

DEEP CREEK HYDROELECTRIC STATION
MDNR WATER APPROPRIATION PERMIT NO. GA92S009 (01)
GARRETT COUNTY, MARYLAND

ANNUAL REPORT for 1997

January 1998

BY

PENNSYLVANIA ELECTRIC COMPANY
JOHNSTOWN, PA

**DEEP CREEK HYDROELECTRIC STATION
MDNR WATER APPROPRIATION PERMIT NO. GA92S009 (01)
ANNUAL REPORT PER PERMIT CONDITION NO. 23**

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**DEEP CREEK HYDROELECTRIC STATION
MDNR WATER APPROPRIATION PERMIT NO. GA92S009 (01)
ANNUAL REPORT PER PERMIT CONDITION NO. 23**

1.0 SUMMARY

The Pennsylvania Electric Company (Permittee) holds Water Appropriation Permit GA92S009(01) issued by the Maryland Department of Natural Resources (MDNR) and now administered by the Maryland Department of the Environment (Department). This report is submitted in accordance with Permit Condition 23, which 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

Permit Condition 15 requires the Permittee to report the results of water level monitoring at Deep Creek Lake. Appendix A contains daily water-level data and a plot depicting lake levels for 1997.

1.2 Temperature Monitoring

Permit Condition 16 requires the Permittee to report the results of temperature monitoring. The Department approved a "Water Temperature Enhancement Plan" by letter dated June 8, 1996. In accordance with the Plan, the Permittee monitored river water temperature at the Sang Run Bridge and made temperature enhancement releases on 7 days in 1997. The Permittee provided Mr. S. P. Schreiner of Versar ESM, Inc., consultant to the MDNR, temperature enhancement summary data and the Operator's Log by letter dated November 20, 1997. Temperature monitoring data was submitted over the internet on November 17, with a confirmation received from Mr. Schreiner on the same day. Appendix B contains a record of daily

maximum water temperatures for 1997 as monitored by the Permittee and Versar and compiled by Versar.

1.3 Minimum Flow Release Monitoring

Permit Condition 17 requires the Permittee to report flow measurements and the occurrence of bypass releases. In 1997, the Permittee did not operate the flow bypass except for test purposes. Natural river flows in the Youghiogheny River did not trigger bypass releases from Deep Creek Station. A record of the river flows at the Oakland gaging station provided by the U.S. Geological Survey is presented in Appendix C.

1.4 Dissolved Oxygen (DO) Monitoring

Permit Condition 18 requires the Permittee to report the results of dissolved oxygen monitoring. The weir was operated in 1997 in accordance with the "Dissolved Oxygen (DO) Enhancement Operations and Monitoring Protocol" approved by the Department on January 6, 1995. GPU Genco petitioned the Department to discontinue the winter DO monitoring requirement contained in the protocol. Winter DO levels in the discharge of the powerhouse were well within water quality standards in all years of sampling. The Department, by letter dated December 1, 1997 agreed and approved the request to delete winter DO monitoring starting in 1998. The letter from the Department and data obtained from monitoring DO in 1997 is included in Appendix D.

In accordance with the DO enhancement protocol, Deep Creek Station operated the tailrace weir with all gates open until DO levels fell below 6.0 mg/l. This occurred on August 21 when Deep Creek Station measured DO levels of 3.01 mg/l while

operating one unit at about 76% capacity. By 1035 hours, DO climbed to 5.48 mg/l in the tailrace with two sluice gates closed and two open about one foot. The lowest winter DO measured in the tailrace downstream of the weir during generation was 10.44 mg/l, on January 7.

1.5 Releases Unsuitable For Whitewater Recreation

Permit Condition 19 requires Permittee to document the "times and dates when generation releases not suitable for whitewater recreation occurred." Such times and dates are presented in Appendix E. Appendix E also presents information on releases made on Fridays, Mondays and designated Saturdays, as required by Condition 19, and special releases made at the request of the whitewater boaters.

1.6 Zebra Mussel Monitoring

Permit Condition 21 requires the Permittee to submit the results of its zebra mussel monitoring program. Appendix F is a memorandum report presenting the results of zebra mussel monitoring at Deep Creek Lake. Artificial substrates placed at the station intake area have shown no signs of the zebra mussel to date.

