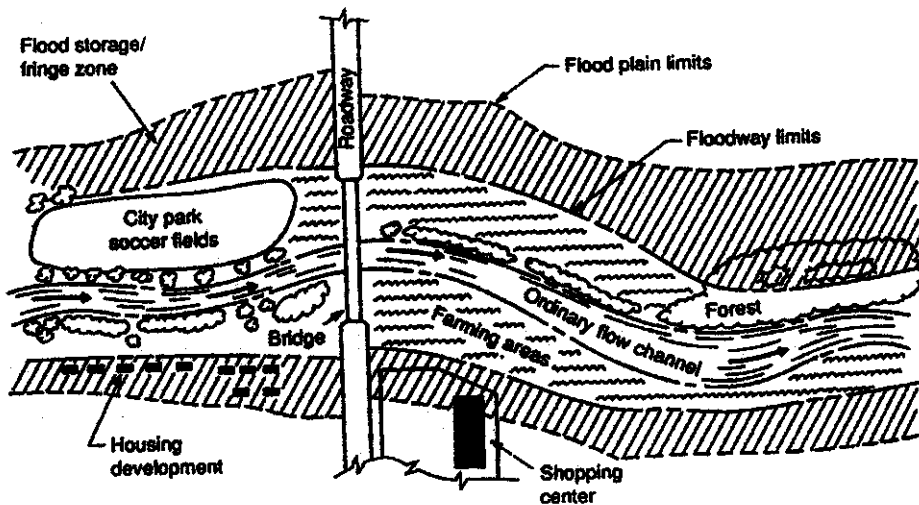


Floodplain Management Association



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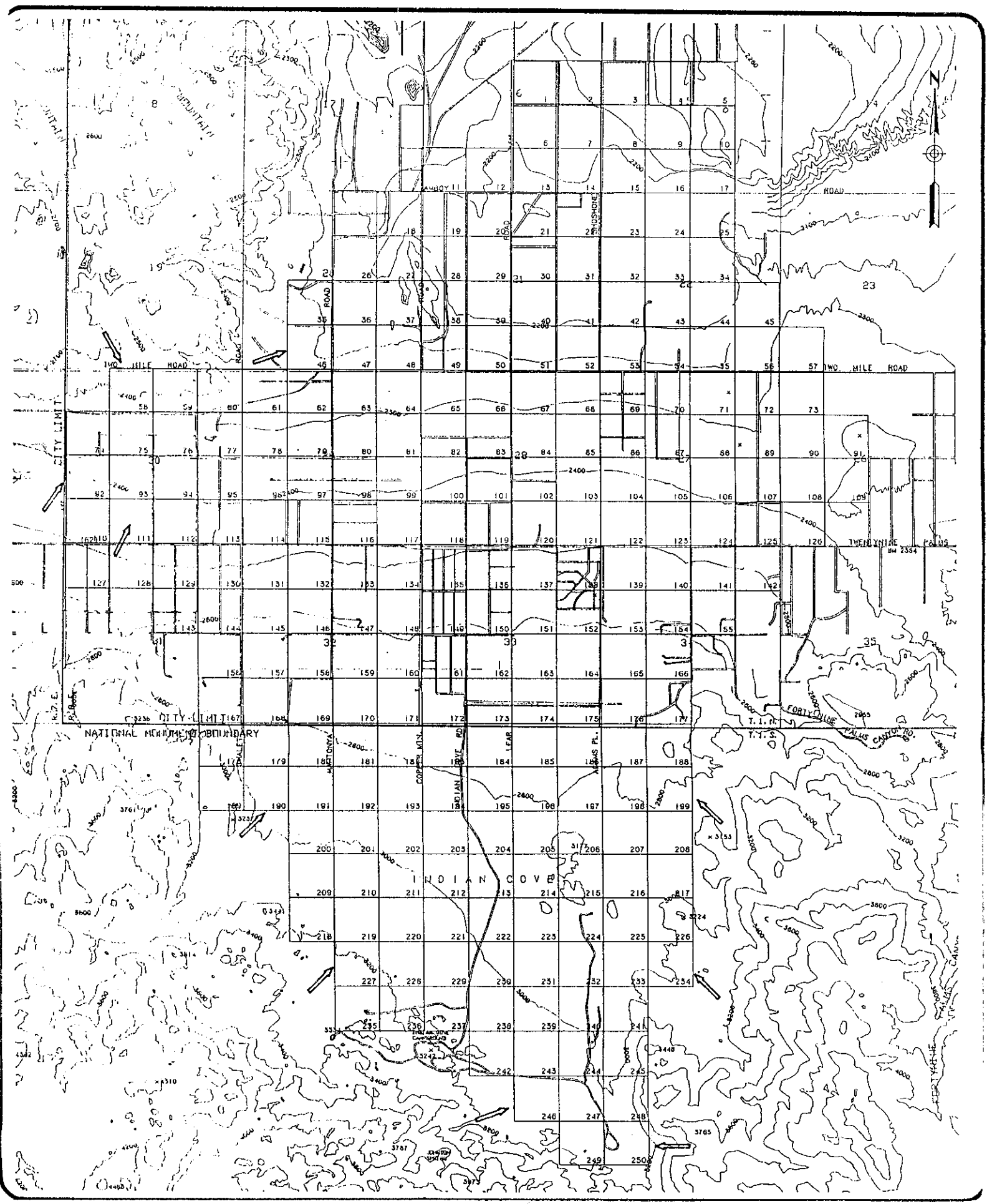
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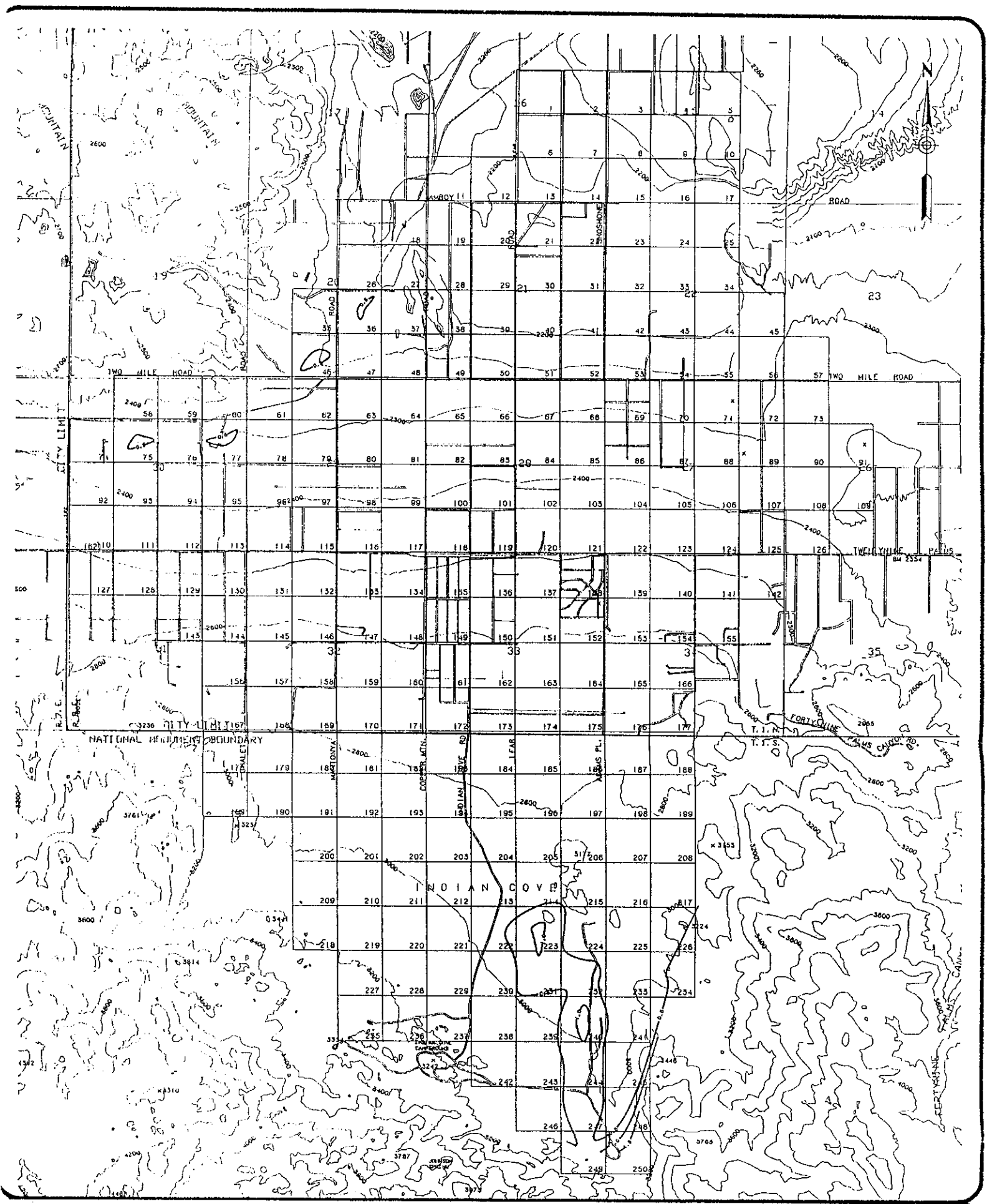
