

DEEP CREEK HYDROELECTRIC STATION  
MARYLAND DEPARTMENT of the ENVIRONMENT  
WATER APPROPRIATION  
PERMIT NO. GA92S009 (03)  
GARRETT COUNTY, MARYLAND

**2003 ANNUAL REPORT**

January 2004

BY

RELIANT ENERGY MARYLAND HOLDINGS, LLC

**DEEP CREEK HYDROELECTRIC STATION  
MDE WATER APPROPRIATION PERMIT NO. GA92S009 (03)  
ANNUAL REPORT for 2003**

**TABLE OF CONTENTS**

<b>SECTION</b>	<b>PAGE</b>
1.0 SUMMARY .....	- 1 -
1.1 LAKE LEVEL MONITORING .....	- 1 -
1.2 TEMPERATURE MONITORING .....	- 3 -
1.3 MINIMUM FLOW RELEASE MONITORING .....	- 3 -
1.4 DISSOLVED OXYGEN (DO) MONITORING .....	- 3 -
1.5 RELEASES UNSUITABLE FOR WHITEWATER RECREATION ...	- 4 -
1.6 ZEBRA MUSSEL MONITORING .....	- 4 -

**APPENDICES**

APPENDIX A -- LAKE LEVEL DATA AND PLOT

APPENDIX B -- TEMPERATURE MONITORING AND RELEASE REPORTS

APPENDIX C -- FLOW BYPASS OPERATION RECORD

APPENDIX D -- RECORD OF DISSOLVED OXYGEN MONITORING

**DEEP CREEK HYDROELECTRIC STATION**  
**MDE WATER APPROPRIATION PERMIT NO. GA92S009 (03)**  
**ANNUAL REPORT for 2003**

**1.0 SUMMARY**

Reliant Energy Maryland Holdings, LLC (Permittee) holds Water Appropriation Permit GA92S009(03) issued by the Maryland Department of the Environment (Department). Permit GA92S009(03) provides for the continued operation of the Deep Creek Hydroelectric Station.

Permit Condition 23 requires the Permittee to submit an annual report to the Department, including data and information as specified in Permit Conditions 15 – 19 and 21.

**1.1 LAKE LEVEL MONITORING**

Appendix A contains daily water level data for 2003. Lake levels exceeded the desired end of month Upper Rule Band (URB) by 0.1 feet in July and August. The maximum desirable reservoir levels at the end of each month were attained in May and September. Reservoir levels were 1.8 feet, 1.5 feet, 0.3 feet, 0.6 feet, 0.1 feet, 0.4 feet, 1.4 feet and 0.9 feet below the URB in January, February, March, April, June, October, November and December respectively. Water levels were maintained above the Lower Rule Band (LRB) for the entire year.

The reservoir level was maintained between 2456.1 and 2456.9 from the first of the year until mid-March. The Lake level then climbed rapidly during spring snowmelt and by March 30<sup>th</sup> was near the URB. The Deep Creek Area received 1.5" of rain on April 7<sup>th</sup> and on April 9<sup>th</sup> the reservoir level was 2460.0, 0.1 feet above the URB. Although Deep Creek Lake received another inch of precipitation before April 12<sup>th</sup>, the reservoir level was held below the URB at 2460.5 feet into the first week of May. May's precipitation total of 8.9 inches was 4.2 inches above historic average. As a result, the highest reservoir level of the year occurred on May 14<sup>th</sup> at an elevation of 2461.6 feet, 0.6' above the URB. The reservoir was at elevation 2460.6 feet on May 7<sup>th</sup>, but 5 inches of rainfall between May 4<sup>th</sup> and 14<sup>th</sup> drove the level beyond the URB on May 10<sup>th</sup> through May 16<sup>th</sup>. Major rain events of 1.65 inches and 1.5 inches on May 31<sup>st</sup> and June 4<sup>th</sup>, coupled with another of 1.2 inches on June 8<sup>th</sup> drove the Lake level slightly above the URB from June 8<sup>th</sup> to June 10<sup>th</sup>. Additional heavy rains the week of June 13<sup>th</sup> increased Lake level again and on both June 16<sup>th</sup> and 21<sup>st</sup> the URB was exceeded by 0.1 foot.

Rainfall totals for July, August, and September were 11.86 inches, 5.22 inches, and 11.99 inches respectively. The rainfall total for the summer of 2003 was 29.07 inches, 230 % above the Garrett County historic average. Reservoir levels, during these months, exceeded the URB as follows:

<b>Date</b>	<b>Reservoir Level (Ft)</b>	<b>Upper Rule Band (Ft)</b>	<b>Δ (Ft)</b>
July 6	2461.1	2460.83	0.27
July 8	2461.0	2460.77	0.23
July 12	2460.7	2460.65	0.05
July 13	2460.7	2460.62	0.08
July 14	2461.0	2460.58	0.42
July 15	2460.8	2460.55	0.25
July 16	2460.6	2460.52	0.08
July 17	2460.5	2460.48	0.02
July 20	2460.4	2460.39	0.01
July 21	2460.4	2460.35	0.05
July 22	2460.4	2460.32	0.08
July 23	2460.4	2460.29	0.11
July 24	2460.3	2460.26	0.04
July 25	2460.3	2460.23	0.07
July 30	2460.1	2460.06	0.04
July 31	2460.1	2460.03	0.07
August 1	2460.1	2460.00	0.10
August 2	2461.0	2459.97	0.03
August 13	2459.6	2459.61	0.01
August 14	2459.7	2459.58	0.35
August 15	2459.6	2459.55	0.28
August 17	2459.5	2459.48	0.02
August 18	2459.5	2459.45	0.05
August 19	2459.5	2459.42	0.08
August 20	2459.4	2459.39	0.01
August 30	2459.1	2459.06	0.04
August 31	2459.1	2459.03	0.07
September 1	2459.1	2459.00	0.10
September 2	2459.25	2458.98	0.27
September 3	2459.4	24589.97	0.43
September 4	2459.2	2458.95	0.25

<b>Date</b>	<b>Reservoir Level (Ft)</b>	<b>Upper Rule Band (Ft)</b>	<b>Δ (Ft)</b>
September 19	2458.9	2458.70	0.20
September 20	2459.3	2458.68	0.62
September 21	2459.2	2458.68	0.52
September 22	2459.0	2458.65	0.08
September 23	2459.0	2458.63	0.37
September 24	2459.0	2458.62	0.38
September 25	2458.7	2458.60	0.10

The reservoir level was maintained between the Rule Bands from September 25<sup>th</sup> through the end of the year, except for the six-day period between November 10<sup>th</sup> and November 15<sup>th</sup> when the reservoir level was slightly above the URB. Deep Creek Lake's level did not fall below the LRB at any time during 2003.

## **1.2 TEMPERATURE MONITORING**

The Permittee monitored water temperature in the Youghiogheny River in accordance with "Deep Creek Station, Water Temperature Enhancement Plan" (approved June 8, 1996, revised September 2001). The Plan was designed to maintain river water temperatures below 25° C in the Youghiogheny River. The Permittee released water in accordance with the Water Temperature Enhancement Plan on 1 day in 2003. Although the temperature enhancement protocol did not predict water temperatures in excess of 25° C on July 3, 26 and 27, and August 23 and 24, river water temperatures did exceed 25° C on each of these days. A summary of these days when temperatures exceeded 25° C is provided in Appendix B.