APPENDIX A

LAKE LEVEL DATA AND PLOT

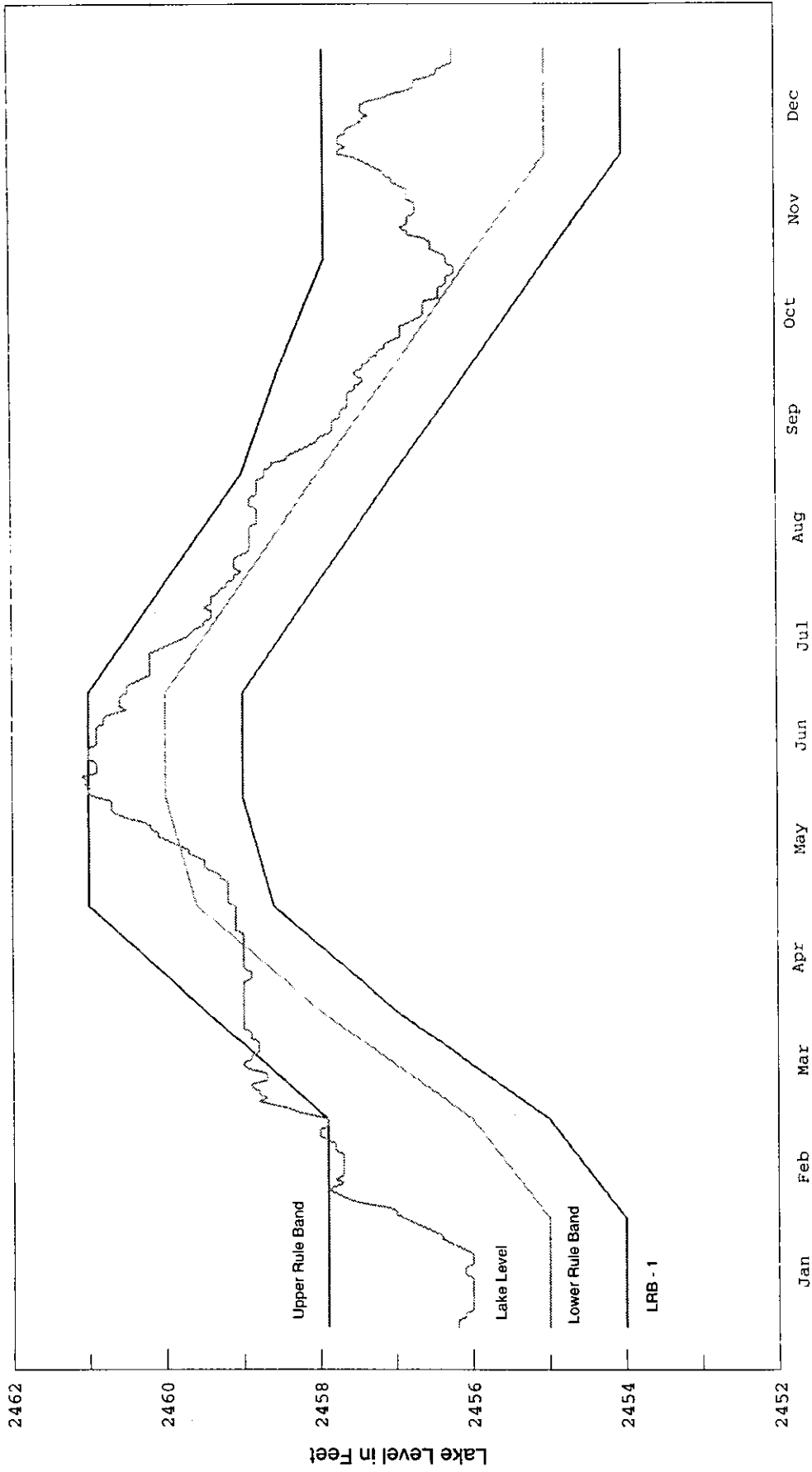
Deep Creek Lake Level 1997

Month	Day	Lake Level	in Fall	Month	Day	Lake Level	in Fall	Month	Day	Lake Level	in Fall
Jan	1	2456.2	0.00	Feb	1	2456.9	0.00	Mar	1	2457.9	1.00
	2	2456.2	0.10		2	2457.0	0.00		2	2458.1	0.95
	3	2456.2	0.20		3	2457.0	0.00		3	2458.3	1.00
	4	2456.1	0.02		4	2457.1	1.25		4	2458.4	0.18
	5	2456.1	0.27		5	2457.4	0.25		5	2458.6	0.70
	6	2456.0	0.00		6	2457.6	0.02		6	2458.8	0.25
	7	2456.0	0.00		7	2457.7	0.02		7	2458.7	0.00
	8	2456.0	0.00		8	2457.8	0.30		8	2458.8	0.00
	9	2456.0	0.40		9	2457.9	0.03		9	2458.8	0.10
	10	2456.0	0.22		10	2457.8	0.04		10	2458.9	0.22
	11	2456.0	0.05		11	2457.7	0.03		11	2458.9	0.00
	12	2456.0	0.00		12	2457.8	0.03		12	2458.7	0.00
	13	2456.0	0.00		13	2457.7	0.15		13	2458.7	0.10
	14	2456.0	0.05		14	2457.7	0.10		14	2458.7	1.05
	15	2456.0	0.05		15	2457.7	0.10		15	2458.9	0.00
	16	2456.1	0.40		16	2457.7	0.10		16	2459.0	0.00
	17	2456.1	0.08		17	2457.7	0.20		17	2459.0	0.00
	18	2456.1	0.02		18	2457.7	0.00		18	2458.9	0.50
	19	2456.0	0.00		19	2457.7	0.40		19	2458.9	0.35
	20	2456.0	0.00		20	2457.8	0.00		20	2458.8	0.00
	21	2456.0	0.00		21	2457.8	0.03		21	2458.8	0.00
	22	2456.0	0.15		22	2457.8	0.02		22	2458.8	0.00
	23	2456.1	0.10		23	2457.9	0.00		23	2458.8	0.15
	24	2456.2	0.60		24	2458.0	0.00		24	2458.9	0.00
	25	2456.3	0.20		25	2458.0	0.00		25	2458.9	0.50
	26	2456.4	0.03		26	2458.0	0.17		26	2458.9	0.90
	27	2456.4	0.60		27	2457.9	0.00		27	2459.0	0.00
	28	2456.5	0.30		28	2457.9	0.00		28	2459.0	0.00
	29	2456.6	0.02						29	2459.0	0.40
	30	2456.7	0.00						30	2459.0	0.35
	31	2456.8	0.00						31	2459.0	0.32
Total			3.86				3.24				9.02
Apr	1	2459.0	0.00	May	1	2459.1	0.08	Jun	1	2460.9	0.25
	2	2459.0	0.00		2	2459.2	0.00		2	2461.0	0.24
	3	2459.0	0.00		3	2459.2	0.67		3	2461.0	0.55
	4	2459.0	0.00		4	2459.2	0.08		4	2461.0	0.00
	5	2459.0	0.00		5	2459.2	0.00		5	2461.1	0.00
	6	2459.0	0.00		6	2459.2	0.15		6	2461.0	0.00
	7	2459.0	0.00		7	2459.2	0.00		7	2461.1	0.00
	8	2459.0	0.00		8	2459.2	0.48		8	2460.9	0.00
	9	2459.0	0.05		9	2459.3	0.32		9	2460.9	0.00
	10	2458.9	0.00		10	2459.3	0.95		10	2460.9	0.00
	11	2458.9	0.00		11	2459.4	0.00		11	2460.9	0.00
	12	2458.9	0.20		12	2459.5	0.05		12	2461.0	0.05
	13	2459.0	0.17		13	2459.5	0.19		13	2461.0	1.25
	14	2459.0	0.00		14	2459.5	0.10		14	2461.0	0.00
	15	2459.0	0.00		15	2459.6	0.35		15	2461.0	0.00
	16	2459.0	0.00		16	2459.7	0.05		16	2460.9	0.00
	17	2459.0	0.42		17	2459.7	0.17		17	2460.9	0.35
	18	2459.0	0.07		18	2459.8	0.52		18	2460.9	0.08
	19	2459.0	0.00		19	2459.9	0.65		19	2460.9	0.00
	20	2459.0	0.00		20	2460.0	0.40		20	2460.9	0.04
	21	2459.0	0.15		21	2460.1	0.00		21	2460.9	0.03
	22	2459.0	0.03		22	2460.1	0.00		22	2460.8	0.12
	23	2459.0	0.00		23	2460.2	0.00		23	2460.8	0.00
	24	2459.1	0.15		24	2460.2	0.00		24	2460.8	0.00
	25	2459.1	0.12		25	2460.3	1.60		25	2460.7	0.00
	26	2459.1	0.00		26	2460.5	0.20		26	2460.5	0.68
	27	2459.1	0.32		27	2460.6	0.00		27	2460.6	0.00
	28	2459.1	0.33		28	2460.7	0.00		28	2460.6	0.00
	29	2459.1	0.00		29	2460.7	0.05		29	2460.6	0.00
	30	2459.1	0.00		30	2460.7	0.02		30	2460.6	0.02
					31	2460.7	0.00				
Total			2.01				7.08				3.66

Deep Creek Lake Level 1997

Month	Day	Lake Level	in Fall	Month	Day	Lake Level	in Fall	Month	Day	Lake Level	in Fall
Jul	1	2460.5	0.83	Aug	1	2459.2	0.00	Sep	1	2458.7	0.00
	2	2460.5	0.02		2	2459.1	0.03		2	2458.7	0.00
	3	2460.5	0.00		3	2459.1	0.10		3	2458.6	0.21
	4	2460.4	0.00		4	2459.0	1.02		4	2458.6	0.00
	5	2460.3	0.00		5	2459.1	0.00		5	2458.4	0.03
	6	2460.2	0.00		6	2459.1	0.00		6	2458.4	0.05
	7	2460.2	0.00		7	2459.1	0.00		7	2458.3	0.05
	8	2460.2	0.00		8	2459.1	0.00		8	2458.2	0.02
	9	2460.2	0.45		9	2459.0	0.00		9	2458.1	0.20
	10	2460.2	0.05		10	2458.9	0.00		10	2458.0	0.43
	11	2460.2	0.00		11	2458.9	0.00		11	2458.0	0.12
	12	2460.2	0.00		12	2458.9	0.00		12	2457.9	0.00
	13	2460.1	0.00		13	2458.9	0.80		13	2457.8	0.00
	14	2460.0	0.00		14	2458.9	0.00		14	2457.8	0.00
	15	2459.9	0.00		15	2458.9	0.42		15	2457.8	0.00
	16	2459.8	0.00		16	2458.9	0.36		16	2457.8	0.00
	17	2459.7	0.00		17	2458.9	1.84		17	2457.7	0.10
	18	2459.7	0.75		18	2458.8	0.21		18	2457.7	0.00
	19	2459.6	0.12		19	2458.8	0.00		19	2457.7	0.00
	20	2459.5	0.00		20	2458.8	0.76		20	2457.6	0.62
	21	2459.5	0.00		21	2458.8	0.16		21	2457.6	0.00
	22	2459.4	0.27		22	2458.8	0.18		22	2457.6	0.00
	23	2459.4	0.34		23	2458.9	0.00		23	2457.6	0.00
	24	2459.4	1.38		24	2458.9	0.00		24	2457.6	0.00
	25	2459.5	0.00		25	2458.9	0.00		25	2457.5	0.00
	26	2459.4	0.02		26	2458.8	0.00		26	2457.5	0.00
	27	2459.4	0.00		27	2458.8	0.05		27	2457.4	0.00
	28	2459.4	0.25		28	2458.8	0.95		28	2457.4	1.57
	29	2459.3	0.00		29	2458.8	0.00		29	2457.5	0.15
	30	2459.3	0.00		30	2458.8	0.00		30	2457.5	0.00
	31	2459.2	0.00		31	2458.7	0.00				
Total			4.48				6.88				3.55
Oct	1	2457.4	0.40	Nov	1	2456.3	0.78	Dec	1	2457.7	0.00
	2	2457.4	0.00		2	2456.3	0.57		2	2457.7	0.00
	3	2457.3	0.00		3	2456.4	0.02		3	2457.6	0.10
	4	2457.3	0.00		4	2456.5	0.07		4	2457.7	0.33
	5	2457.2	0.00		5	2456.5	0.00		5	2457.7	0.07
	6	2457.2	0.00		6	2456.5	0.40		6	2457.7	0.10
	7	2457.1	0.00		7	2456.6	1.52		7	2457.6	0.05
	8	2457.1	0.00		8	2456.8	0.63		8	2457.6	0.00
	9	2457.0	0.00		9	2456.8	0.07		9	2457.5	0.00
	10	2456.9	0.10		10	2456.9	0.00		10	2457.4	0.58
	11	2456.9	0.00		11	2456.8	0.05		11	2457.4	0.22
	12	2456.9	0.00		12	2456.8	0.02		12	2457.3	0.02
	13	2456.9	0.00		13	2456.8	0.02		13	2457.4	0.00
	14	2456.8	0.00		14	2456.7	1.00		14	2457.4	0.00
	15	2456.7	0.00		15	2456.7	0.15		15	2457.4	0.00
	16	2456.6	0.00		16	2456.7	0.22		16	2457.3	0.00
	17	2456.6	0.00		17	2456.7	0.00		17	2457.1	0.00
	18	2456.6	0.00		18	2456.8	0.00		18	2457.0	0.00
	19	2456.6	0.00		19	2456.8	0.00		19	2456.8	0.00
	20	2456.6	0.00		20	2456.8	0.00		20	2456.7	0.00
	21	2456.4	0.00		21	2456.8	0.57		21	2456.7	0.00
	22	2456.4	0.00		22	2456.9	0.32		22	2456.7	0.45
	23	2456.4	0.00		23	2457.0	0.12		23	2456.5	0.20
	24	2456.4	0.40		24	2457.0	0.04		24	2456.4	0.45
	25	2456.3	0.08		25	2457.1	0.00		25	2456.4	0.15
	26	2456.3	0.80		26	2457.1	0.20		26	2456.3	0.05
	27	2456.3	0.00		27	2457.2	0.00		27	2456.2	0.22
	28	2456.2	0.00		28	2457.3	0.36		28	2456.2	0.00
	29	2456.2	0.00		29	2457.4	0.12		29	2456.2	0.45
	30	2456.2	0.00		30	2457.5	0.90		30	2456.2	0.10
	31	2456.3	0.00						31	2456.2	0.10
Total			1.78				8.15				3.64
Year Total											57.35

Deep Creek Lake Level - 1997



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 table. 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 "PenMAX" 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.

DATE	SANGMAX	PENSMAX
01-Jun-97		15.99
02-Jun-97		15.28
03-Jun-97		14.93
04-Jun-97		16.31
05-Jun-97		16.27
06-Jun-97		16.09
07-Jun-97		16.2
08-Jun-97		18.44
09-Jun-97		19.81
10-Jun-97		21.51
11-Jun-97	19.7	19.87
12-Jun-97	19.45	20.11
13-Jun-97	17.9	18.08
14-Jun-97	17.5	17.82
15-Jun-97	19.1	20.18
16-Jun-97	19.9	
17-Jun-97	22.2	
18-Jun-97	21.5	
19-Jun-97	20.95	
20-Jun-97	20.6	
21-Jun-97	21.4	
22-Jun-97	22.85	
23-Jun-97	22.3	
24-Jun-97	23.8	
25-Jun-97	23	
26-Jun-97	23.05	
27-Jun-97	21.4	
28-Jun-97	23.45	24.04
29-Jun-97	24.15	24.3
30-Jun-97	20.7	20.5
01-Jul-97	22.35	22.21
02-Jul-97	24.25	24.43
03-Jul-97	26.8	26.3
04-Jul-97	21.7	21.15
05-Jul-97	19.25	19.68
06-Jul-97	23.95	24.41
07-Jul-97	21.05	21.3
08-Jul-97	26.1	25.9
09-Jul-97	22.25	18.95
10-Jul-97	24.05	25.07
11-Jul-97	22.1	23.19
12-Jul-97	24.85	23.36
13-Jul-97	23.2	21.99
14-Jul-97	21.15	19.78
15-Jul-97	23.8	22.84

