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PRODUCTION DEPARTMENT

September 12, 1979

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Ronald L. Ballard, Chief
Environmental Projects Branch No. 1
Division of Site Safety and Environmental Analysis

Dear Mr. Ballard:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
CPPR-118 and CPPR-119
Docket Nos. 50-416 and 50-417
File 0260/15970/15983
Submittal of Additional Information to Support Request for Deletion of Stage Monitoring Requirements (Reference: AECM-79/59)
AECM-79/95

In response to the July 27, 1979 request made by your Mr. Bob Samworth, we are transmitting the attached data to support our request for deletion of the stage monitoring requirement contained in Staff Exhibit 2-A entitled "Environmental Protection Program Respecting Construction of Grand Gulf Nuclear Station Units 1 and 2".

Should you require additional information, please advise.

Yours truly,

L. F. Dale
Nuclear Project Manager

LSD:mt
Attachments

cc: Mr. N. L. Stampley
Mr. R. B. McGehee
Mr. T. B. Conner
Mr. Jack Davis, NRC

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GRAND GULF NUCLEAR STATION UNITS 1 AND 2
ANALYSIS OF CORRELATION BETWEEN SUSPENDED SOLIDS AND WATER STAGE AT FOUR LOCATIONS ON SITE SEDIMENT RETENTION BASINS

INTRODUCTION

Staff Exhibit 2-A entitled "Environmental Protection Program Respecting Construction of Grand Gulf Nuclear Station Units 1 and 2" requires that continuous recorders be utilized at two stations on each sediment retention basin to document water stage. The report further states that "the recorded stage will be correlated with surface water quality measurements to document the effectiveness of the sediment control structures in reducing sediment contents in water discharged from the basins".

ANALYSES

Implementation of the Environmental Protection Program began with the initiation of construction activities in May 1974. Suspended solids samples were taken at the head and below each sediment retention dam within twenty-four hours after each rainfall which caused significant erosion. Only samples taken from January 7, 1977 to April 13, 1979 were used in the analyses because of basin maintenance difficulties encountered during the first stages of construction. Seventy-two data points (seventeen above the dam and sixteen below in stream A, twenty-three above the dam and sixteen below in stream B) were deleted because of stage recorder malfunction, dredging operations, or rapid changes in stage that could not be accurately quantified. A limiting parameter of less than or equal to 500 mg/l suspended solids was applied to the analyses to eliminate the effect of outlying points. Because of this stipulation fourteen data points (four above the dam and one below in stream A, six above the dam and three below in stream B) were deleted. The type of computer program used was the CORR procedure of the Statistical Analysis System (SAS) supplied by SAS Institute, Inc. which computes univariate descriptive statistics and correlation coefficients between variables. The procedure for this program tests the hypothesis that there is no correlation between the variables suspended solids (calculated in Mg/l) and water stage (calculated in tenths of an inch).

RESULTS

In all four locations the correlation coefficient was much closer to zero than it was to absolute one. The probability of obtaining such correlation coefficients was greater than .05, thus indicating that the hypothesis that suspended solids and water stage are not correlatd is accepted with ninety-five percent confidence.

CONCLUSION

The lack of correlation between stage and suspended solids can be attributed to the influence of other variables such as changes in the amount of disturbed acres, sampling time after rainfall, duration, and intensity of rainfall, and basin capacities all of which were not accounted for in the analyses.

ATTACHMENT A

GRAND GULF NUCLEAR STATION UNITS 1 AND 2
SUSPENDED SOLIDS AND WATER STAGE DATA
JANUARY 7, 1979 THROUGH APRIL 13, 1979

STREAM A

	Above Dam		Below Dam	
OBS	Suspended Solids	Water Stage	Suspended Solids	Water Stage
1	89.0	0.4	352.8	4.2
2	52.6	0.4	24.6	1.6
3	304.8	4.3	312.8	3.1
4	235.6	2.3	132.8	1.8
5	34.8	0.4	268.8	3.8
6	35.9	0.2	82.8	2.1
7	278.2	0.7	203.4	2.2
8	95.0	0.4	110.0	3.4
9	79.1	0.1	18.5	1.2
10	76.8	1.5	15.2	1.3
11	50.1	0.7	226.9	0.4
12	115.1	0.4	77.1	0.8
13	467.2	0.3	34.3	0.5
14	102.4	0.2	44.5	0.4
15	443.4	0.4	49.8	3.9
16	49.4	0.3	47.4	1.5
17	55.3	2.9	26.4	4.1
18	72.7	0.2	41.9	3.6
19	193.4	0.7	61.8	1.6
20	19.3	5.6	86.6	1.1
21	31.1	2.8	99.7	2.4
22	20.8	2.1	127.4	1.7
23	500.0	0.8	120.8	1.0
24	178.9	1.3	92.0	1.3
25	193.5	1.1	141.4	2.1
26	89.4	0.8	97.2	1.1
27	412.4	4.4	90.8	1.2
28			263.8	1.4
29			186.2	1.2
30			62.2	1.3
31			196.6	4.5

ATTACHMENT A (Cont'd.)

STREAM B

OBS	Above Dam		Below Dam	
	Suspended Solids	Water Stage	Suspended Solids	Water Stage
1	77.9	3.7	130.6	0.7
2	127.2	6.8	116.8	1.0
3	497.2	1.9	106.6	0.7
4	168.6	4.8	289.9	1.4
5	82.0	8.4	317.2	5.4
6	123.0	7.5	376.6	0.7
7	268.9	2.8	219.0	0.9
8	150.7	2.4	53.4	0.2
9	174.2	3.6	235.4	1.0
10			334.2	5.8
11			380.4	0.9
12			389.6	0.7
13			113.9	0.4
14			30.3	3.4
15			278.4	1.9
16			446.4	3.6
17			472.0	3.3
18			202.3	2.1
19			276.0	1.8

ATTACHMENT B

GRAND GULF NUCLEAR STATION UNITS 1 AND 2
SUSPENDED SOLIDS VS. WATER STAGE STATISTICAL RESULTS

	STREAM A				STREAM B			
	Above Dam		Below Dam		Above Dam		Below Dam	
	Suspended Solids	Water Stage	Suspended Solids	Water Stage	Suspended Solids	Water Stage	Suspended Solids	Water Stage
Number of Data Points	27	27	31	31	9	9	19	19
Mean	158.4	1.3	113.4	2.1	185.5	4.7	251.0	1.9
STD.DEV.	148.3	1.5	83.1	1.3	130.1	2.4	132.6	1.7
Minimum	19.3	0.1	15.2	0.4	77.9	1.9	30.3	0.2
Maximum	500.0	5.6	352.8	5.6	497.2	8.4	472.0	5.8
Correlation Coefficient	.06066	.06066	.2233	.2233	-.61399	-.61399	.35792	.35792
Probability Factor	.7638	.7638	.2272	.2272	.0786	.0786	.1324	.1324