The temperature enhancement protocol called for a two-hour temperature release on August 26, 2003, beginning at 11 AM, to supplement the 54 cfs flow at Oakland. Reliant began the release at 10:20 and continued until 16:00. That day, Sang Run's maximum water temperature of 22.38° occurred at 18:30.

## **1.3 MINIMUM FLOW RELEASE MONITORING**

The Permittee operated the flow bypass in accordance with the "Deep Creek Station Flow Bypass Operation Protocol" (May 1995, revised September 2001).

## **1.4 DISSOLVED OXYGEN MONITORING**

The Permittee operated the dissolved oxygen enhancement weir during 2003 in accordance with the "Dissolved Oxygen (DO) Enhancement Operations and Monitoring Protocol" approved by the Department on January 6, 1995. Data obtained from DO monitoring in 2003 are included in Appendix D.

The DO levels in the tailrace did not fall below 6.0 mg/l during 2003. The DO value was measured at 6.01 mg/l on August 12<sup>th</sup>, just above the 6.0 mg/l standard.

## **1.5 RELEASES UNSUITABLE FOR WHITEWATER RECREATION**

Permit Condition 19 outlines several operating rules designed to enhance whitewater boating opportunities in the Youghiogheny River. One operating rule restricts generation during certain times of the day unless flows suitable for whitewater boating also occur. The specific criteria for this operating rule are:

- Apply only from April 15 through October 15,
- apply only when the Lake is between the upper and lower rule bands,
- May be suspended during emergency conditions described in Condition 14, and
- Prohibit releases between 1600 hours and 0800 hours of the following morning unless:
  1. a release providing three consecutive hour suitable for whitewater boating occurs during the 0800 to 1600 hour period immediately preceding the release.
  2. a release providing three consecutive hours suitable for whitewater boating occurs during the 0800 to 1600 hour period immediately following the release.

Condition 19 requires the Permittee to document "times and dates when generation releases not suitable for whitewater recreation occurred." Using the criteria above, generation releases not suitable for whitewater recreation did not occur during 2003.

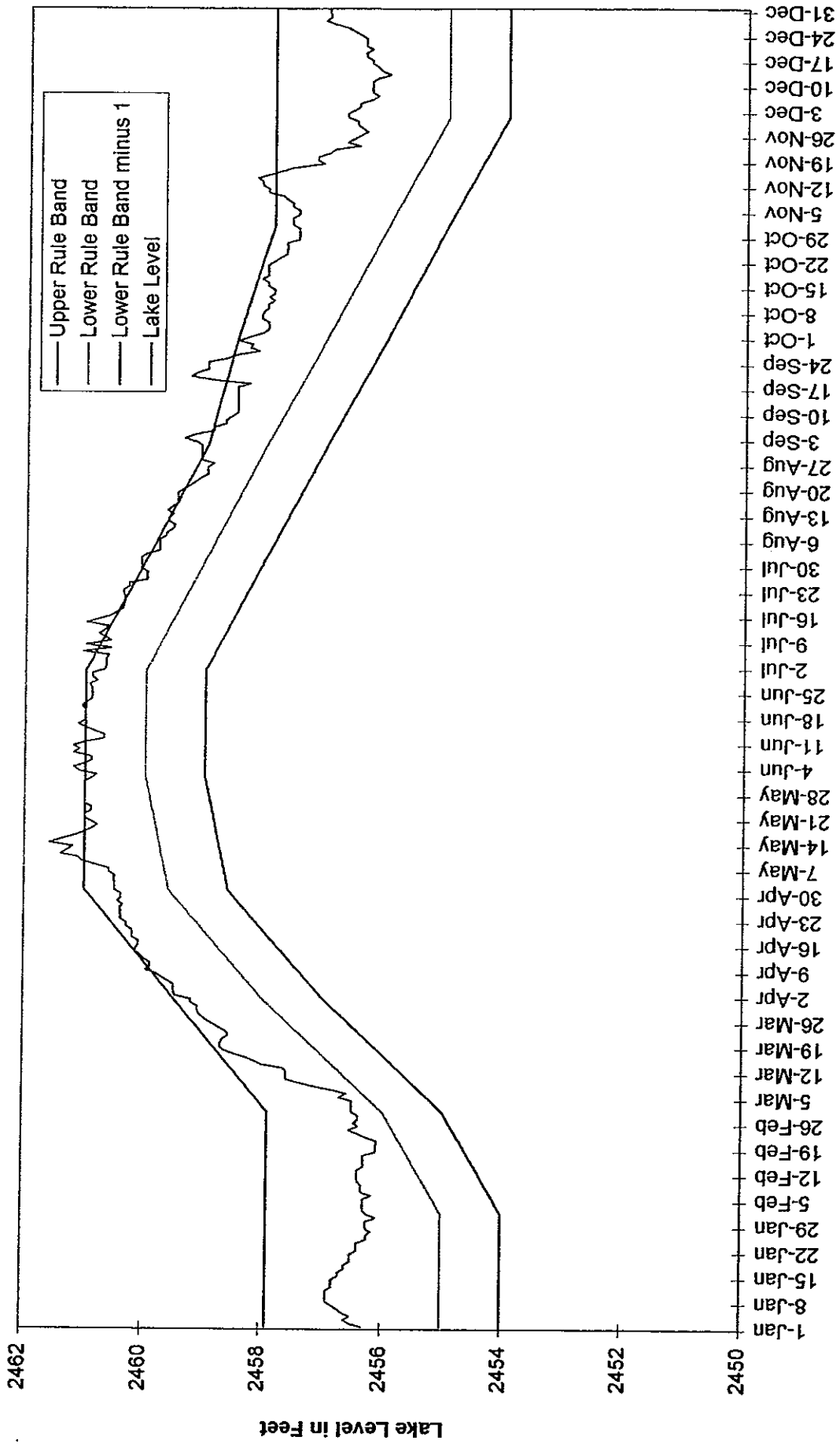
## **1.2 ZEBRA MUSSEL MONITORING**

Artificial substrates placed at the station intake area during 2003 showed no signs of the zebra mussel infestation.