16-Jul-97	26	24.85
17-Jul-97	24.25	22.85
18-Jul-97	23.8	22.62
19-Jul-97	22.35	22.36
20-Jul-97	26.75	26.01
21-Jul-97	22.05	20.7
22-Jul-97	23.05	23.15
23-Jul-97	21.7	21.53
24-Jul-97	21	21.35
25-Jul-97	20.05	20.36
26-Jul-97	23.45	23.76
27-Jul-97	25.9	26.03
28-Jul-97	23.7	22.88
29-Jul-97	25.65	24.78
30-Jul-97	25.7	26.27
31-Jul-97	25.9	26.16
01-Aug-97	21.35	22.11
02-Aug-97	20.75	20.98
03-Aug-97	23.05	22.77
04-Aug-97	20.9	21.79
05-Aug-97	20.85	21.18
06-Aug-97	22	22
07-Aug-97	23.25	24.38
08-Aug-97	20.65	21.68
09-Aug-97	25.2	25.66
10-Aug-97	25.8	25.88
11-Aug-97	21.85	22.03
12-Aug-97	25.35	25.55
13-Aug-97	21.45	21.51
14-Aug-97	24.05	24.16
15-Aug-97	21.45	20.5
16-Aug-97	22.3	21.98
17-Aug-97	24.75	23.52
18-Aug-97	22.2	22.38
19-Aug-97	21.05	21.3
20-Aug-97	19.5	19.54
21-Aug-97	18.5	18.31
22-Aug-97	17.55	17.6
23-Aug-97	17.55	19
24-Aug-97	18.85	19.22
25-Aug-97	18.6	18.9
26-Aug-97	20.75	21.46
27-Aug-97	21.15	21.01
28-Aug-97	22.7	23.21
29-Aug-97	19.75	19.78
30-Aug-97	19.65	20.74
31-Aug-97	21.9	23.05

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Data</u>
4/16/97	1030	Deep Creek	Sharp inspecting sub.
4/18/97	1000	Deep Creek	Units loaded, to cond at 1300
4/21/97	0700	Deep Creek	Radio Check ok
4/21/97	0733	Deep Creek	Station power alarm/normal
4/21/97	0800	Deep Creek	Units loaded on cost.
4/25/97	1000	Deep Creek	#1&2 units loaded to cond 1300
4/26/97	1000	Deep Creek	#1&2 units loaded to cond 1300
4/28/97	0720	Deep Creek	Radio cks comp
4/28/97	0819	Deep Creek	Emerg gen on off at 0827
4/28/97	1000	Deep Creek	#1&2 units loaded to cond at 1300
5/ 2/97	0838	Deep Creek	By pass valve back in service
5/ 2/97	1000	Deep Creek	Units # 1 & 2 loaded
5/ 2/97	1025	Deep Creek	Sharp sub inspection
5/ 2/97	1300	Deep Creek	Units # 1 & 2 to condenser
5/ 2/97	2210	Deep Creek	#1 & 2 machines loaded (100% Spinning)
5/ 3/97	0900	Deep Creek	Units # 1 & 2 loaded to condenser at 1200
5/ 4/97	2045	Deep Creek	#1 & 2 machines loaded (Cost)
5/ 5/97	0720	Deep Creek	Radio check failed at Deep Creek, can not receive notified Lamb
5/ 7/97	1225	Deep Creek	Sang River temperature probe in service
5/ 9/97	1000	Deep Creek	Units # 1 & 2 loaded to condenser at 1300
5/12/97	0727	Deep Creek	Plant radio checked ok
5/12/97	0800	Deep Creek	#1 & 2 machines loaded (100% spinning) To cond at 0805
5/14/97	2045	Deep Creek	Loaded for 100% spinning. Condenser 2100
5/16/97	1000	Deep Creek	# 1 and 2 units loaded. cond 1300
5/19/97	0725	Deep Creek	Checked radio ok.
5/19/97	0725	Deep Creek	Emg gen on for test off 0733
5/19/97	1000	Deep Creek	#1 and 2 units loaded comp: 1300
5/20/97	1235	Deep Creek	Plant calibrating bypass flow valve.
5/23/97	1000	Deep Creek	Units loaded to cond at 1300
5/24/97	1000	Deep Creek	Units loaded to cond at 1300
5/26/97	0730	Deep Creek	Roger claims flo is too dangerous and requested the release for today cancelled. Cancelled release and updated tape.
5/27/97	0710	Deep Creek	Start req # 616, #1 & 2 units off for Inspection
5/27/97	0714	Deep Creek	Radio check ok
5/27/97	0723	Deep Creek	Station power alarm normal at 0728
5/28/97	1135	Deep Creek	Comp req # 616 #1 & 2 units closed & available. Notified Gen Disp.
5/29/97	1127	Deep Creek	Scanlan working on RTU
5/30/97	1000	Deep Creek	#1&2 units loaded to cond at 1300
5/30/97	1047	Deep Creek	Scanlon on RTU
6/ 2/97	0350	Deep Creek	Hi lake level alarm (2461.05') Not. Hoadly Lake level is 2461.0 per Hoadly
6/ 2/97	0600	Deep Creek	#1 & 2 machines loaded
6/ 2/97	0720	Deep Creek	Emerg Gen on off at 0728
6/ 2/97	0730	Deep Creek	Radio ck comp OK
6/ 2/97	0935	Deep Creek	#1&2 units to cond
6/ 2/97	1000	Deep Creek	#1&2 units loaded
6/ 2/97	2359	Deep Creek	Units to cond.
6/ 3/97	0800	Deep Creek	Units # 1 & 2 loaded high lake level
6/ 3/97	2359	Deep Creek	Units to cond.
6/ 4/97	1000	Deep Creek	#1&2 units loaded to cond at 1300
6/ 4/97	2055	Deep Creek	Units # 1 & 2 loaded for cost to condenser at 2125
6/ 5/97	2359	Deep Creek	Units to cond.
6/ 6/97	1000	Deep Creek	Units # 1 & 2 loaded
6/ 6/97	1300	Deep Creek	Units # 1 & 2 to condenser
6/ 7/97	0900	Deep Creek	Units # 1 & 2 loaded due to high lake level 2461.1
6/ 7/97	2200	Deep Creek	#1 & 2 machines to cond
6/ 9/97	0722	Deep Creek	Radio check complete
6/ 9/97	0859	Deep Creek	Emergency generator on off at 0904

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Data</u>
6/9/97	1000	Deep Creek	Units # 1 & 2 loaded to condenser at 1300
6/12/97	1000	Deep Creek	Units # 1 & 2 loaded high lake level to condenser at 1300
6/12/97	1510	Deep Creek	100% spinning. cancelled.
6/13/97	0600	Deep Creek	Units loaded L.L. 2461.09
6/13/97	2200	Deep Creek	Units to cond.
6/14/97	1000	Deep Creek	Loaded. Cond 1300.
6/15/97	1000	Deep Creek	#1 & 2 machines loaded To cond at 1300
6/16/97	0727	Deep Creek	Radio checked ok
6/16/97	1000	Deep Creek	#1 & 2 machines loaded To Cond at 1300
6/18/97	1000	Deep Creek	#1 & 2 machines loaded To cond at 1300
6/19/97	1000	Deep Creek	#1 & 2 machines loaded To cond at 1300
6/20/97	1000	Deep Creek	# 1 and 2 units loaded cond:
6/20/97	1300	Deep Creek	1 and 2 units left on due to cost.
6/20/97	1600	Deep Creek	Units to cond.
6/21/97	1000	Deep Creek	# 1 and 2 units loaded
6/21/97	1600	Deep Creek	Units to cond
6/21/97	2100	Deep Creek	Units loaded 100 % Spin
6/21/97	2230	Deep Creek	Units to cond
6/23/97	0716	Deep Creek	Emg gen on for test off 0734
6/23/97	0725	Deep Creek	Radio checked ok.
6/23/97	1000	Deep Creek	# 1 and 2 units loaded. to cond: 1300
6/24/97	1100	Deep Creek	# 1 and 2 units loaded for temp release , Required because river flows unavailable from C. of Eng. Both Oakland and Friendville out.
6/24/97	1430	Deep Creek	Units loaded on cost 50.7 to cond at 1830.
6/25/97	0950	Deep Creek	Units loaded on 51.8 cost.
6/25/97	1550	Deep Creek	Units to cond
6/26/97	1100	Deep Creek	# 1 and 2 units loaded on cost 73.4
6/26/97	1620	Deep Creek	#1&2 units to cond on cost
6/27/97	1000	Deep Creek	Units loaded to cond at 1300
6/30/97	0735	Deep Creek	Plant radio check ok
6/30/97	0821	Deep Creek	Emergency generator on off at 0838
6/30/97	1000	Deep Creek	Units loaded to cond at 1300
6/30/97	1039	Deep Creek	Sharp inspection
7/ 3/97	1350	Deep Creek	Units loaded on cost 54.2 Tape not to be updated per Thomas
7/ 4/97	1000	Deep Creek	#1&2 units loaded to cond 1300
7/ 5/97	1000	Deep Creek	#1&2 units loaded to cond at 1400
7/ 7/97	0720	Deep Creek	Radio ck comp
7/ 7/97	0739	Deep Creek	Emerg Gen on off at 0744
7/ 7/97	1000	Deep Creek	#1&2 units loaded to cond at 1300
7/ 8/97	1420	Deep Creek	#1&2 units loaded for temp enhancement
7/ 8/97	1520	Deep Creek	Units # 1 & 2 to condenser
7/ 8/97	1724	Deep Creek	Cost at 58mill did not load units because of loading of the Somerset Allegheny line (@90%)
7/11/97	0700	Deep Creek	Temperature reading from probe has a bad reading notified Thomas at Deep Creek
7/11/97	0900	Deep Creek	Temperature reading still bad
7/11/97	0930	Deep Creek	Thomas reports someone tried to destroy temperature probe, conduit pulled out of ground
7/11/97	1000	Deep Creek	Units # 1 & 2 loaded to condenser at 1300
7/12/97	1200	Deep Creek	Units # 1 & 2 loaded for <u>temperature enhancement</u> 1 hour release required to condenser at 1300
7/13/97	1100	Deep Creek	Units # 1 & 2 loaded for <u>temperature enhancement</u> to condenser at 1300
7/13/97	1430	Deep Creek	Units # 1 & 2 loaded for cost
7/13/97	1830	Deep Creek	#1 & 2 machines to cond, Ran Max 12 unit hrs. per day
7/14/97	0717	Deep Creek	Radio check complete
7/14/97	1000	Deep Creek	Units # 1 & 2 loaded
7/14/97	1600	Deep Creek	#1 & 2 machines to cond

