RIO GRANDE CANALIZATION PROJECT
WATER BUDGET STUDY
Final Report
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Appendix M

Reference Material

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Excerpt from URGWOM Technical Completion Report (USACE, 2012)

Technical Completion Report

DEVELOPMENT OF RIVERWARE MODEL OF THE RIO GRANDE FOR WATER RESOURCES MANAGEMENT IN THE PASO DEL NORTE WATERSHED

Sponsored by U.S. Army Corps of Engineers, Gulf Coast Cooperative Ecosystem Studies Unit

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$$Q = C\,(h_s - E) \qquad (2)$$

where:

E is the streambed elevation, in ft.

River Conductance

In the case of seepage to or from a stream, the conductance of the stream bottom is used to calculate the flow. Conductance is the rate that a volume of material can transmit fluid. Conductance was initially calculated for each of the river reaches using equation 3. The conductance was then adjusted during the calibration process.

$$C = \frac{K'WL}{b'} \qquad (3)$$

where:

b' is the thickness of the streambed, in ft,

K' is the vertical hydraulic conductivity of the streambed, in ft/day,

W is the width of the stream, assuming a rectangular channel, in ft,

L is the length of the reach in ft.

The initial vertical hydraulic conductivity and the riverbed thickness were used as 0.114 feet/day and 5 feet (Weeden and Maddock 1999), respectively. The river width and length were determined in ArcGIS by tracing over the active river channel and determining the area of the polygon (Table I-1 and Table I-2). The vertical hydraulic conductivity was adjusted during the calibration process to match observed seepage loss. The initial river conductance values used for RiverWare models for Rincon Valley and Mesilla Basin are listed in Table I-3 and Table I-4, respectively.

River Reach Rating Tables

Rivers, canals, channels, and drains are all represented by Reach objects in RiverWare models, and will hence be used interchangeably, as all are applied and termed the same