APPENDIX A

LAKE LEVEL DATA AND PLOT

# Deep Creek Lake Level 2003





DEEP CREEK LAKE LEVELS 2003

Month	Day	Lake Level (Ft)	Rain Fall (In)	Month	Day	Lake Level (Ft)	Rain Fall (In)	Month	Day	Lake Level (Ft)	Rain Fall (In)
Jan	1	2456.3	0.05	Feb	1	2456.3	0.03	Mar	1	2456.5	0.00
	2	2456.5	0.85		2	2456.3	0.02		2	2456.5	0.00
	3	2456.6	0.10		3	2456.3	0.00		3	2456.5	0.10
	4	2456.5	0.50		4	2456.3	0.00		4	2456.5	0.00
	5	2456.6	0.05		5	2456.3	0.55		5	2456.7	0.15
	6	2456.7	0.07		6	2456.2	0.08		6	2456.6	0.75
	7	2456.8	0.23		7	2456.3	0.07		7	2456.8	0.00
	8	2456.9	0.00		8	2456.4	0.10		8	2457.2	0.00
	9	2456.9	0.00		9	2456.3	0.05		9	2457.4	0.00
	10	2456.9	0.00		10	2456.4	0.00		10	2457.6	0.15
	11	2456.9	0.30		11	2456.4	0.25		11	2457.6	0.00
	12	2456.8	0.00		12	2456.4	0.05		12	2457.6	0.00
	13	2456.8	0.00		13	2456.4	0.05		13	2457.7	0.00
	14	2456.8	0.10		14	2456.3	0.00		14	2458.0	0.35
	15	2456.7	0.15		15	2456.3	0.00		15	2458.1	0.00
	16	2456.7	0.05		16	2456.3	0.35		16	2458.3	0.00
	17	2456.6	0.10		17	2456.3	0.70		17	2458.5	0.00
	18	2456.6	0.02		18	2456.1	0.30		18	2458.7	0.00
	19	2456.5	0.05		19	2456.1	0.05		19	2458.7	0.03
	20	2456.5	0.00		20	2456.1	0.00		20	2458.7	0.00
	21	2456.5	0.20		21	2456.1	0.30		21	2458.7	0.50
	22	2456.4	0.12		22	2456.3	0.75		22	2458.6	0.05
	23	2456.4	0.00		23	2456.4	0.40		23	2458.6	0.00
	24	2456.4	0.03		24	2456.5	0.10		24	2458.7	0.00
	25	2456.2	0.07		25	2456.4	0.05		25	2458.8	0.00
	26	2456.3	0.00		26	2456.5	0.00		26	2458.9	0.00
	27	2456.2	0.05		27	2456.4	0.05		27	2459.0	0.10
	28	2456.3	0.00		28	2456.4	0.10		28	2459.1	0.00
	29	2456.3	0.05		29	2456.3	0.05		29	2459.1	0.12
	30	2456.3	0.12		30	2456.3	0.12		30	2459.1	0.40
	31	2456.1	0.00		31	2456.1	0.00		31	2459.2	0.05
Total			3.26	Total			4.40	Total			2.75



DEEP CREEK LAKE LEVELS 2003

Month	Day	Lake Level (Ft)	Rain Fall (In)	Month	Day	Lake Level (Ft)	Rain Fall (In)	Month	Day	Lake Level (Ft)	Rain Fall (In)
Jul	1	2460.7	0.00	Aug	1	2460.1	0.05	Sep	1	2459.1	0.97
	2	2460.7	0.60		2	2460.0	0.03		2	2459.2	N/C
	3	2460.7	0.00		3	2459.8	0.25		3	2459.4	0.50
	4	2460.7	0.05		4	2459.8	0.25		4	2459.2	0.15
	5	2460.6	0.05		5	2459.8	0.20		5	2458.9	0.00
	6	2461.1	4.63		6	2459.8	0.00		6	2458.9	0.05
	7	2460.6	0.63		7	2459.7	0.00		7	2458.7	0.00
	8	2461.0	1.40		8	2459.7	0.50		8	2458.7	0.00
	9	2460.6	1.40		9	2459.6	0.57		9	2458.6	0.00
	10	2460.7	0.42		10	2459.6	0.57		10	2458.5	0.05
	11	2460.8	0.00		11	2459.7	0.00		11	2458.5	0.00
	12	2460.7	0.70		12	2459.7	0.10		12	2458.5	0.00
	13	2460.7	0.05		13	2459.6	0.20		13	2458.5	0.15
	14	2461.0	0.00		14	2459.7	0.00		14	2458.5	0.05
	15	2460.8	0.00		15	2459.6	0.00		15	2458.5	0.45
	16	2460.6	0.25		16	2459.5	0.00		16	2458.5	0.00
	17	2460.5	0.00		17	2459.5	0.00		17	2458.5	0.00
	18	2460.4	0.00		18	2459.5	0.00		18	2458.3	1.90
	19	2460.4	0.25		19	2459.5	0.00		19	2458.9	1.95
	20	2460.4	0.00		20	2459.4	0.00		20	2459.3	2.25
	21	2460.4	0.00		21	2459.3	0.00		21	2459.2	0.20
	22	2460.4	0.10		22	2459.2	0.00		22	2459.0	0.60
	23	2460.4	0.13		23	2459.1	0.10		23	2459.0	0.10
	24	2460.3	0.07		24	2459.0	0.00		24	2459.0	0.00
	25	2460.3	0.00		25	2459.0	0.00		25	2458.7	0.15
	26	2460.0	0.00		26	2459.0	0.40		26	2458.5	0.00
	27	2460.0	0.00		27	2458.9	1.23		27	2458.2	0.90
	28	2460.0	1.13		28	2459.1	0.05		28	2458.3	1.00
	29	2460.1	0.00		29	2459.1	0.20		29	2458.3	0.03
	30	2460.1	0.00		30	2459.1	0.45		30	2458.5	0.07
	31	2460.1	0.00		31	2459.1	0.07				
Total			11.86	Total			5.22	Total			11.52

**DEEP CREEK LAKE LEVELS 2003**

Month	Day	Lake Level (Ft)	Rain Fall (In)	Month	Day	Lake Level (Ft)	Rain Fall (In)	Month	Day	Lake Level (Ft)	Rain Fall (In)
Oct	1	2458.3	0.05	Nov	1	2457.6	0.00	Dec	1	2456.7	0.05
	2	2458.1	0.30		2	2457.6	0.00		2	2456.7	0.00
	3	2458.0	0.00		3	2457.6	0.00		3	2456.6	0.00
	4	2458.0	0.00		4	2457.5	0.00		4	2456.5	0.00
	5	2458.0	0.52		5	2457.5	0.00		5	2456.5	0.00
	6	2458.1	0.00		6	2457.6	0.85		6	2456.3	0.10
	7	2458.1	0.00		7	2457.6	0.25		7	2456.2	0.00
	8	2458.1	0.00		8	2457.7	0.05		8	2456.3	0.00
	9	2458.0	0.00		9	2457.8	0.00		9	2456.3	N/C
	10	2458.0	0.00		10	2458.0	0.00		10	2456.3	0.00
	11	2457.9	0.00		11	2458.0	0.45		11	2456.3	0.65
	12	2458.0	0.00		12	2458.1	1.97		12	2456.2	0.05
	13	2457.9	0.00		13	2458.1	0.10		13	2456.0	0.00
	14	2457.9	0.00		14	2458.2	0.00		14	2456.2	0.05
	15	2458.0	0.45		15	2458.0	0.00		15	2456.2	0.82
	16	2458.0	0.10		16	2457.8	0.00		16	2456.3	0.15
	17	2458.1	0.00		17	2457.6	0.00		17	2456.3	0.00
	18	2458.0	0.20		18	2457.1	0.00		18	2456.4	0.10
	19	2458.0	0.00		19	2457.2	0.00		19	2456.4	0.05
	20	2458.0	0.00		20	2457.2	2.00		20	2456.3	0.15
	21	2458.0	0.00		21	2457.0	0.00		21	2456.4	0.10
	22	2457.9	0.00		22	2456.9	0.00		22	2456.4	0.00
	23	2457.8	0.25		23	2456.5	0.00		23	2456.4	0.00
	24	2457.7	0.15		24	2456.7	0.00		24	2456.5	0.00
	25	2457.7	0.00		25	2456.6	0.15		25	2456.6	0.45
	26	2457.7	0.00		26	2456.5	0.00		26	2456.7	0.05
	27	2457.7	0.20		27	2456.4	0.00		27	2456.9	0.00
	28	2457.5	0.40		28	2456.5	0.00		28	2457.1	0.00
	29	2457.5	0.00		29	2456.5	0.70		29	2457.0	0.00
	30	2457.5	0.10		30	2456.5	0.25		30	2457.0	0.00
	31	2457.5	0.00		31	2456.5	0.00		31	2457.0	0.45
Total		2.72		Total		6.77		Total			3.22

APPENDIX B

TEMPERATURE MONITORING AND RELEASE REPORTS

## MAXIMUM DAILY RIVER WATER TEMPERATURES

Daily maximum river water temperatures in the Youghiogheny River at Sang Run are presented on the following tables. The data were collated and provided by Versar, Inc., consultant to the MDNR Power Plant Assessment Division (PPAD).