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Data</u>
7/15/97	1100	Deep Creek	Units # 1 & 2 loaded for cost (159Mils) and maximum emergency generation Note: 1230 Temperature enhancement release
7/15/97	1700	Deep Creek	#1 & 2 machines to cond
7/16/97	1230	Deep Creek	Units # 1 & 2 loaded for temperature enhancement (2 hour requirement) addition 4 hours for cost (156 mils)
7/16/97	1830	Deep Creek	#1 & 2 machines to cond
7/17/97	1100	Deep Creek	Units # 1 & 2 loaded for temperature enhancement (2 hour release required) Cost at 102 mils
7/17/97	1700	Deep Creek	Units to cond.
7/18/97	1100	Deep Creek	Units # 1 & 2 loaded for scheduled lease (was scheduled from 1000-1300) loaded late alarm not set Temperature called for release at 1100 for 2 hours and cost at 76 mils
7/18/97	1700	Deep Creek	Units to cond.
7/19/97	1000	Deep Creek	#1 & 2 machines loaded To Cond at 1330 Regular release & Temperature Enhancement
7/20/97	1400	Deep Creek	#1 & 2 machines loaded, Temperature Enhancement
7/20/97	1500	Deep Creek	#1 and 2 units to cond.
7/20/97	2105	Deep Creek	Loaded for 100% spinning canceled 2115
7/21/97	0725	Deep Creek	Plant radio checked ok
7/21/97	1000	Deep Creek	#1 & 2 machines loaded Temperature enhancement (1230-1330) and cost
7/21/97	1109	Deep Creek	Emerg generator on Off at 1116
7/21/97	1540	Deep Creek	#2 unit tripped 12kv and Neutral Cb's opened
7/21/97	1540	Deep Creek	#2 Transf&Gen Critical alarm, Non-critical alarm and Lockout Alarm.
7/21/97	1644	Deep Creek	12KV # 2 gen closed and unit on as cond.
7/21/97	2045	Deep Creek	#1 and 2 units loaded for 100% spin cond 2110
7/25/97	1000	Deep Creek	#1 and 2 units loaded. cond. 1300
7/25/97	2112	Deep Creek	Units loaded 100% spinning, to cond at 2121
7/27/97	1405	Deep Creek	✓ #1 and 2 units loaded for temp release for 1 hour.
7/27/97	1500	Deep Creek	Temp plan calls for 1 more hour, cost 50.8
7/27/97	1605	Deep Creek	Units to cond. Water temp 26.012, cost 49.0
7/28/97	0718	Deep Creek	Emg gen on for test off 0726
7/28/97	0725	Deep Creek	Radio checked ok.
7/28/97	1000	Deep Creek	# 1 and 2 units loaded.
7/28/97	1600	Deep Creek	Units to cond, cost still 102.0
7/29/97	0946	Deep Creek	Thomas working on lake level
7/29/97	1230	Deep Creek	✓ #1 and 2 units loaded for temperature release .
7/30/97	1505	Deep Creek	Units loaded for temp , cost 24.0
7/30/97	1605	Deep Creek	Units to cond.
7/31/97	1515	Deep Creek	✓ #1&2 unit loaded for Temp enhancement to cond @ 1615
8/ 1/97	0940	Deep Creek	100% Spinning to cond at 0950
8/ 1/97	1348	Deep Creek	Units loaded 100% spinning to cond at 1407
8/ 2/97	1000	Deep Creek	d Units loaded to cond at 1300
8/ 3/97	0935	Deep Creek	Units loaded 100% spinning cost 20 units to cond at 0948
8/ 3/97	1200	Deep Creek	✓ Units loaded for temp , cost 37. To cond at 1300
8/ 3/97	2024	Deep Creek	#1&2 units loaded 100% spin to cond 2041
8/ 4/97	0700	Deep Creek	Radio check ok
8/ 4/97	0755	Deep Creek	Emergency generator on off at 0803
8/ 4/97	1000	Deep Creek	Units loaded to cond at 1300
8/ 8/97	1000	Deep Creek	#1&2 units loaded to cond at 1300
8/10/97	1415	Deep Creek	✓ Units # 1 & 2 loaded for temperature enhancement
8/10/97	1515	Deep Creek	Units # 1 & 2 to condenser
8/11/97	100	Deep Creek	#1&2 units loaded to cond 1300
8/12/97	1415	Deep Creek	✓ #1&2 units loaded for temp enhancement
8/12/97	1515	Deep Creek	Units # 1 & 2 to condenser
8/15/97	1000	Deep Creek	Units # 1 & 2 loaded
8/15/97	1300	Deep Creek	Units # 1 & 2 to condenser

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Data</u>
8/15/97	1600	Deep Creek	#1 & 2 machines loaded (Cost) To cond at 1830
8/16/97	0940	Deep Creek	Units # 1 & 2 loaded for 100% spinning issued at 0935
8/16/97	1010	Deep Creek	Units # 1 & 2 to condenser 100% spin cancelled at 0959 and GPU never called and notified us found out 100% spin was issued at 0822 cancelled at 0922 and we where never notified.
8/16/97	1100	Deep Creek	Units # 1 & 2 loaded for cost 89 mils
8/16/97	1700	Deep Creek	#1 & 2 machines to cond
8/17/97	1230	Deep Creek	Units # 1 & 2 loaded for temperature enhancement
8/17/97	1430	Deep Creek	Units # 1 & 2 to condenser
8/18/97	0723	Deep Creek	Radio check complete
8/18/97	0758	Deep Creek	# 2 Generator tripped of line DC ground problem Gen & TX critical alarm, # 2 Gen lockout, 12kv # 2 Gen CB open and Neutral CB open
8/18/97	0853	Deep Creek	# 1 Generator tripped off line, # 1 Gen/TX critical and non-critical alarms, 115kv CB open and Neutral CB open
8/18/97	0920	Deep Creek	# 1 Generator 115kv CB closed # 1 Unit available
8/18/97	1000	Deep Creek	Unit # 1 loaded as scheduled per request of Rodger Zbel request because of high river conditions
8/18/97	1051	Deep Creek	Unit # 2 on line and available
8/18/97	1300	Deep Creek	Unit # 1 to condenser
8/19/97	1019	Deep Creek	Units # 1 & 2 off line
8/19/97	1209	Deep Creek	Unit # 1 on line
8/19/97	1423	Deep Creek	Unit # 2 on and available
8/20/97	1035	Deep Creek	Unit # 2 off line start req # 1003
8/21/97	0900	Deep Creek	Loading of units delayed, Waiting for Rodgers return phone call on release.
8/21/97	0910	Deep Creek	Loaded 1 unit at economy per Rodgers request due to high water in river.
8/21/97	1500	Deep Creek	Unit # 1 to condenser
8/22/97	1000	Deep Creek	Unit # 1 & 2 loaded to condenser at 1300
8/25/97	0723	Deep Creek	Plant radio checked ok
8/25/97	1000	Deep Creek	#1 & 2 machines load To cond at 1300
8/27/97	1235	Deep Creek	#1 & 2 machines loaded (100% spinning) To cond at 1300
8/27/97	1320	Deep Creek	#1 & 2 machines loaded (100% spinning) To cond at 1335
8/28/97	1350	Deep Creek	#1 & 2 machines loaded (100% spinning) To cond at 1355
8/29/97	1000	Deep Creek	#1 and 2 units loaded cond. 1300
8/30/97	1000	Deep Creek	# 1 and 2 units loaded. cond 1400
8/31/97	2214	Deep Creek	Units loaded 100% spinning to cond at 2221
9/ 1/97	1000	Deep Creek	Units loaded to cond. 1300
9/ 1/97	2002	Deep Creek	Units loaded 100% spinning to cond at 2028
9/ 2/97	0726	Deep Creek	Radio checked completed ok
9/ 2/97	1038	Deep Creek	100% spin cancelled 1044 cond 1048
9/ 2/97	1230	Deep Creek	#1 and 2 units loaded on cost.
9/ 2/97	1800	Deep Creek	Units to cond cost at 36.6
9/ 4/97	1000	Deep Creek	#1 and 2 units loaded to cond 1300
9/ 4/97	1005	Deep Creek	Sharp inspecting
9/ 4/97	1800	Deep Creek	#1&2 units loaded to cond at 2100
9/ 5/97	1000	Deep Creek	Units loaded
9/ 5/97	1800	Deep Creek	#1&2 units loaded to cond at 2100
9/ 6/97	1000	Deep Creek	Units loaded
9/ 6/97	2000	Deep Creek	#1&2 units loaded on cost to cond 2115
9/ 7/97	1555	Deep Creek	#1&2 units loaded 100% Spin Spin cancelled at 1621 units still on for cost
9/ 7/97	2145	Deep Creek	#1&2 units unloaded on cost
9/ 8/97	0620	Deep Creek	Units # 1 & 2 loaded for 100% spinning
9/ 8/97	0635	Deep Creek	Units # 1 & 2 to condenser 100% spinning cancelled
9/ 8/97	0720	Deep Creek	Radio test completed.
9/ 8/97	1000	Deep Creek	#1 and 2 units loaded.
9/ 8/97	1154	Deep Creek	Emg gen on for test off 1159
9/ 8/97	1300	Deep Creek	Unit still on due to 52 mill cost.
9/ 8/97	1425	Deep Creek	Units to cond.

