

5 August 1994

D A Howard, BR 3D-C

KINGSTON FOSSIL PLANT - COAL YARD RAINFALL RUNOFF STUDY

The design package for the subject study has been revised to reflect those design premises listed in Dan Scott's memorandum to Ralph Johnson on June 29. It is being forwarded to Cost Estimating in a format that will allow cost estimates to be prepared for three design alternatives.

An analysis of significant rainfall events was made for a recent three-year period (5/1/91 through 5/31/94). Attached is a brief report that describes the analysis and findings.

A recommended design will be made as soon as the cost estimates have been completed. We are requesting that they be completed by August 26 in order to support preparation of a PAB package for the September PAB meeting.

If you have any questions please call me at 8428 or Dan Scott at 4446.



J. W. Coan  
Manager  
Project Engineering  
LP 2P-C

Attachments

DWS

cc (attachments):

J S Baugh, LP 5G-C  
D E Bohl, LP 2G-C  
K W Burnett, LP 2G-C  
R W Clevenger, SP 3F-C  
J L Glover, LP 2G-C  
F L Johnson, SP 3F-C  
R G Johnson, LP 2G-C  
K E Lewis, Kingston  
C H McFall, BR 4A-C  
C L Mount, LP 2G-C  
L W Wolfe, LP 5D-C  
RIMS, CST 13B-C

# KINGSTON COAL YARD RAINFALL RUNOFF STUDY

## ANALYSIS OF SIGNIFICANT RAINFALL EVENTS BETWEEN MAY 1, 1991 & MAY 31, 1994

### BACKGROUND

If rain falls continually for several days or if two rainfall events approaching the size of a 10-year, 24-hour rainfall event closely follow each other, a runoff collection pond can overflow even though a pump/pond system is adequately sized to normally handle a 10-year, 24-hour rainfall event. State and federal regulations do not prescribe a definite interim of time in which a system must recover from such events. In order to evaluate the consequences of such events at the Kingston plant, rainfall data for a recent three-year period (5/1/91 through 5/31/94) was analyzed.

### SUMMARY OF FINDINGS

Five significant rainfall events occurred during the period of 5-1-91 through 5-31-94. With no pumps operating, the pond would have overflowed during each period except that of 4/12-16/94. (Refer to Attachment 1 for pump and pipeline configurations.) It would not have overflowed during any event if at least one pump had been operating. The most significant event occurred in February 1994 when more than 602,000 cubic feet of water would have overflowed if no pumps had operated.

INTERVAL	----- TOTAL -----		----- PEAK -----	
	RAINFALL (INCHES)	INTERVAL (DAYS)	RAINFALL (INCHES)	INTERVAL (DAYS)
03/23-27/93	5.73	5.0	4.09	1.25
12/04-10/93	6.03	7.0	4.72	1.25
02/09-11/94	6.27	3.0	3.00	0.25
03/27-31/94	6.18	5.0	4.78	1.00
04/12-16/94	4.58	4.5	2.41	0.25
10-YR 24-HR STORM	4.8	1.0		

### RECOMMENDATION

The results of this analysis could not be used to predict the frequency that runoff would likely overflow the pond in the future for each of the three pump/pipeline configurations. In order to determine an accurate probability of overflow, rainfall data covering a longer period of time would have to be reviewed. We believe that a more thorough analysis would prove that there is a very low probability of overflow during any three year period if one pump (1500 gpm) and pipeline are installed.

With two pumps and one pipeline the chances for overflow would be much less because of second pump standby capability in the event of first pump failure and because of the added pumping rate (about 20%) provided by a second pump. We believe that this design and resulting reduced frequency of overflow would be acceptable to state regulators upon any future review of compliance measures taken to lower the probability of pond overflow. Therefore, a two-pump, one pipeline configuration is believed to be environmentally adequate.