The column labeled "SMAX" lists the arithmetic means of the daily maximum water temperatures, in degrees C, measured by two "Tempmentors" placed in the river by the MDNR. The column labeled "PenSmax" lists the maximum water temperatures, in degrees C, measured by the Permittee's temperature monitor at the Sang Run Bridge. PPAD and Versar analyze the data to evaluate the Water Temperature Enhancement Plan used by the Permittee to determine the need and timing of daily temperature releases.

Days when temperatures exceeded 25° C and days when temperature enhancement releases were made are summarized in the following tables. Log sheets for each of these dates are also enclosed.

**Deep Creek Station**  
**Youghiogheny River Temperature Data - 2003**

<u>June</u>	<u>Smax</u>	<u>PenSmax</u>	<u>July</u>	<u>Smax</u>	<u>PenSmax</u>	<u>August</u>	<u>Smax</u>	<u>PenSmax</u>
1		12.94	1	N/A	24.22	1	20.82	24.18
2		13.56	2	23.32	22.90	2	21.48	20.61
3		13.11	3	25.91	25.83	3	24.86	24.35
4		13.01	4	22.81	21.86	4	21.64	21.09
5		13.80	5	23.83	24.01	5	24.52	24.54
6		15.09	6	22.31	22.14	6	24.35	24.25
7		14.74	7	20.82	18.97	7	22.47	22.34
8		15.09	8	20.65	19.76	8	21.72	20.94
9		15.79	9	19.52	18.60	9	21.14	20.72
10		15.67	10	18.38	18.08	10	19.03	19.39
11		16.09	11	18.06	17.90	11	20.01	20.12
12		16.04	12	17.73	17.48	12	20.65	19.96
13		17.12	13	18.06	18.25	13	21.31	21.83
14		16.81	14	18.79	19.13	14	21.64	21.66
15		16.37	15	19.19	19.24	15	21.48	21.11
16		15.60	16	19.84	19.21	16	24.18	24.54
17		15.41	17	21.31	20.39	17	23.32	22.91
18		16.83	18	20.17	19.96	18	20.98	20.85
19		17.10	19	22.65	22.86	19	22.47	22.16
20		16.21	20	23.66	23.84	20	24.52	23.84
21		14.68	21	22.81	23.12	21	24.69	23.77
22		15.99	22	23.66	23.14	22	22.98	22.36
23		16.86	23	22.47	21.69	23	25.47	25.50
24		18.31	24	21.81	21.46	24	25.04	25.20
25		19.70	25	20.82	20.89	25	21.14	21.14
26		22.89	26	25.38	25.17	26	22.47	22.38
27		19.56	27	24.86	25.13	27	22.47	24.35
28		22.61	28	21.81	22.01	28	19.84	21.62
29		24.22	29	20.98	21.43	29	20.82	20.41
30		22.38	30	22.14	22.39	30	20.33	20.70
			31	20.49	20.17	31	19.52	19.55

Due to High Flows Versar Sensors Not Installed

Exceedance of 25° C at Sang Run Temperature Probe

Date	Duration	Maximum
July 3, 2003	16:00 – 19:20	25.83°
July 26, 2003	17:20 – 18:30	25.17°
July 27, 2003	18:00 – 18:50	25.13°
August 23, 2003	15:40 – 18:30	25.50°
August 24, 2003	16:50 – 18:00	25.20°



# oughiogheny River Water Temperature Enhancement Plan

103 = CFS River Flow at Oakland

July 3, 2003

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	21.06	Temperature Plan not required today
	<=30	23.98	Temperature Plan not required today
0900	> 30	-1.92	Temperature Plan not required today
	<=30	1.00	Temperature Plan not required today
1100	All	11.79	Temperature Plan not required today
1200	All	10.49	Temperature Plan not required today
1400	All	6.31	Temperature Plan not required today
1500	All	4.39	Temperature Plan not required today

Tair	26.67	Air Temp, Elkins WV - Degree C
CCF	100.00	Cloud Cover Factor, Elkins WV
T7	18.83	River Temp Sang Run @700
T9	0.00	River Temp Sang Run @900
T11	0.00	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	103.00	River Flow at Oakland

80 Air Temp, Elkins WV - Degree F  
TSTRMS Cloud Cover, Elkins WV

# Shooheny River Water Temperature Enhancement Plan

62

= CFS River Flow at Oakland

July 26, 2003

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	24.26	Check again at 0900
	<=30	25.54	Check again at 0900
0900	> 30	2.54	No further predictions necessary today
	<=30	3.82	No further predictions necessary today
1100	All	12.78	No further predictions necessary today
1200	All	11.28	No further predictions necessary today
1400	All	6.31	No further predictions necessary today
1500	All	4.39	No further predictions necessary today

ir	26.67	Air Temp, Elkins WV - Degree C
JCF	1.00	Cloud Cover Factor, Elkins WV
T7	17.88	River Temp Sang Run @700
T9	0.00	River Temp Sang Run @900
T11	0.00	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	62.00	River Flow at Oakland

80  
SUNNY

Air Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

# Ohiohony River Water Temperature Enhancement Plan

62

= CFS River Flow at Oakland

July 26, 2003

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	24.26	Check again at 0900
	<=30	25.54	Check again at 0900
0900	> 30	24.08	Check again at 1100
	<=30	25.36	Check again at 1100
1100	All	25.07	Check again at 1200
1200	All	24.72	Check again at 1400
1400	All	24.47	Check again at 1500
1500	All	24.99	No further predictions necessary today

air	26.67	Air Temp, Elkins WV - Degree C
CCF	1.00	Cloud Cover Factor, Elkins WV
T7	17.88	River Temp Sang Run @700
T9	17.83	River Temp Sang Run @900
T11	19.42	River Temp Sang Run @1100
T12	20.24	River Temp Sang Run @1200
T14	22.35	River Temp Sang Run @1400
T15	23.61	River Temp Sang Run @1500
Q	62.00	River Flow at Oakland

80  
SUNNY

Air Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	24.80	Check again at 0900 Temperature Plan not required today
	<=30	25.68	
0900	> 30	0.93	Temperature Plan not required today
	<=30	1.81	Temperature Plan not required today
1100	All	12.56	Temperature Plan not required today
1200	All	11.12	Temperature Plan not required today
1400	All	6.36	Temperature Plan not required today
1500	All	4.41	Temperature Plan not required today