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Data</u>
9/ 8/97	1800	Deep Creek	#1&2 units loaded to cond 1930
9/ 9/97	0709	Deep Creek	Unit # 1 loaded for 100% spinning to condenser at 0714
9/ 9/97	1000	Deep Creek	Units # 1 & 2 loaded
9/ 9/97	1300	Deep Creek	#1&2 units to cond
9/ 9/97	1800	Deep Creek	#1&2 units loaded to cond 2100
9/10/97	0610	Deep Creek	#1 & 2 machines loaded (100% Spinning) To cond at 0625
9/10/97	1000	Deep Creek	#1&2 units loaded to cond 1300
9/11/97	0939	Deep Creek	#1&2 units loaded 100& Spin to cond 0849
9/11/97	1000	Deep Creek	#1&2 units loaded to cond
9/11/97	1800	Deep Creek	Units # 1 & 2 loaded to condenser at 2100
9/12/97	1000	Deep Creek	#1&2 units loaded to cond at 1300
9/12/97	1957	Deep Creek	Units # 1 & 2 loaded for 100% spinning
9/13/97	0845	Deep Creek	#1&2 units loaded 100% Spin off 0905
9/14/97	1940	Deep Creek	Units # 1 & 2 loaded for cost (88 mils)
9/14/97	2030	Deep Creek	Units # 1 & 2 to condenser
9/15/97	0633	Deep Creek	#1&2 units loaded 100% Spin to cond 0639
9/15/97	0715	Deep Creek	Radio ck comp
9/15/97	1000	Deep Creek	#1&2 unit loaded to cond at 1300
9/16/97	0909	Deep Creek	#1&2 units loaded 100% Spin to cond 0923
9/17/97	0625	Deep Creek	Units loaded 100% spin to cond 0639
9/18/97	0757	Deep Creek	#2 Gen & Tx non-crit alarm normal 0807 Harlon switching oil pumps
9/19/97	1000	Deep Creek	Units # 1 & 2 loaded
9/19/97	1300	Deep Creek	Units # 1 & 2 to condenser
9/22/97	0720	Deep Creek	Radio check complete
9/22/97	1000	Deep Creek	Units # 1 & 2 loaded
9/22/97	1300	Deep Creek	Units # 1 & 2 to condenser
9/23/97	0630	Deep Creek	Units loaded 100% spinning
9/23/97	0640	Deep Creek	Units # 1 & 2 to condenser
9/23/97	1100	Deep Creek	Units # 1 & 2 loaded
9/23/97	1300	Deep Creek	Units # 1 & 2 to condenser
9/24/97	1100	Deep Creek	Units # 1 & 2 loaded
9/25/97	1100	Deep Creek	Units # 1 & 2 loaded to condenser at 1300
9/26/97	1000	Deep Creek	Units # 1 & 2 loaded to condenser at 1300
9/29/97	0722	Deep Creek	Radio check complete
9/29/97	0852	Deep Creek	Emerg generator on Off at 0859
9/29/97	1000	Deep Creek	#1 & 2 machines loaded To cond at 1300
9/30/97	1730	Deep Creek	#1 and 2 units loaded on cost 50.3 to cond 1830
9/30/97	1910	Deep Creek	Units loaded on 55 mil cost. cond: 2020
10/ 2/97	0720	Deep Creek	#1 & 2 machines loaded (100% Spinning) Cancelled at 0724, Cost is 86 Mils To cond at 0830
10/ 2/97	1911	Deep Creek	Units loaded 100% spinning, to cond at 1919
10/ 2/97	2309	Deep Creek	#1&2 units loaded 100% Spin to cond 2316
10/ 3/97	1000	Deep Creek	Units loaded.
10/ 3/97	1300	Deep Creek	Units to cond.
10/ 3/97	1620	Deep Creek	RTU down, notified Delorian
10/ 3/97	1945	Deep Creek	RTU up
10/ 3/97	2307	Deep Creek	#1&2 units loaded 100% spin to cond 2318
10/ 4/97	0726	Deep Creek	Unit loaded 100% spin cond. 0740
10/ 4/97	1000	Deep Creek	Units loaded to cond. 1300
10/ 6/97	0620	Deep Creek	#1&2 units loaded 100% Spin to cond 0635
10/ 6/97	0720	Deep Creek	Radio check completed.
10/ 6/97	1000	Deep Creek	# 1 and 2 units loaded
10/ 6/97	1300	Deep Creek	# 1 and 2 left on due to 67 mill cost.
10/ 6/97	1600	Deep Creek	Units to cond
10/ 7/97	1345	Deep Creek	# 1 and 2 units loaded for 52.7 mill cost.
10/ 7/97	1945	Deep Creek	Units to cond, cost 62
10/ 8/97	1838	Deep Creek	Units loaded on cost 52, to cond at 2033

<u>Date</u>	<u>Time</u>	<u>Location</u>	<u>Data</u>
10/9/97	1240	Deep Creek	Units loaded on cost. 51 mills
10/9/97	1815	Deep Creek	#1&2 units to cond on cost
10/10/97	0707	Deep Creek	Units loaded 100%
10/10/97	1000	Deep Creek	Units loaded to cond at 1300
10/11/97	0915	Deep Creek	Units loaded 100% spinning
10/11/97	0930	Deep Creek	Units to cond.
10/13/97	0722	Deep Creek	Radio check ok
10/13/97	0723	Deep Creek	Generator on for test comp at 0725
10/13/97	1000	Deep Creek	Units loaded, to cond at 1300
10/13/97	2105	Deep Creek	#1&2 units loaded 100% spin to cond at 2113
10/14/97	0605	Deep Creek	#1 & 2 machines loaded (100% Spinning) To cond at 0615
10/14/97	0800	Deep Creek	Units loaded on cost 50.9 to cond at 1000
10/14/97	1835	Deep Creek	#1&2 units loaded on cost to cond 1935
10/15/97	0715	Deep Creek	Units loaded on cost 50.9
10/15/97	0930	Deep Creek	Units to cond
10/15/97	1308	Deep Creek	Units loaded, to cond at 1312 100% spinning

27-JUL-97

Youghogheny River Water Temperature Enhancement Plan

84.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	23.55	Check again at 0900
	<=30	25.71	Check again at 0900
0900	> 30	23.54	Check again at 1100
	<=30	25.70	Check again at 1100
1100	All	25.33	Check again at 1200
1200	All	25.09	Check again at 1400
1400	All	26.26	Release ASAP - not later than 1430 for 1 hour
1500	All	-2.05	No further predictions necessary today

88 Air Temp, Elkins WV - Degree
 TSTRMS Cloud Cover, Elkins WV

Tair	31.1	Air Temp, Elkins WV - Degree C
CCF	100	Cloud Cover Factor, Elkins WV
T7	19.70	River Temp Sang Run @700
T9	19.96	River Temp Sang Run @900
T11	20.80	River Temp Sang Run @1100
T12	21.34	River Temp Sang Run @1200
T14	23.82	River Temp Sang Run @1400
I15	0.00	River Temp Sang Run @1500
Q	84.0	River Flow at Oakland

29-Jul-97

Youghiogheny River Water Temperature Enhancement Plan

64.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
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0700	> 30	23.66	Check again at 0900
	<=30	25.02	Check again at 0900
0900	> 30	23.96	Check again at 1100
	<=30	25.32	Check again at 1100
1100	All	25.44	Release at 1230 for 2 hours
1200	All	1.97	No further predictions necessary today
1400	All	6.19	No further predictions necessary today
1500	All	4.33	No further predictions necessary today

78 Air Temp, Elkins WV - Degree
PICLDY Cloud Cover, Elkins WV

Tair	25.6	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	19.37	River Temp Sang Run @700
T9	19.62	River Temp Sang Run @900
T11	21.21	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	64.0	River Flow at Oakland

31-Jul-97

Youghiogheny River Water Temperature Enhancement Plan

42.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
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0700	> 30	24.18	Check again at 0900
	<=30	24.66	Check again at 0900
0900	> 30	24.09	Check again at 1100
	<=30	24.57	Check again at 1100
1100	All	24.50	Check again at 1200
1200	All	24.30	Check again at 1400
1400	All	25.10	Check again at 1500
1500	All	26.05	Release ASAP - not later than 1530 for 1 hour

79 Air Temp, Elkins WV - Degree
SUNNY Cloud Cover, Elkins WV

Tair	26.1	Air Temp, Elkins WV - Degree C
CCF	1	Cloud Cover Factor, Elkins WV
T7	15.79	River Temp Sang Run @700
T9	15.95	River Temp Sang Run @900
T11	18.00	River Temp Sang Run @1100
T12	19.15	River Temp Sang Run @1200
T14	22.38	River Temp Sang Run @1400
T15	24.27	River Temp Sang Run @1500
Q	42.0	River Flow at Oakland

03-Aug-97

Youghiogheny River Water Temperature Enhancement Plan

26.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
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0700	> 30	25.54	Check again at 0900
	<=30	25.38	Check again at 0900
0900	> 30	25.58	Check again at 1100
	<=30	25.42	Check again at 1100
1100	All	25.17	Check again at 1200
1200	All	25.44	Release ASAP - not later than 1230 for 1 hour
1400	All	24.32	Check again at 1500
1500	All	21.55	No further predictions necessary today

Tair	27.2	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	18.85	River Temp Sang Run @700
T9	18.98	River Temp Sang Run @900
T11	20.33	River Temp Sang Run @1100
T12	21.56	River Temp Sang Run @1200
T14	22.78	River Temp Sang Run @1400
T15	20.93	River Temp Sang Run @1500
Q	26.0	River Flow at Oakland

81 Air Temp, Elkins WV - Degree
 FICIDY Cloud Cover, Elkins WV

10-Aug-97

Youghiogheny River Water Temperature Enhancement Plan

49.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
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0700	> 30	23.38	Check again at 0900
	<=30	24.14	Check again at 0900
0900	> 30	23.19	Check again at 1100
	<=30	23.95	Check again at 1100
1100	ALL	23.61	Check again at 1200
1200	ALL	24.24	Check again at 1400
1400	ALL	25.29	Release ASAP - not later than 1430 for 1 hour
1500	ALL	-2.12	No further predictions necessary today

Tair	25.6	Air Temp, Elkins WV - Degree C
CCF	64	Cloud Cover Factor, Elkins WV
T7	18.32	River Temp Sang Run @700
T9	18.30	River Temp Sang Run @900
T11	19.31	River Temp Sang Run @1100
T12	20.68	River Temp Sang Run @1200
T14	23.24	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	49.0	River Flow at Oakland

78 Air Temp, Elkins WV - Degree
 SHWRS Cloud Cover, Elkins WV

12-Aug-97

Youghiogheny River Water Temperature Enhancement Plan

36.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
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0700	> 30 <=30	24.78 25.02	Check again at 0900 Check again at 0900
0900	> 30 <=30	25.09 25.33	Check again at 1100 Check again at 1100
1100	All	24.40	Check again at 1200
1200	All	25.11	Check again at 1400
1400	All	25.26	Release ASAP - not later than 1430 for 1 hour
1500	All	-2.22	No further predictions necessary today

Tair	29.4	Air Temp, Elkins WV - Degree C
CCF	100	Cloud Cover Factor, Elkins WV
T7	19.26	River Temp Sang Run @700
T9	19.77	River Temp Sang Run @900
T11	20.31	River Temp Sang Run @1100
T12	21.61	River Temp Sang Run @1200
T14	23.33	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	36.0	River Flow at Oakland

85 Air Temp, Elkins WV - Degree
TSTRMS Cloud Cover, Elkins WV

17-Aug-97

Youghiogheny River Water Temperature Enhancement Plan

64.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	23.96	Check again at 0900
	<=30	25.32	Check again at 0900
0900	> 30	23.67	Check again at 1100
	<=30	25.03	Check again at 1100
1100	All	25.91	Release at 1230 for 2 hours
1200	All	2.42	No further predictions necessary today
1400	All	6.65	No further predictions necessary today
1500	All	4.55	No further predictions necessary today

86 Air Temp, Elkins WV - Degree
TSIRMS Cloud Cover, Elkins WV

Tair	30.0	Air Temp, Elkins WV - Degree C
CCF	100	Cloud Cover Factor, Elkins WV
T7	19.60	River Temp Sang Run @700
T9	19.60	River Temp Sang Run @900
T11	21.20	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	64.0	River Flow at Oakland

