II.4-RES-SNGL-A-MAXQ SINGLE RESERVOIR REGULATION OPERATION UTILITY
MAXIMUM DAM OUTFLOW

Description

Utility MAXQ is used to determine the maximum possible discharge from a dam at the current pool elevation (the model pool elevation at the time of elevation).

Its use is restricted to being an RCL IF statement user variable. Examples of when this Utility can be used are:

- checking to see if inflow can be passed at the current elevation to determine if spillway routing is needed
- checking to see if the evacuation discharge can be passed at the current elevation when dropping the pool to minimize upstream stages

The maximum discharge at a given elevation is determined by a table look-up of an elevation versus maximum discharge relation. The table typically will contain both non-spillway and spillway discharges. This relation can be described in a number of ways:

- Case 1 - If the tailwater elevation does not affect non-spillway discharge then the relation can be defined as a spillway Rating Curve plus a constant non-spillway discharge. The non-spillway discharge is added to the spillway discharge at every elevation to derive the relation.
- Case 2 - Again if the tailwater elevation does not affect non-spillway discharge then the relation can be entered directly and used as it is entered.
- Case 3 - If the tailwater elevation does significantly affect non-spillway discharge then a spillway Rating Curve, a head versus maximum generation (or sluice) discharge curve and a tailwater elevation versus discharge curve must be entered. A maximum discharge versus elevation curve is computed using discharge versus maximum non-spillway discharge curve as described in the Uncontrolled Spillway Scheme description in this Appendix.

Parameters

(ELVSMAXQ) - The maximum discharge versus elevation curve as entered directly (Case 1)

(ELVSQ) - The spillway Rating Curve - this is needed for computing the relation both when a constant non-spillway discharge is added (Case 1) or when tailwater elevations affect discharge (Case 3)

(CONSTQ) - The constant non-spillway discharge (Case 2)

(HEADVSQ) - The head versus discharge curve (Case 3)

(TWCURVE) - The tailwater Rating Curve identifier (Case 3)

(CONV) - A convergency criterion needed for computing the relation in Case 3

Time Series

No time series are needed.

Carryover

No carryover is needed.