Tair	27.22	Air Temp, Elkins WV - Degree C
CCF	36.00	Cloud Cover Factor, Elkins WV
T7	19.73	River Temp Sang Run @700
T9	0.00	River Temp Sang Run @900
T11	0.00	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	52.00	River Flow at Oakland

81 Air Temp, Elkins WV - Degree F  
PTCLDY Cloud Cover, Elkins WV

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	24.80	Check again at 0900
	<=30	25.68	Temperature Plan not required today
0900	> 30	25.01	Check again at 1100
	<=30	25.89	Temperature Plan not required today
1100	All	-3.95	Temperature Plan not required today
1200	All	2.18	Temperature Plan not required today
1400	All	6.36	Temperature Plan not required today
1500	All	4.41	Temperature Plan not required today

Print Info for file

Tair	27.22	Air Temp, Elkins WV - Degree C
CCF	36.00	Cloud Cover Factor, Elkins WV
T7	19.73	River Temp Sang Run @700
T9	19.94	River Temp Sang Run @900
T11	0.00	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	52.00	River Flow at Oakland

81  
PTCLDYAir Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

52

= CFS River Flow at Oakland

July 27, 2003

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	24.80	Check again at 0900
	<=30	25.68	Temperature Plan not required today
0900	> 30	25.01	Check again at 1100
	<=30	25.89	Temperature Plan not required today
1100	All	24.83	Check again at 1200
1200	All	2.18	Temperature Plan not required today
1400	All	6.36	Temperature Plan not required today
1500	All	4.41	Temperature Plan not required today

Print Info for file

Tair	27.22	Air Temp, Elkins WV - Degree C
CCF	36.00	Cloud Cover Factor, Elkins WV
T7	19.73	River Temp Sang Run @700
T9	19.94	River Temp Sang Run @900
T11	20.66	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	52.00	River Flow at Oakland

81  
PTCLDYAir Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30 <=30	24.80 25.68	Check again at 0900 Temperature Plan not required today
0900	> 30 <=30	25.01 25.89	Check again at 1100 Temperature Plan not required today
1100	All	24.83	Check again at 1200
1200	All	24.65	Check again at 1400
1400	All	-6.36	Temperature Plan not required today
1500	All	-2.20	Temperature Plan not required today

Tair	27.22	Air Temp, Elkins WV - Degree C
CCF	36.00	Cloud Cover Factor, Elkins WV
T7	19.73	River Temp Sang Run @700
T9	19.94	River Temp Sang Run @900
T11	20.66	River Temp Sang Run @1100
T12	21.21	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	52.00	River Flow at Oakland

81  
PTCLDYAir Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	24.80	Check again at 0900
	<=30	25.68	Temperature Plan not required today
0900	> 30	25.01	Check again at 1100
	<=30	25.89	Temperature Plan not required today
1100	All	24.83	Check again at 1200
1200	All	24.65	Check again at 1400
1400	All	24.28	Check again at 1500
1500	All	-2.20	Temperature Plan not required today

Print Info for file

Tair	27.22	Air Temp, Elkins WV - Degree C
CCF	36.00	Cloud Cover Factor, Elkins WV
T7	19.73	River Temp Sang Run @700
T9	19.94	River Temp Sang Run @900
T11	20.66	River Temp Sang Run @1100
T12	21.21	River Temp Sang Run @1200
T14	22.60	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	52.00	River Flow at Oakland

81  
PTCLDYAir Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV



Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30 ≤30	24.80 25.68	Check again at 0900 Temperature Plan not required today
0900	> 30 ≤30	25.01 25.89	Check again at 1100 Temperature Plan not required today
1100	All	24.83	Check again at 1200
1200	All	24.65	Check again at 1400
1400	All	24.28	Check again at 1500
1500	All	24.42	No further predictions necessary today

Tair	27.22	Air Temp, Elkins WV - Degree C
CCF	36.00	Cloud Cover Factor, Elkins WV
T7	19.73	River Temp Sang Run @700
T9	19.94	River Temp Sang Run @900
T11	20.66	River Temp Sang Run @1100
T12	21.21	River Temp Sang Run @1200
T14	22.60	River Temp Sang Run @1400
T15	23.35	River Temp Sang Run @1500
Q	52.00	River Flow at Oakland

81  
PTCLDY

Air Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

# Youghiogheny River Water Temperature Enhancement Plan

90 = CFS River Flow at Oakland

August 23, 2003

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30	21.24	No further predictions necessary today Check again at 0900
	<=30	23.64	
0900	> 30	-3.45	No further predictions necessary today
	<=30	-1.05	No further predictions necessary today
1100	All	11.10	No further predictions necessary today
1200	All	9.89	No further predictions necessary today
1400	All	6.02	No further predictions necessary today
1500	All	4.25	No further predictions necessary today

Tair	23.89	Air Temp, Elkins WV - Degree C
CCF	100.00	Cloud Cover Factor, Elkins WV
T7	20.46	River Temp Sang Run @700
T9	0.00	River Temp Sang Run @900
T11	0.00	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	90.00	River Flow at Oakland

75 Air Temp, Elkins WV - Degree F  
TSTRMS Cloud Cover, Elkins WV

# Youghiogeny River Water Temperature Enhancement Plan

70 = CFS River Flow at Oakland

August 24, 2003

Print Info for file

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	<30 <=30	23.19 24.79	Check again at 0900 Check again at 0900
0900	> 30 <=30	22.86 24.46	No further predictions necessary today Check again at 1100
1100	All	-2.81	No further predictions necessary today
1200	All	2.62	No further predictions necessary today
1400	All	6.02	No further predictions necessary today
1500	All	4.25	No further predictions necessary today

Tair	23.89	Air Temp, Elkins WV - Degree C
CCF	1.00	Cloud Cover Factor, Elkins WV
T7	18.29	River Temp Sang Run @700
T9	18.00	River Temp Sang Run @900
T11	0.00	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	70.00	River Flow at Oakland

75  
SUNNY

Air Temp, Elkins WV - Degree F  
Cloud Cover, Elkins WV

APPENDIX C

BYPASS FLOW OPERATION RECORD

## BYPASS FLOW OPERATION

The flow bypass protocol requires the Permittee to maintain a minimum flow of 40 cfs in the Youghiogeny River immediately downstream of the tailrace. Starting June 1, and continuing through November 30, the Permittee monitors the river flows at the Oakland gage. When flows at the Oakland gage fall below 26 cfs, the Permittee may be required to open a bypass valve to release enough water to maintain 40 cfs in the river immediately below the tailrace.

The following table summarizes flow bypass data for June through November 2003, when flows in the Youghiogeny River were less than 26 cfs. Flow data were obtained from the USGS recording at the Oakland gage, direct readings from the USGS Oakland gage, or from the tailrace gage at the station, per guidance provided in the protocol. Valve opening was determined from Table 3 of the protocol based on station operating status.

Data from the USGS gaging station at Oakland are also provided. Data for 2003 are provisional data. USGS data represent daily mean flows and may not agree with instantaneous data collected by the Permittee throughout the year.