APPENDIX C

FLOW BYPASS OPERATION RECORD

No flow by-pass operations in 1997

Provisional

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - MD-DEL-DC INSTALLATION 01/16/98
 STATION NUMBER 03075500 YOUGHIOGHENY R NR OAKLAND, MD STREAM SOURCE AGENCY USGS
 LATITUDE 392519 LONGITUDE 0792532 DRAINAGE AREA 134.00 DATUM 2383.61 STATE 24 COUNTY 023
 PROVISIONAL DATA DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997 SUBJECT TO REVISION
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	401	213	1430	224	333	660	392	241	388	122	30	67
2	380	190	2350	215	267	1760	375	202	242	108	26	66
3	257	166	1210	209	253	1790	312	179	250	91	26	55
4	221	146	737	199	319	1870	269	241	417	73	287	53
5	205	135	514	201	230	1860	232	192	271	63	276	43
6	154	124	425	198	749	2090	204	181	219	57	117	39
7	200	120	350	168	517	1270	180	172	188	52	79	36
8	109	861	323	148	424	872	152	156	164	46	58	35
9	117	1440	277	154	343	627	145	362	341	47	47	33
10	284	867	241	158	280	617	133	575	123	110	40	62
11	194	577	518	124	239	478	124	649	109	58	35	84
12	132	423	998	130	210	393	118	474	101	42	32	56
13	133	333	1140	116	186	311	128	422	606	36	44	42
14	120	281	907	110	181	504	117	354	444	35	70	37
15	112	233	633	102	221	633	104	301	250	32	46	37
16	103	207	478	163	199	488	94	271	186	28	36	40
17	94	191	388	165	167	385	123	231	177	28	223	47
18	96	203	309	142	201	359	160	203	259	31	513	52
19	274	243	260	126	515	776	157	183	416	44	246	58
20	1090	212	287	122	1080	640	134	347	203	32	246	65
21	1340	193	189	114	684	496	133	267	159	25	424	102
22	1310	178	172	136	563	395	145	224	138	25	320	73
23	861	160	252	498	415	322	129	194	124	54	236	63
24	555	152	441	324	330	269	127	171	100	402	175	46
25	397	148	545	760	268	230	156	222	87	235	140	35
26	307	1350	356	520	236	1100	162	340	364	95	115	27
27	315	943	309	366	239	775	147	685	492	67	96	24
28	346	584	280	1230	196	528	358	432	203	56	181	40
29	358	423	282	716	---	432	356	315	149	61	132	503
30	291	465	295	480	---	367	278	259	124	46	98	182
31	249	---	246	379	---	421	---	209	---	35	80	---
TOTAL	11025	11761	17072	8697	10845	23668	5644	10254	6894	2236	4454	2102
MEAN	356	392	551	281	387	763	188	331	230	72.1	144	70.1
MAX	1340	1440	2350	1230	1230	2090	392	1340	606	402	513	503
MIN	94	120	172	167	167	230	94	156	87	25	26	24
CFPM	2.65	2.93	4.11	2.09	2.89	5.70	1.40	2.47	1.71	.54	1.07	.52
IN.	3.06	3.26	4.74	2.41	3.01	6.57	1.57	2.85	1.91	.62	1.24	.58

FAX NO. 301 729 2942

JAN-16-98 FRI 2:01 PM LaVale MD USGS

Provisional

Provisional

OPTIONAL FORM 99 (7-93)

FAX TRANSMITTAL

1 of pages = 2

TO Tom Teitt
 Dept. Agency GPO GenCo
 Phone 301-729-2949
 FAX 717-948-2809

FROM Jeff Griffith, USGS
 GENERAL SERVICES ADMINISTRATION
 E099-101
 NSN 7540-01-817-7368

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - MD-DEL-DC INSTALLATION 01/16/98
STATION NUMBER 03075500 YOUGHIOGHERY R NR OAKLAND, MD STREAM SOURCE AGENCY USGS
LATITUDE 392519 LONGITUDE 0792532 DRAINAGE AREA 134.00 DATUM 2353.61 STATE 24 COUNTY 023
PROVISIONAL DATA SUBJECT TO REVISION

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

Provisional

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.49	2.39	3.86	2.73								
2	2.45	3.25	3.86									
3	2.32	3.10	3.22									
4	2.26	2.83	3.18									
5	2.22	2.68	3.15									
6	2.19	2.58	3.00									
7	2.15	4.99	2.91									
8	2.12	4.68	2.84									
9	2.10	4.04	2.78									
10	2.09	3.82	3.02									
11	2.11	3.30	4.14									
12	2.08	3.13	3.61									
13	2.07	2.95	3.29									
14	2.06	3.21	3.08									
15	2.06	3.61	2.90									
16	2.05	3.30	2.80									
17	2.04	3.08	2.73									
18	2.03	2.93	2.65									
19	2.03	2.84	2.60									
20	2.03	2.80	2.57									
21	2.02	2.86	2.54									
22	2.01	3.66	2.53									
23	2.00	3.56	2.80									
24	1.99	3.29	2.90									
25	2.14	3.08	3.34									
26	2.19	2.97	3.25									
27	2.40	2.95	3.14									
28	2.26	2.84	3.02									
29	2.17	2.89	2.89									
30	2.13	3.24	2.85									
31	2.12	--	2.76									
TOTAL	66.38	96.65	93.81									
MEAN	2.14	3.22	3.03									
MAX	2.49	4.99	4.14									
MIN	1.99	2.39	2.53									
MED	2.11	3.09	2.91									

Provisional

Provisional

APPENDIX D

RECORD OF
DISSOLVED OXYGEN MONITORING

DEEP CREEK STATION,
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS			SLUICE GATE POSITION	TIMES OF GENERATION	NO. UNITS GENERATING	DO MEASUREMENTS			NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	DOWNSTREAM TIME	TEMP °C				DO (mg/l)	UPSTREAM TIME	TEMP °C		
1-21-97	No Generation												
1-22-97	0735	14.1	9.03	0745	1.7	11.96	0715 - 0820	1 - 85%			Open	2022.2	2021.6
1-23-97	No Generation												
1-24-97	0740	14.7	8.68	0745	1.6	11.79	0715 - 0845	1 - 85%			"	2022.8	2021.8
1-25-97	Saturday - No	One At Station											
1-26-97	Sunday - No	One At Station											
1-27-97	No Generation												
1-28-97	No Generation												
1-29-97	No Scheduled	Generation											
1-30-97	No Generation												
1-31-97	No Generation												

JANUARY - 1997

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS		NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS		NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	DOWNSTREAM FROM WEIR				TEMP °C	DO (mg/l)		
2-01-97	Saturday	- No One At Station									
2-02-97	Sunday	- No One At Station									
2-03-97	No Generation										
2-04-97	No Generation										
2-05-97	No Generation										
2-06-97	No Generation										
2-07-97	No Generation										
2-08-97	Saturday	- No One At Station									
2-09-97	Sunday	- No One At Station									
2-10-97	No Scheduled Generation										
2-11-97	No Generation										
2-12-97	0820	15.3	8.57	0830	1.9	11.47	2 - 100%	0800 - 1100	Open	2022.5	2028.1
2-13-97	0822	14.9	8.63	0830	2.1	11.50	2 - 100%	0800 - 1100	"	2022.4	2028.1
2-14-97	0823	13.6	8.76	0832	2.1	11.08	2 - 82%	0800 - 1100	"	2022.3	2027.5
2-15-97	Saturday	- No One At Station									
2-16-97	Sunday	- No One At Station									
2-17-97	Holiday	- No One At Station									
2-18-97	No Scheduled Generation										
2-19-97	0815	15.7	8.69	0830	2.2	11.62	2 - 100%	0800 - 1100	"	2022.8	2028.1
2-20-97	No Scheduled Generation										

FEBRUARY - 1977

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS		NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR		NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME				TEMP °C	DO (mg/l)		
6-1-97											
6-2-97	10:25	21.4°	8.04	10:30	14.8°	9.62	2 @ 100%	06:00 To 09:10 10:00 To 24:00	OPEN	2022.5	2028.1
6-3-97	8:30	18.9°	8.17	8:35	15.1°	9.18	2 @ 100%	08:00 To 24:00	"	2022.5	"
6-4-97	10:25	19.8°	8.25	10:30	14.8°	9.47	2 @ 100%	10:00 To 13:00 20:55 To 21:25	"	2023.0	"
6-5-97	8:25	16.8°	8.71	8:30	14.7°	9.41	2 @ 100%	08:00 To 24:00	"	2022.7	"
6-6-97	10:30	17.9°	8.62	10:35	14.7°	9.38	2 @ 97%	18:00 To 13:00	"	2022.5	"
6-7-97			Flows	Not	ATTENDED				"		
6-8-97			"	"	"				"		
6-9-97	10:30	18.2°	8.63	10:35	14.6°	9.34	2 @ 97%	10:00 To 13:00	"	2022.2	"
6-10-97									"		
6-11-97									"		
6-12-97	10:30	18.8°	8.42	10:35	14.9°	9.26	2 @ 100%	10:00 To 13:00	"		
6-13-97			Plants		Not	ATTENDED		06:00 To 22:00	"	2022.2	"
6-14-97					"		"	10:00 To 13:00	"		
6-15-97					"		"	10:00 To 13:00	"		
6-16-97	10:25	19.1°	8.23	10:35	15.3°	8.31	2 @ 98%	10:00 To 13:00	"	2022.4	"
6-17-97									"		
6-18-97	10:30	22.3°	7.97	10:35	14.9°	9.82	2 @ 96%	10:00 To 13:00	"		
6-19-97	10:30	21.4°	8.11	10:35	15.0°	9.53	2 @ 100%	10:00 To 13:00	"	2022.3	"
6-20-97	10:30	21.8°	8.05	10:35	14.7°	8.67	2 @ 100%	10:00 To 13:00	"	2023.0	"
									"	2022.4	"

WEEKEND

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS		DO MEASUREMENTS DOWNSTREAM FROM WEIR		NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR		NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME				TEMP °C	TIME		
6-21-97				PLANT	Not	ATTENDED	OPEN				2022.1
6-22-97				"	"	"	"				"
6-23-97	10:30	22.8°	7.80	10:35	15.1°	2 @ 100%	10:00 To 13:00				"
6-24-97	11:35	23.8°	7.83	11:40	15.0°	2 @ 100%	11:00 To 13:00			2022.2	"
6-25-97	10:30	25.8°	7.01	10:35	15.4°	2 @ 100%	10:00 To 15:50			2022.0	"
6-26-97	11:00	26.5°	6.93	11:35	15.2°	2 @ 100%	11:00 To 16:20			2021.9	"
6-27-97	10:25	24.8°	6.85	10:30	15.2°	2 @ 98%	10:00 To 13:00			2021.9	"
6-28-97				PLANT	Not	ATTENDED				2023.2	"
6-29-97				"	"	"					
6-30-97	10:30	23.0°	6.68	10:35	15.5°	2 @ 97%	10:00 To 13:00				
7-1-97										2022.1	"
7-2-97										2022.2	"
7-3-97	14:20	25.1°	6.98	14:25	15.7°	2 @ 100%	13:50 To 20:00			2022.2	"
7-4-97				PLANT	Not	ATTENDED				2022.0	2022.1
7-5-97				"	"	"					"
7-6-97				"	"	"					"
7-7-97	10:30	20.4°	7.80	10:35	15.7°	2 @ 94%	10:00 To 13:00				
7-8-97	14:40	25.1°	7.61	14:45	16.1°	2 @ 100%	14:30 To 15:20			2021.8	2022.1
7-9-97										2021.7	2022.1
7-10-97										2021.7	
										2021.8	

