Received: 8/17/2017 **Date Reported:** 9/14/2017

Sample Number	Client Sample ID	Date Sampled	Sample Matrix
71380-001	Clam River	08/15/17	Water
71380-002	Clam River	08/15/17	Water
71380-003	Danbury	08/15/17	Water
71380-004	Danbury	08/15/17	Water

ANALYTICAL REPORT

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

Cover Page..continued

Client: RWE **WWA Job #:** 71380

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: Teresa L. Haag

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

ANALYTICAL REPORT

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

Client: RWE **WWA Job #:** 71380

Project: Monitoring

Date Received: 8/17/2017 **Date Reported:** 9/14/2017

Sample Results

Sample No. / ID / Description / Matrix	Result	Flags	Units	Date/Time	Method	MDL	MQL	Analyst
71380-001 / Clam River / Surface / Water								
General Chemistry Parameters								
chlorophyll a	11		mg/m3	9/7/2017 10:00	10200H	NA	NA	WS
Color	20	H	CU	8/17/2017 11:40	2120B	5	5	AH
Total Phosphorus LL (t)	0.034	J	mg/L	8/18/2017 11:48	365.4	0.008	0.050	NK
71380-002 / Clam River / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.034	J	mg/L	8/18/2017 11:49	365.4	0.008	0.050	NK
71380-003 / Danbury / Surface / Water								
General Chemistry Parameters								
chlorophyll a	3.8		mg/m3	9/7/2017 10:00	10200H	NA	NA	WS
Color	15		CU	8/17/2017 11:40	2120B	5	5	AH
Total Phosphorus LL (t)	0.029	J	mg/L	8/18/2017 11:50	365.4	0.008	0.050	NK
71380-004 / Danbury / Bottom / Water								
General Chemistry Parameters								
Total Phosphorus LL (t)	0.027	J	mg/L	8/18/2017 11:50	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)

JGuth 8/18/17
Version 160504

Job # (WWA office use): 71380

CHAIN-OF-CUSTODY RECORD

WHITE WATER ASSOCIATES, INC.

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

Phone: (906) 822-7889, Fax -7977
Web: white-water-associates.com

CLIENT NAME / BILL TO	EMAIL ADDRESS
RWE	
ADDRESS	TELEPHONE
CITY / STATE / ZIP	CONTRACT / PO / PROJECT NAME / WSSN#
	Monitoring
SAMPLER NAME (print first/last name): Angie Stine	COUNTY OF LOCATION: J — PAGE 1 OF 1 (Indicate if more than one page of COC records used)
SAMPLER'S SIGNATURE: Angie Stine	Check off preservatives for each bottle upon arrival and indicate total number of bottles. WWA database contains bottle preservation details.

ANALYSIS TYPE REQUESTED (Attach list if neeeded)

Instructions to White Water
Send my report by:
____ email
____ mail

Unless otherwise noted, drinking water report copies are sent to 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.)

	SAMPLE ID AND LOCATION (Containers for each sample may be combined on one line.)	DATE	TIME	SAMPLE MATRIX: Drinking water	Aqueous	Sed.	Soil	Other:	CONTAINERS / PRESERVATIVES: None	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Na Thio	Total Number of Containers	Chl a	TPhos	Color
1	Clam River Surface	8-15-17	10:28		X				X	X						3	X	X	X
2	" Bottom	"	10:26						two							1		X	
3	Duboisy Surface	"	12:54						X							3	X	X	X
4	" Bottom	"	12:56						two							1		X	
									①										

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	8-16-17	16:47		8-17-17	830

Comments/Sample temp. on receipt: 1

Packing: Ice ✓
Cooler ✓

WHITE - RETURN W/ REPORT CANARY - W/ SAMPLES PINK - CUSTOMER

UPS☐ FedEx☐ USPS☐ Client☐ Other WWA

Appendix E – Agency Comments

From: Laatsch, Cheryl - DNR
To: Brian Kreuscher;
Subject: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports
Date: Tuesday, December 05, 2017 3:55:23 PM
Attachments: image001.gif
image002.gif
image003.gif
image004.gif
image005.gif
image006.gif

See the comments below.

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

dnr.wi.gov

From: Roesler, Craig P - DNR
Sent: Friday, December 01, 2017 3:11 PM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Toshner, Pamela J - DNR <Pamela.Toshner@wisconsin.gov>
Subject: RE: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

In the Clam River document, figure 1 shows a "new" sampling location and a second sampling location (the old one). The sampling location was changed a few years ago at our request. It would be good to indicate in figure 1 the year that sampling switched over to the new station.

From: Laatsch, Cheryl - DNR
Sent: Monday, November 27, 2017 12:33 PM

To: Roesler, Craig P - DNR <Craig.Roesler@wisconsin.gov>; Toshner, Pamela J - DNR <Pamela.Toshner@wisconsin.gov>
Subject: FW: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports

Hi folks – here are the draft WQ reports for Danbury and Clam River FERC projects. Please review and let me know if you have any questions, concerns, or recommendations for changes to sampling. The final reports will be sent to CO for entry into the SWIMS database.

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

dnr.wi.gov

From: Brian Kreuscher [mailto:bkreuscher@rwehydro.com]
Sent: Friday, November 17, 2017 8:53 AM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; Nick Utrup <nick_utrup@fws.gov>
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 30 days for FERC submittal.

Thanks

Brian Kreuscher

Renewable World Energies
Regulatory & Compliance
855-944-9376 x230

Brian Kreuscher

From: Brian Kreuscher
Sent: Friday, November 17, 2017 8:53 AM
To: Cheryl Laatsch; Nick Utrup
Subject: Danbury (P-9184) Clam River (P-9185) Draft Water Quality Reports
Attachments: Draft Report 2017 Danbury Final WQ-Complete.pdf; Draft Report 2017 Clam River Final WQ-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 30 days for FERC submittal.

Thanks
Brian Kreuscher
Renewable World Energies
Regulatory & Compliance
855-944-9376 x230

Brian Kreuscher

From: Brian Kreuscher
Sent: Friday, November 17, 2017 3:59 PM
To: Cheryl Laatsch; Nick Utrup; Sue Reinecke; Paul Strong; Dale Higgins
Subject: 2017 Draft Water Quality Report
Attachments: Draft Report 2017 Danbury Final WQ-Complete.pdf; Draft Report 2017 Flambeau Lower Final WQ-Complete.pdf; Draft Report 2017 Flambeau Upper Final WQ-Complete.pdf; Draft Report 2017 Pixley FInal WQ-Complete.pdf; Draft Report 2017 Winter Final WQ-Complete.pdf; Draft Report 2017 Clam River Final WQ-Complete.pdf; Draft Report 2017 Crowley Final WQ-Complete.pdf

All,
In previous emails I said we need comments within 30 days for the FERC submittal. Correction, we are to allow 60 days for you to comment on the Water Quality Reports before the FERC submittal is required on these projects:

Winter (P-2064)

Clam River (P-9185)
Danbury (P-9184)
Flambeau Upper (P-2640)
Flambeau Lower (P-2421)
Pixley (P-2395)
Crowley (P-2473)

Sorry for the confusion, I have re-attached all reports noted for ease.

Thanks
Brian Kreuscher
Renewable World Energies
Regulatory & Compliance
855-944-9376 x230