Deep Creek Hydro  
Flow Bypass Operation - 2003

Month	Day	River Flow at Oakland	Bypass Operation	
			Bypass Flow	% Open
June	1	2360	0	CLOSED
June	2	1520	0	CLOSED
June	3	830	0	CLOSED
June	4	1600	0	CLOSED
June	5	986	0	CLOSED
June	6	706	0	CLOSED
June	7	495	0	CLOSED
June	8	1380	0	CLOSED
June	9	940	0	CLOSED
June	10	625	0	CLOSED
June	11	430	0	CLOSED
June	12	334	0	CLOSED
June	13	726	0	CLOSED
June	14	1120	0	CLOSED
June	15	1480	0	CLOSED
June	16	1460	0	CLOSED
June	17	881	0	CLOSED
June	18	948	0	CLOSED
June	19	660	0	CLOSED
June	20	599	0	CLOSED
June	21	1440	0	CLOSED
June	22	895	0	CLOSED
June	23	660	0	CLOSED
June	24	437	0	CLOSED
June	25	306	0	CLOSED
June	26	229	0	CLOSED
June	27	182	0	CLOSED
June	28	155	0	CLOSED
June	29	120	0	CLOSED
June	30	103	0	CLOSED
July	1	90	0	CLOSED
July	2	161	0	CLOSED
July	3	103	0	CLOSED
July	4	78	0	CLOSED
July	5	80	0	CLOSED
July	6	103	0	CLOSED
July	7	299	0	CLOSED
July	8	241	0	CLOSED
July	9	1900	0	CLOSED
July	10	4240	0	CLOSED
July	11	2260	0	CLOSED
July	12	1186	0	CLOSED
July	13	1120	0	CLOSED
July	14	673	0	CLOSED

Deep Creek Hydro  
Flow Bypass Operation - 2003

Month	Day	River Flow at Oakland	Bypass Operation	
			Bypass Flow	% Open
July	15	625	0	CLOSED
July	16	384	0	CLOSED
July	17	277	0	CLOSED
July	18	201	0	CLOSED
July	19	175	0	CLOSED
July	20	129	0	CLOSED
July	21	112	0	CLOSED
July	22	98	0	CLOSED
July	23	98	0	CLOSED
July	24	90	0	CLOSED
July	25	88	0	CLOSED
July	26	62	0	CLOSED
July	27	52	0	CLOSED
July	28	46	0	CLOSED
July	29	1340	0	CLOSED
July	30	317	0	CLOSED
July	31	190	0	CLOSED
August	1	145	0	CLOSED
August	2	123	0	CLOSED
August	3	109	0	CLOSED
August	4	109	0	CLOSED
August	5	106	0	CLOSED
August	6	120	0	CLOSED
August	7	90	0	CLOSED
August	8	80	0	CLOSED
August	9	733	0	CLOSED
August	10	1680	0	CLOSED
August	11	451	0	CLOSED
August	12	480	0	CLOSED
August	13	558	0	CLOSED
August	14	558	0	CLOSED
August	15	237	0	CLOSED
August	16	172	0	CLOSED
August	17	148	0	CLOSED
August	18	241	0	CLOSED
August	19	182	0	CLOSED
August	20	139	0	CLOSED
August	21	112	0	CLOSED
August	22	93	0	CLOSED
August	23	90	0	CLOSED
August	24	70	0	CLOSED
August	25	62	0	CLOSED
August	26	54	0	CLOSED
August	27	60	0	CLOSED
August	28	1930	0	CLOSED
August	29	642	0	CLOSED
August	30	480	0	CLOSED
August	31	1340	0	CLOSED

**Deep Creek Hydro  
Flow Bypass Operation - 2003**

Month	Day	River Flow at Oakland	Bypass Operation	
			Bypass Flow	% Open
September	1	719	0	CLOSED
September	2	2050	0	CLOSED
September	3	2000	0	CLOSED
September	4	1260	0	CLOSED
September	5	2710	0	CLOSED
September	6	1050	0	CLOSED
September	7	686	0	CLOSED
September	8	444	0	CLOSED
September	9	311	0	CLOSED
September	10	246	0	CLOSED
September	11	190	0	CLOSED
September	12	151	0	CLOSED
September	13	132	0	CLOSED
September	14	139	0	CLOSED
September	15	115	0	CLOSED
September	16	317	0	CLOSED
September	17	201	0	CLOSED
September	18	172	0	CLOSED
September	19	4530	0	CLOSED
September	20	3720	0	CLOSED
September	21	1260	0	CLOSED
September	22	774	0	CLOSED
September	23	851	0	CLOSED
September	24	608	0	CLOSED
September	25	423	0	CLOSED
September	26	377	0	CLOSED
September	27	291	0	CLOSED
September	28	986	0	CLOSED
September	29	712	0	CLOSED
September	30	582	0	CLOSED
October	1	397	0	CLOSED
October	2	430	0	CLOSED
October	3	311	0	CLOSED
October	4	263	0	CLOSED
October	5	459	0	CLOSED
October	6	340	0	CLOSED
October	7	272	0	CLOSED
October	8	213	0	CLOSED
October	9	182	0	CLOSED
October	10	158	0	CLOSED



Flow Bypass Operation - 2003

Month	Day	River Flow at Oakland	Bypass Operation	
			Bypass Flow	% Open
October	11	139	0	CLOSED
October	12	120	0	CLOSED
October	13	112	0	CLOSED
October	14	101	0	CLOSED
October	15	361	0	CLOSED
October	16	371	0	CLOSED
October	17	246	0	CLOSED
October	18	311	0	CLOSED
October	19	241	0	CLOSED
October	20	209	0	CLOSED
October	21	225	0	CLOSED
October	22	205	0	CLOSED
October	23	175	0	CLOSED
October	24	155	0	CLOSED
October	25	120	0	CLOSED
October	26	135	0	CLOSED
October	27	172	0	CLOSED
October	28	371	0	CLOSED
October	29	259	0	CLOSED
October	30	365	0	CLOSED
October	31	268	0	CLOSED
November	1	241	0	CLOSED
November	2	217	0	CLOSED
November	3	197	0	CLOSED
November	4	172	0	CLOSED
November	5	155	0	CLOSED
November	6	963	0	CLOSED
November	7	706	0	CLOSED
November	8	35	0	CLOSED
November	9	444	0	CLOSED
November	10	334	0	CLOSED
November	11	281	0	CLOSED
November	12	346	0	CLOSED
November	13	3350	0	CLOSED
November	14	1250	0	CLOSED
November	15	910	0	CLOSED
November	16	574	0	CLOSED
November	17	430	0	CLOSED
November	18	346	0	CLOSED
November	19	311	0	CLOSED
November	20	2070	0	CLOSED
November	21	1040	0	CLOSED
November	22	706	0	CLOSED
November	23	510	0	CLOSED
November	24	417	0	CLOSED
November	25	397	0	CLOSED
November	26	291	0	CLOSED
November	27	246	0	CLOSED
November	28	225	0	CLOSED
November	29	955	0	CLOSED
November	30	566	0	CLOSED

U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

The data you have obtained from this automated U.S. Geological Survey database have not received Director's approval and as such are provisional and subject to revision. The data are released on the condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its use. Additional information can be obtained from the USGS at <http://waterdata.usgs.gov/md/nwis/help/?provisional>

Retrieved: 2004-01-30 12:20:57 EST

Data for the following stations is contained in this file:

USGS 03075500 YOUGHIOGHENY RIVER NEAR OAKLAND, MD

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	35	439	250	1220	125	342	339	106	2090	94	136	782	461	231	481
2	28	335	285	1690	122	421	741	166	1180	142	115	2170	375	210	392
3	24	254	195	1150	116	397	526	124	1110	91	180	1570	287	189	312
4	22	207	175	830	435	342	393	158	1270	75	116	3210	352	167	283
5	20	198	121	624	678	499	482	381	865	97	157	1800	388	359	257
6	19	907	105	493	423	2010	407	466	618	237	106	882	276	754	248
7	18	900	122	392	318	1900	966	337	1200	435	84	587	230	648	219
8	16	625	134	339	248	1300	1130	406	1130	1350	199	390	201	486	195
9	16	422	112	378	229	1920	1060	1010	795	2060	759	282	170	391	182
10	17	320	112	452	203	1420	921	2480	542	3530	962	224	149	319	200
11	101	299	117	339	175	939	1060	2590	394	1790	509	172	131	276	1080
12	191	485	139	301	162	812	972	1290	326	1000	432	142	119	2860	728
13	104	779	168	289	142	1500	742	1070	811	921	438	136	108	230	521
14	77	513	552	241	147	2550	560	734	1030	613	388	129	124	1020	430
15	59	371	421	186	140	1850	420	568	1410	537	222	162	568	706	369
16	306	307	378	183	102	1880	339	452	1180	348	166	242	301	519	306
17	406	697	315	166	100	1980	277	351	909	246	469	242	245	403	284
18	242	719	269	150	140	1870	230	309	816	193	239	249	284	320	265
19	163	689	253	139	133	1510	209	251	612	166	162	4910	226	1340	260
20	211	863	1840	130	127	1290	175	209	991	130	127	2380	206	1790	238
21	187	657	1510	130	129	1100	177	224	1160	108	105	1010	214	948	285
22	142	504	898	121	542	867	179	198	829	106	92	706	201	662	208
23	112	395	803	111	1830	673	150	168	572	95	82	823	166	493	418
24	90	323	565	103	1640	503	125	251	388	87	65	522	143	409	1140
25	79	340	470	102	962	391	111	200	276	78	58	392	123	360	1080
26	157	321	366	102	668	337	111	176	213	56	52	342	133	278	746
27	144	304	282	105	495	289	104	158	170	48	735	412	271	240	543
28	116	263	240	104	395	236	88	266	141	737	1230	865	327	452	416
29	271	235	214	110	110	218	82	231	117	720	567	639	290	731	360
30	1010	249	189	141	141	232	87	216	98	256	798	463	311	522	653
31	646	254	254	130	130	227	227	558	166	166	974	257	257	257	630
TOTAL	5029	13920	11854	10951	10926	31805	13163	16104	23243	16512	10724	26593	7637	20313	13739
MEAN	162.2	464.0	382.4	353.3	390.2	1026.0	438.8	519.5	774.8	532.6	345.9	917.0	246.4	677.1	443.2
MAX	1010	907	1840	1690	1830	2550	1130	2590	2090	3530	1230	4910	568	2860	1140
MIN	16	198	105	102	100	218	82	106	98	48	52	129	108	167	182

APPENDIX D

RECORD OF  
DISSOLVED OXYGEN MONITORING

DEEP CREEK STATION  
DISSOLVED OXYGEN MONITORING LOG

2003

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION			DO MEASUREMENTS			NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	NON-OPERATING TAILRACE ELEV	OPTI TAI I
	TIME	TEMP °C	DO (mg/l)	TIME	TEMP °C	DO (mg/l)					
June 2	10:00A	14.9	9.50	10:30A	13.7	9.32	2	0000 - 2400	CLOSED	NONE	20
June 3	12:00A	14.8	9.23	07:00A	13.0	9.22	2	0000 - 2400	CLOSED	NONE	20
June 5	10:00A	15.1	9.03	10:30A	13.2	8.95	2	0000 - 2400	OPEN	NONE	20
June 6	10:00A	14.9	9.29	10:30A	13.2	9.04	2	0000 - 2400	OPEN	NONE	20
June 9	08:00A	18.0	8.46	08:30A	14.2	9.42	2	0700 - 0930	CLOSED	2023.5	20
June 03	08:35	19.2	8.60	08:45	14.4	9.23	2	0808 - 2400	OPEN	2023.1	20
June 03	07:40	19.6	8.58	08:00	14.6	9.40	2	0000 - 0000	OPEN	NONE	20
June 12	08:00	19.3	8.55	08:45	14.6	9.37	2	00:00 - 2400	OPEN	NONE	20
June 13	13:00	19.4	8.62	13:30	14.7	9.33	2	1300 - 1900	OPEN	2023.4	20
June 03	13:45	21.8	8.07	13:50	14.7	9.05	2	1300 - 2120	OPEN	2024.0	20
June 17	11:15	20.5	8.42	11:45	14.7	9.21	2	1100 - 2400	OPEN	2023.4	20
June 03	10:00	21.2	8.20	10:30	15.8	9.15	2	0800 - 0400 0800 - 2000	OPEN	2023.4	20
June 03	13:15	22.9	7.80	13:45	14.9	9.25	2	1200 - 2000	OPEN	2023.5	20
June 23	10:140	22.9	2.93	11:00	14.0	7.77	1/2	1000/1800 1400/1800	OPEN	2023.0	20
June 24	13:00	24.2	7.87	13:15	14.2	7.91	1/2	1200/2000 1500/1900	OPEN	2023.0	20
June 15	12:40	26.7	7.36	12:55	14.3	7.10	1/2	1200/2000 1500/1900	OPEN	2023.0	20
June 16	STATION		UNATT	ended		-	2	1720 - 2120	OPEN	2022.6	20
June 27	11:00	26.8	7.41	11:15	14.4	7.22	2	1000 - 1800	OPEN	2022.3	20
June 30	11:05	24.4	7.91	11:15	15.6	7.77	2	1000 - 1300	OPEN	2022.1	20

DEEP CREEK STATION  
DISSOLVED OXYGEN MONITORING LOG

2003

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS		NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	NON-OPERATING TAILRAISE ELEV	OPER TAIL ELEV
	TIME	TEMP °C	DO (MG/L)	DOWNSTREAM FROM WEIR					
	TIME	TEMP °C	DO (MG/L)	TIME	TEMP °C	DO (MG/L)			
4 July	STA 710W			UNATT	END	ED	open	-	-
5 July	STA 710W			UNATT	NO REC		open	-	-
6 July	STA 710W			UNATT	NO REC		open	-	-
7 July	0940	23.7	7.83	0950	16.3	7.21	open	-	202
8 July	1015	22.6	7.96	1020	16.3	6.25	open	2022.7	202
9 July	1300	22.1	7.88	1310	16.0	7.18	open	-	202
10 July	0930	23.0	7.80	0940	16.9	6.10	open	-	202
11 July	1315	25.4	7.60	1330	16.5	6.33	open	-	202
12 July	-	STATION	-	UNATTEN	ED	-	open	-	-
13 July	-	STATION	-	UNATTEN	NO REC		open	-	-
14 July	1030	21.9	8.13	1038	18.0	6.57	open	-	202
15 July	1010	22.2	8.20	1040	17.8	6.72	open	-	202
16 July	10:00	22.8	8.27	10:30	17.1	6.84	open	-	202
17 July	2:00	24.4	7.35	2:30	17.1	6.02	open	-	202
18 July	10:00	20.9	8.16	10:30	17.2	5.92	open	-	202
21 July	1235	27.7	7.30	10:35	17.3	6.80	2 closed 2-6" open	2022.4	202
22 July	Fractam ENT						2 closed 2-6" open	2022.3	202
23 July	1430	22.8	7.98	1440	17.2	6.80	2 closed 2-6" open	2022.3	202
24 July	1450	23.5	7.87	1455	17.3	6.75	2 closed 2-6" open	2022.1	202
25 July	1145	22.9	7.91	1150	17.3	6.81	2 closed 2-6" open	2022.0	202