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS		NO. UNITS GENERATING	TIMES OF GENERATION	SLIICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR		NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME				TEMP °C	DO (mg/l)		
7-11-97	10:30	22.5°	7.93	10:35	15.4°	7.85	2 @ 97%	10:00 To 13:00	OPEN	2021.9	2028.1
7-12-97				Plant		Not	ATTENDED		"		
7-13-97				"		"	"		"		
7-14-97	10:30	22.8°	7.89	10:35	15.2°	7.72	2 @ 97%	10:00 To 16:00	"	2021.6	2028.1
7-15-97								11:00 To 17:00 UNSCHEDULED	"		
7-16-97								11:30 To 18:30 UNSCHEDULED	"		
7-17-97								11:00 To 17:00 UNSCHEDULED	"		
7-18-97	11:20	23.6°	7.71	11:30	15.9°	7.59	2 @ 98%	11:00 To 17:00	"	2021.7	
7-19-97				Plant		Not	ATTENDED		"		
7-20-97				"		"	"		"		
7-21-97	10:25	22.7°	7.82	10:30	16.5°	7.73	2 @ 100%	10:00 To 16:00	"	2021.7	2028.1
7-22-97								None	"	2021.6	
7-23-97								None	"	2021.7	
7-24-97								None	"	2021.8	
7-25-97	10:30	21.0°	8.10	10:35	16.3°	6.92	2 @ 100%	10:00 To	"	2022.7	2028.1
7-26-97				Plant		Not	ATTENDED		"		
7-27-97				"		"	"		"		
7-28-97	10:25	26.3°	7.32	10:30	16.5°	7.21	2 @ 100%	10:00 To 16:00	"		
7-29-97	12:55	23.0°	7.90	13:00	16.9°	7.17	2 @ 100%	12:30 To 14:30	"	2021.9	2028.1
7-30-97							2 @ 100%	15:05 To 16:05 UNSCHEDULED	"	2021.9	2028.1
									"	2021.8	

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS		DO MEASUREMENTS DOWNSTREAM FROM WEIR		NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR		NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME				TEMP °C	DO (mg/l)		
7-31-97							OPEN			2021.7	
8-1-97	10:30	20.5°	7.79	10:35	2 @ 92%	15:15 TO 16:15 UNSCHEDULED	"			2021.6	2028.1
8-2-97				Plank	2 @ 100%	10:00 TO 13:00	"				
8-3-97				"	ATTENDED		"				
8-4-97	10:30	20.8°	7.88	10:35	2 @ 100%	10:00 TO 13:00	"				
8-5-97						NONE	"			2021.7	2028.1
8-6-97						NONE	"			2022.8	
8-7-97						NONE	"			2022.0	
8-8-97	10:45	18.5°	8.48	10:50	2 @ 100%	10:00 TO 13:00	"			2021.9	
8-9-97				Plank	ATTENDED		"			2021.8	2028.1
8-10-97				Plank	ATTENDED		"				
8-11-97	10:30	22.4°	7.67	10:35	2 @ 100%	10:00 TO 13:00	"				
8-12-97						14:15 TO 15:15 UNSCHEDULED	"			2021.7	2028.1
8-13-97						NONE	"			2021.6	
8-14-97						NONE	"			2021.7	
8-15-97	10:30	21.1°	8.02	10:35	2 @ 100%	10:00 TO 13:00	"			2021.9	
8-16-97				Plank	ATTENDED		"			2021.8	
8-17-97				"			"				
8-18-97						10:00 TO 13:00	INCREMENT		WEATHER	2022.7	2025.1
8-19-97						NONE				2022.7	

(Instrument Calibrated to 2000 ft. MSL) **DEEP CREEK STATION**
DISSOLVED OXYGEN MONITORING LOG

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS		DO UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM VEIR		NON-OPERATING SAILORACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME				TEMP °C	DO (mg/l)		
8-20-97											
8-21-97	09:05	18.4°	8.47	09:45	15.6°	3.01	1 @ 76%	None	Open	2022.3	
8-21-97	10:30	18.6°	8.42	10:35	15.5°	5.48	1 @ 76%	09:10 To 15:00	"	2022.9	2024.5
8-22-97	09:45	18.1°	8.41	09:48	18.8°	3.34		10:00 - 13:00 Planned	Closed	2022.9	2028.2
8-22-97	10:35	18.3°	8.46	10:40	17.3°	6.45	2 @ 100%	10:00 To 13:00	"	2022.9	20
8-23-97					Plant		Not	ATTENDED	"	2022.9	2028.5
8-24-97					"		"	"	"		
8-25-97	10:30	18.9°	8.44	10:35	18.1°	6.52	2 @ 100%	10:00 To 13:00	"	2022.3	2028.5
8-26-97								None	"	2022.2	
8-27-97							2 @ 100%	10:35 To 13:00 Not Scheduled	"		
8-28-97							2 @ 100%	10:30 To 13:55 Not Scheduled	"	2022.1	2028.5
8-29-97	10:30	19.6°	8.35	10:35	17.8°	6.61	2 @ 100%	10:00 To 13:00	"	2022.2	2028.5
8-30-97					Plant		Not	ATTENDED	"	2022.4	2028.5
8-31-97					"		"	"	"		
9-1-97					"		"	"	"		
9-2-97							2 @ 100%	10:30 To 13:00 Not Scheduled	"		
9-3-97								None	"	2022.0	
9-4-97	10:30	16.3°	8.74	10:35	18.1°	7.14	2 @ 100%	10:00 To 13:00	"	2021.9	
9-5-97	10:30	15.7°	8.89	10:35	17.8°	6.81	2 @ 100%	10:00 To 13:00	"	2022.0	2028.5
9-6-97					Plant		NOT	ATTENDED	"	2022.1	2028.5

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSI.)

DATE	INSTRUMENT CALIBRATION		DO MEASUREMENTS		NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR		NON-OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TEMP °C				DO (mg/l)	TIME		
9-7-97				P	Not	ATTENDED	2 Closed 2 Operate				
9-8-97	10:35	19.9°	8.26	10:38	2 @ 100%	10:00 To 13:00	"	18.4°	7.44	2021.1	2028.5
9-9-97	10:30	20.7°	8.18	10:35	2 @ 100%	10:00 To 13:00	"	18.6°	7.46	2021.8	2028.5
9-10-97	10:30	20.6°	8.15	10:35	2 @ 100%	10:00 To 13:00	"	18.7°	7.41	2021.8	2028.5
9-11-97	10:30	18.7°	8.28	10:35	2 @ 100%	10:00 To 13:00	"	18.7°	7.34	2021.8	2028.5
9-12-97	10:30	15.4°	8.49	10:35	2 @ 100%	10:00 To 13:00	"	18.5°	7.08	2022.0	2028.5
9-13-97				Plant	Not	ATTENDED	"				
9-14-97				"	"	"	"				
9-15-97	10:30	18.5°	8.37	10:35	2 @ 100%	10:00 To 13:00	"	18.3°	6.86	2021.8	2028.5
9-16-97						09:00 To 09:33 UNSCHEDULED	"			2021.8	
9-17-97						None Scheduled	"			2021.8	
9-18-97						None Scheduled	"			2021.8	
9-19-97	10:30	18.4°	8.32	10:35	2 @ 100%	10:00 To 13:00	"	18.5°	6.92	2021.8	2028.5
9-20-97				Plant	Not	ATTENDED	"				
9-21-97				"	"	"	"				
9-22-97	10:40	15.7°	8.93	10:45	2 @ 100%	10:00 To 13:00	"	18.0°	7.12	2021.8	2028.5
9-23-97	11:35	17.3°	8.71	11:40	2 @ 100%	11:00 To 13:00	"	18.1°	7.14	2021.8	2028.5
9-24-97	11:30	19.0°	8.43	11:35	2 @ 100%	11:00 To 13:00	"	17.8°	7.05	2021.8	2028.5
9-25-97	11:35	18.8°	8.52	11:40	2 @ 100%	11:00 To 13:00	"	17.9°	6.97	2021.8	2028.5
9-26-97	10:20	17.8°	8.63	10:35	2 @ 100%	10:00 To 13:00	"	17.8°	7.08	2021.7	2028.5



MARYLAND DEPARTMENT OF THE ENVIRONMENT

2500 Broening Highway • Baltimore Maryland 21224
(410) 631-3000 • 1-800-633-6101 • <http://www.mde.state.md.us>

Parris N. Glendening
Governor

Jane T. Nishida
Secretary

December 1, 1997

Mr. Thomas R. Teitt
GPU Generation, Inc.
1001 Broad Street
Johnstown, PA 15907

Re: Permit # GA92S009(01); Deep Creek Hydroelectric Facility
Dissolved Oxygen Monitoring

Dear Mr. Teitt:

The Water Management Administration (WMA) has reviewed GPU's proposal to discontinue winter monitoring of dissolved oxygen in releases from the Deep Creek facility. In view of the three years of data indicating acceptable dissolved oxygen levels, WMA has no objection to the discontinuation of winter monitoring. Effective immediately, GPU is no longer required to monitor dissolved oxygen levels during winter months as outlined in Condition 18 of the Water Appropriation permit. Submittal of the 1997 data in the upcoming annual report, will fulfill your reporting obligation for winter monitoring data.

If you have any questions, please call me at (410)631-3591.

Sincerely,

Matthew G. Pajeroski, Chief
Water Rights Division

APPENDIX E

REPORT ON RELEASES UNSUITABLE FOR
WHITEWATER RECREATION

Appendix E

REPORT OF RELEASES UNSUITABLE FOR WHITEWATER RECREATION

Permit Condition 19 provides:

“WHEN LAKE LEVELS ARE BETWEEN THE UPPER AND LOWER RULE BANDS, NO RELEASES SHALL BE MADE BETWEEN THE 1600 HOURS AND 0800 HOURS OF THE FOLLOWING MORNING, UNLESS THE RELEASE ALSO PROVIDES THREE CONSECUTIVE HOURS OF FLOWS SUITABLE FOR WHITEWATER BOATING DURING THE HOURS BETWEEN 0800 HOURS AND 1600 HOURS. THE TIMES AND DATES WHEN GENERATION RELEASES NOT SUITABLE FOR WHITEWATER RECREATION OCCURRED SHALL BE DOCUMENTED IN AN ANNUAL REPORT.”