DEEP CREEK STATION  
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2003

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS			NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	NON-OPERATING TAILRACE ELEV	OPERU TAILF ELEV
	TIME	TEMP °C	DO (mg/l)	DO (mg/l)	DOWNSTREAM FROM WEIR					
		TEMP °C	DO (mg/l)	DO (mg/l)	TIME	TEMP °C	DO (mg/l)			
28 July	Inclined		weather					closed	2021.9	2028
29 July	Station		weather					closed	2023.6	2028
31 July	1140	23.1	7.94	6.78	1145	19.1	6.78	closed	2022.3	2028
Aug	1130	23.3	7.91	6.74	1140	19.2	6.74	closed	2022.2	2028
Aug	-	-	station	-	Attended	-	-	closed	-	-
Aug	-	-	station	-	Attended	-	-	closed	-	-
Aug	1230	24.5	7.73	6.20	1240	18.0	6.20	closed	2022.2	2028
Aug	1115	24.6	7.72	6.08	1125	18.3	6.08	closed	2022.0	2028
Aug	-	-	station	-	-	-	-	closed	-	-
Aug	-	-	station	-	-	-	-	closed	-	-
Aug	1340	24.3	7.81	6.01	1350	18.3	6.01	closed	2022.9	2028
Aug	1100	25.5	7.53	6.11	1110	18.2	6.11	closed	2022.8	2028
Aug	1120	25.2	7.86	6.24	1130	18.4	6.24	closed	2022.5	2028
Aug	1130	25.3	7.77	6.08	1140	18.3	6.08	closed	2022.5	2028
Aug	1400	25.5	7.99	6.12	1410	18.4	6.12	closed	2022.3	2028
Aug	1420	27.4	7.41	6.72	1430	18.5	6.72	closed	2022.2	2028
Aug	1415	27.2	7.38	6.59	1425	18.5	6.59	closed	2022.1	2028
Aug	1240	27.4	7.43	6.26	1250	18.0	6.26	closed	2022.1	2028
Aug	1210	24.5	7.78	6.64	1220	18.8	6.64	closed	2021.9	2028
Aug	1250	24.1	7.69	6.48	1300	18.6	6.48	closed	2021.9	2028

DEEP CREEK STATION  
DISSOLVED OXYGEN MONITORING LOG

2003

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION			DO MEASUREMENTS			NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME	TEMP °C	DO (mg/l)					
28 Aug	1240	29.0	7.81	1250	18.4	6.21	2	1200-1800	2 closed 2 open 6"	2024.4	2028.
29 Aug	-	-	measurement	weather	-	-	2	1000-1500	2 closed 2 open 6"	2023.1	2028.
30 Aug	-	-	STATION	UNATTENDED	-	-	2	1000-1300	2 closed 2 open 6"	-	-
1 Sept	-	-	STATION	CRASH-TESTED	-	-	1	1000-1300	2 closed 2 open 6"	-	-
2 Sept	-	-	ENCLOSURE	weather	-	-	2	1300-1630	2 closed 2 open 6"	-	2028.
3 Sept	1235	24.8	7.91	1245	19.4	6.77	2	0600-2400	2 closed 2 open 6"	-	2028.
4 Sept	1100	24.5	7.89	1120	19.4	6.78	2	0000-2400	2 closed 2 open 6"	-	2028.
5 Sept	1020	24.2	7.85	1030	19.4	6.69	2	0000-2400	2 closed 2 open 6"	-	2028.
6 Sept	-	-	STATION	UNATTENDED	-	-	2	1400-2100	2 closed 2 open 6"	2023.1	2028.
7 Sept	1150	24.1	7.69	1155	19.1	6.75	2	1000-2400	2 closed 2 open 6"	2022.8	2028.
8 Sept	1350	24.0	7.64	1400	19.6	6.97	2	0000-0020 9:15-1800	2 closed 2 open 6"	2022.7	2028.
9 Sept	1445	23.6	7.94	1450	19.9	6.99	2	1300-1700	2 closed 2 open 6"	2022.5	2028.
12 Sept	1130	23.4	7.68	1140	20.0	7.08	2	1000-1315.	2 closed 2 open 6"	2022.3	2028.
15 Sept	-	-	enclosure	weather	-	-	2	0134-0218 0954-1300	2 closed 2 open 6"	-	2028.
16 Sept	1310	23.5	7.75	1320	19.6	7.12	2	1000-1500	2 closed 2 open 6"	2022.8	2028.
17 Sept	1240	23.4	7.82	1245	19.1	7.16	2	0645-2340	2 closed 2 open 6"	-	2028.
18 Sept	-	-	enclosure	weather	-	-	2	0630-2400	2 closed 2 open 6"	-	2028.
19 Sept	1430	20.1	7.92	1440	18.8	7.19	2	0000-2400	2 closed 2 open 6"	-	2028.
20 Sept	-	-	STATION	UNATTENDED	-	-	2	0000-2400	2 closed 2 open 6"	-	2028.
21 Sept	-	-	STATION	UNATTENDED	-	-	2	0000-2400	2 closed 2 open 6"	-	2028.

FROM

(Instrument Calibrated to 2000 ft. MSL)

DEEP CREEK STATION  
DISSOLVED OXYGEN MONITORING LOG

2003

DATE	INSTRUMENT CALIBRATION			DO MEASUREMENTS			NO. UNITS GENERATING	TIMES OF GENERATION	SLICE GATE POSITION	NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME	TEMP °C	DO (mg/l)					
22 SEPT			Inconcl	1630	18.5	7.80	1	0000 - 2400	2 closed		2028.5
23 SEPT	1020	20.0	7.86	1630	18.5	7.80	1	0000 - 2400	2 closed		2028.3
24 SEPT	1500	20.4	7.91	1510	18.4	7.98	1/2	0000 - 2400	2 closed		2028.5
25 SEPT	1040	20.2	7.88	1050	18.3	7.95	2	0000 - 2400	2 closed		2028.5
26 SEPT	0730	20.1	7.86	0740	18.1	7.99	2	0000 - 2400	2 closed		2028.5
27 SEPT			station outflow				1/2	0900 - 2100	2 closed		2028.5
28 SEPT			station outflow				1/2	0900 - 2100	2 closed		2028.5
29 SEPT	1400	19.6	7.90	1410	17.8	8.34	2	0900 - 2100	2 closed		2028.5
30 SEPT	0940	18.4	8.00	095	17.5	8.50	2	0900 -	2 closed		2028.5

FROM :

FAX NO. :

Jan 30 2004 09:05AM