Releases during the whitewater boating season could be considered unsuitable for whitewater boating for one or more of the following reasons:

- The release was not announced or scheduled,
- The release was not at least three hours in length, or
- The release did not occur within the hours of 1000 - 1500 hours (May, September and October) or 1000 - 1600 hours (June, July and August).

The whitewater boating season is defined in Condition 19 as the period from April 15 through October 15. Information in this section is limited to this time period.

1997 Scheduled Whitewater Releases

The following requirements contained in Condition 19 of the permit provide for whitewater releases during the boating season.

“THE PERMITTEE SHALL MAKE RELEASES THREE HOURS IN DURATION BETWEEN 1000 HOURS AND 1300 HOURS ON FRIDAYS WHEN THE LAKE LEVEL IS HIGHER THAN AN ELEVATION THAT IS ONE FOOT BELOW THE LOWER RULE BAND, AND ON MONDAYS AND ON ONE SATURDAY PER MONTH WHEN LAKE LEVEL IS ABOVE THE LOWER RULE BAND. SATURDAY RELEASES WILL BE ON THE LAST SATURDAY IN APRIL, ON MEMORIAL DAY WEEKEND, AND THE FIRST SATURDAY IN JUNE, JULY, AUGUST, SEPTEMBER AND OCTOBER.”

And:

“THE PERMITTEE SHALL PROVIDE SPECIAL WHITEWATER RELEASES FOR THE AUGUST WEEKDAY RACES AND ON WEEKDAYS DURING THE GAULEY RIVER FESTIVAL WHEN THE LAKE LEVEL IS ABOVE THE LOWER RULE BAND, AND WHEN A REQUEST FOR SUCH RELEASES HAS BEEN MADE THROUGH THE DEPARTMENT ONE MONTH IN ADVANCE OF THE REQUESTED RELEASE DATE.”

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In addition to complying with the requirements above, Deep Creek scheduled additional releases for whitewater boating during 1997. The 1997 release schedule for Saturday and Special Event releases is summarized in the following table.

Saturday Releases

April 26 (per permit)
May 3 - 0900 to 1200 - (special request)
May 24 (per permit)
June 7 (per permit)
June 21 (special request)
July 5 - 4 hour release (3 hour release per permit, 1 extra hour special request)
July 19 (special request)
August 2 (per permit)
August 30 - 4 hour release (switched Sept. 6 to Aug. 30 to correspond with the holiday)
September 6 - 1000 to 1300 - (special request)
October 4 (per permit)

Special Events

Thursday, August 21 - 0900 to 1500 - Upper Yough Race
Tuesday, September 23 - 2 hour release - Gauley River Festival
Wednesday, September 24 - 2 hour release - Gauley River Festival
Thursday, September 25 - 2 hour release - Gauley River Festival

Releases required and scheduled for whitewater boating were met with few exceptions. All releases were by two unit generation unless otherwise noted.

- Mondays: All scheduled Monday releases were made with the exception of May 5, May 12 and May 26. The lake was below the Lower Rule Band on May 5 and May 12 and the scheduled releases had to be cancelled. The scheduled release on May 26 was cancelled at the request of the whitewater boating representative due to naturally high river flows. Only one unit was loaded on August 18 at the request of the whitewater boating representative.
- Fridays: All scheduled Friday releases were made in accordance to the Permit with the exception of July 18. Both units were loaded at 1100 hours rather than 1000 hours.
- Designated Saturdays: All scheduled Saturday releases were made in accordance with the conditions in the permit.
- Special Events: All scheduled Special Events releases were made in accordance with the conditions in the permit. Deep Creek delayed loading the units and only loaded one unit during the Upper Yough Race on August 21 at the request of the whitewater representative. In addition to the Special Events scheduled prior to the boating season, Deep Creek Station received numerous requests for extra releases during and prior to the

Appendix E

season. Deep Creek granted as many of the extra releases as possible while maintaining compliance with the operating rule bands.

Releases Unusable by Whitewater Boaters

Tables 1 and 2 list all substantial releases from the Deep Creek Lake other than releases scheduled for the whitewater boaters. These releases include water discharged on days other than days scheduled with the boaters and water discharged on scheduled days but outside the time period scheduled with the whitewater boaters. Most of the releases listed on Tables 1 and 2 were announced on the telephone recording maintained by the Permittee and, therefore, were available for boating. However, since the Permittee does not track messages made on the recording, these announced releases are included on the tables. None of the releases listed on Tables 1 or 2 jeopardized releases previously scheduled for the whitewater boaters.

Table 1

Releases made on days with no scheduled whitewater boating releases

<u>Day/Date</u>	<u>Hours</u>	<u>Comments</u>
Sun - May 4	2045-2125	High System Cost
Tue - June 3	0800-2359	High Lake Level
Wed - June 4	1000-1300	High System Cost
	2055-2125	High System Cost
Thur - June 12	1000-1300	High Lake Level
Sat - June 14	1000-1300	High Lake Level
Sun - June 15	1000-1300	High Lake Level
Wed - June 18	1000-1300	High Lake Level
Thur - June 19	1000-1300	High Lake Level
Tue - June 24	1100-	Temperature Enhancement
	1430-1830	High System Cost
Wed - June 25	0950-1550	High System Cost
Thur - June 26	1100-1620	High System Cost
Thur - July 3	1350-	High System Cost
Tue - July 8	1420-1520	Temperature Enhancement
Sat - July 12	1200-1300	Temperature Enhancement
Sun - July 13	1100-1300	Temperature Enhancement
	1430-1830	High System Cost
Tue - July 15	1100-1700	Temperature Enhancement / High System Cost
Wed - July 16	1230-1630	Temperature Enhancement / High System Cost
Thur - July 17	1000-1700	Temperature Enhancement / High System Cost
Sun - July 20	1400-1500	Temperature Enhancement
Sun - July 27	1405-1605	Temperature Enhancement
Tue - July 29	1230-	Temperature Enhancement
Wed - July 30	1505-1605	Temperature Enhancement
Thur - July 31	1515-1615	Temperature Enhancement

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Sun - Aug 3	1200-1300	Temperature Enhancement
Sun - Aug 10	1415-1515	Temperature Enhancement
Tue - Aug 12	1415-1515	Temperature Enhancement
Sat - Aug 16	1100-1700	High System Cost
Sun - Aug 17	1230-1430	Temperature Enhancement
Tue - Sept 2	1230-1800	High System Cost
Thur - Sept 4	1000-1300	
	1800-2100	
Sun - Sept 7	1555-2145	High System Cost
Tue - Sept 9	1000-1300	High System Cost
	1800-2100	High System Cost
Wed - Sept 10	1000-1300	High System Cost
Thur - Sept 11	1800-2100	High System Cost
Sun - Sept 14	1940-2030	High System Cost
Tue - Sept 30	1730-1830	High System Cost
	1910-2020	High System Cost
Thur - Oct 2	0720-0830	Emergency Orders - 100% Spinning / Cost
Tue - Oct 7	1345-1945	High System Cost
Wed - Oct 8	1838-2033	High System Cost
Thur - Oct 9	1240-1815	High System Cost
Tue - Oct 14	0800-1000	High System Cost
	1835-1935	High System Cost
Wed - Oct 15	0715-0930	High System Cost

Table 2

Releases made on scheduled release days but outside of the scheduled release period

<u>Day/Date</u>	<u>Hours</u>	<u>Comments</u>
Mon - Apr 21	0800-1000	High System Cost
Mon - June 2	0600-0935	High Lake Level
	1300-2359	High Lake Level
Sat - June 7	1300-2200	High Lake Level
Fri - June 13	0600-1000	High Lake Level
	1300-2200	High Lake Level
Fri - June 20	1300-1600	High System Cost
Sat - June 21	1300-1600	High System Cost
	2100-2230	Emergency Orders - 100% Spinning
Mon - July 14	1300-1600	High System Cost
Mon - July 28	1300-1600	High System Cost
Fri - Aug 15	1300-1830	High System Cost
Fri - Sept 5	1800-2100	High System Cost
Sat - Sept 6	2000-2115	High System Cost
Mon - Sept 8	1300-1425	High System Cost
	1800-1930	High System Cost

APPENDIX F

ZEBRA MUSSEL MONITORING REPORT

Memorandum



Subject: GPU ZEBRA MUSSEL MONITORING PROGRAM – DEEP CREEK HYDROELECTRIC STATION **Date:** January 19, 1998

From: R. L. Grove – Sr. Chemist, E&CS **Location:** Reading
E740-98-0004

To: T. R. Teitt – Water Resources, GENCO

This memo on the results of GPU's Zebra Mussel Monitoring Program at the Deep Creek Hydroelectric Station in 1997 is provided in accordance with Permit Condition 21 with the State of Maryland Department of Natural Resources.

GPU Nuclear Environmental & Chemistry Services (GPUN E&CS) began a Zebra Mussel Monitoring Program at Deep Creek in 1992. A star substrate has been placed at the Station intake area in Deep Creek Lake which is checked monthly by station personnel for the presence and/or attachment of zebra mussels. Water temperatures are recorded monthly for the substrate location as well as at the Station tailrace location. Water samples are taken annually to trend calcium levels in Deep Creek Lake. Copies of the monthly "Field Collection Sheets" for the Zebra Mussel Monitoring Program as supplied by station personnel are available upon request.

GPUN E&CS conducted monthly zebra mussel veliger sampling via plankton net/microscopic identification from June through September 1997 at the Deep Creek Hydroelectric Station. Field observations have indicated no presence of zebra mussels at Deep Creek Lake.

Zebra mussels have been confirmed in western Pennsylvania in the Allegheny, Monongahela and Ohio Rivers, therefore the spread of the mussels into other fresh waters of Pennsylvania and Maryland appears inevitable. Projected activities for 1998 include monthly zebra mussel veliger sampling via plankton net/microscopic identification from June through October 1998 at the Deep Creek Hydroelectric Station. The substrate will continue to be monitored monthly by station personnel. Water samples will be collected and analyzed for calcium as an indicator of zebra mussel colonization potential. During 1998 GPUN E&CS will develop an action plan for the Deep Creek Hydroelectric Station. This includes a review of the operational water uses at the facility and mitigation strategies for control of zebra mussels at the station.

Should you have any questions concerning the GPU Zebra Mussel Monitoring Program, contact me at (610) 375-5046.

R. L. Grove

cc: R. C. Bosold