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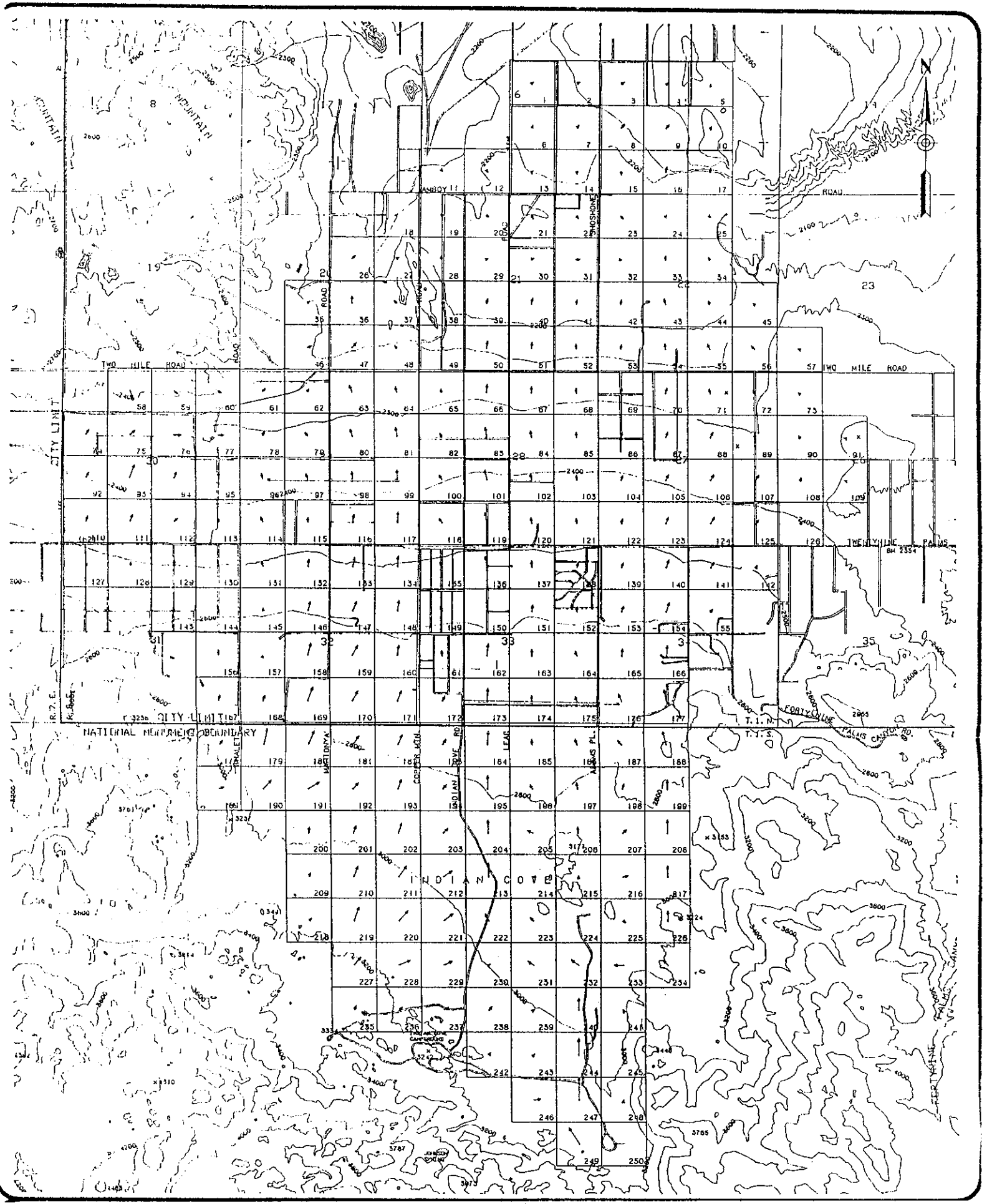
Recent Applications of the Diffusion Hydrodynamic Model (DHM)
T.V. Hromadka

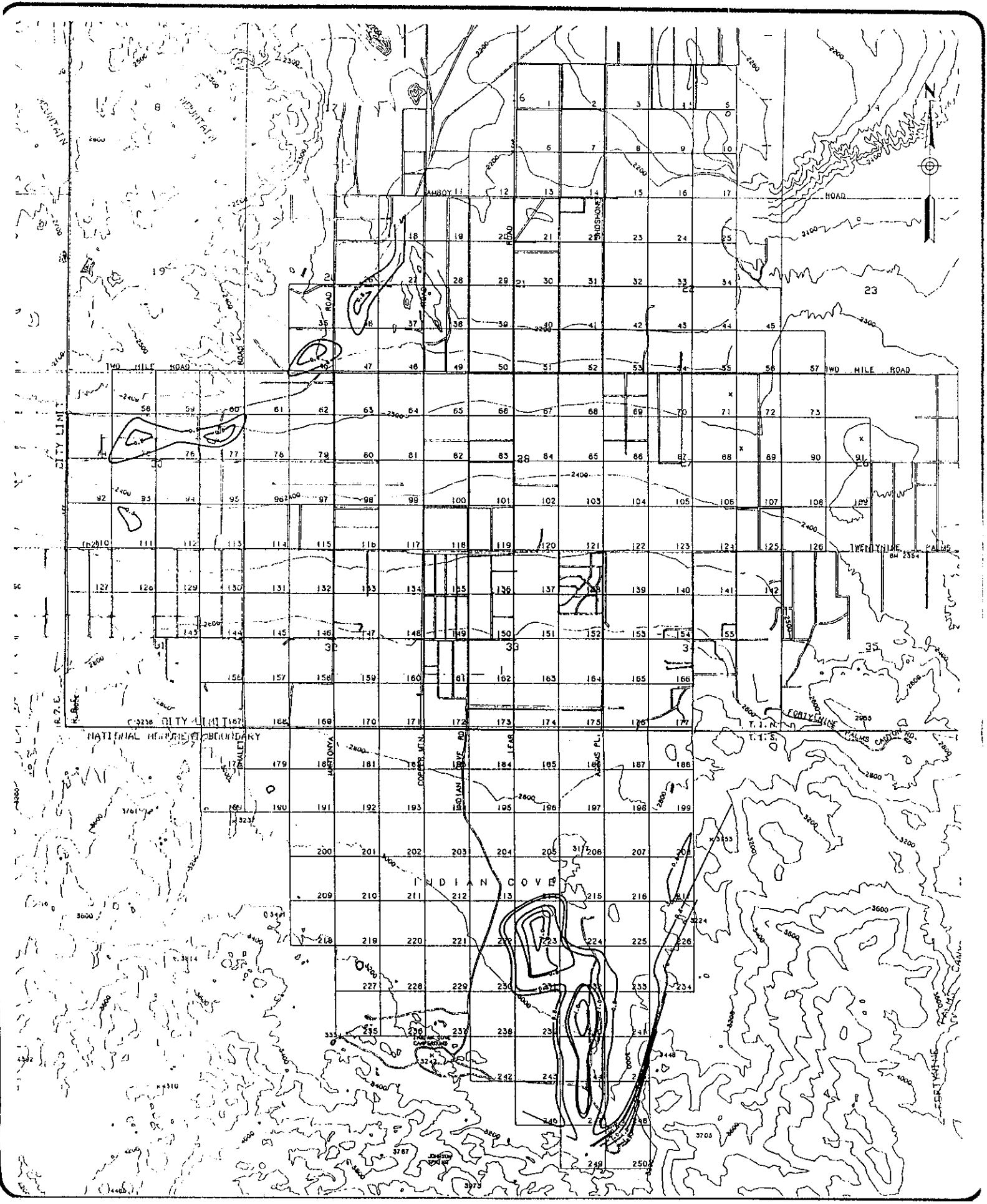
The Diffusion Hydrodynamic Model (DHM) is a two-dimensional topographic flow computer model developed by the USGS for use in the analysis of undefined flow. Boundary problems such as these occur on alluvial fans and other two-dimensional flow regimes. Recent applications of the DHM include model extensions including the effects of one-dimensional channels, surcharged pipes, levers, and other effects coupled with the original DHM 2D topographic flow routing algorithm. In this paper, we will examine some of these new model extensions, and will consider some recent novel applications. Because the computer code is published in the associated USGS report, it is readily available for others to make enhancements and other model extensions.

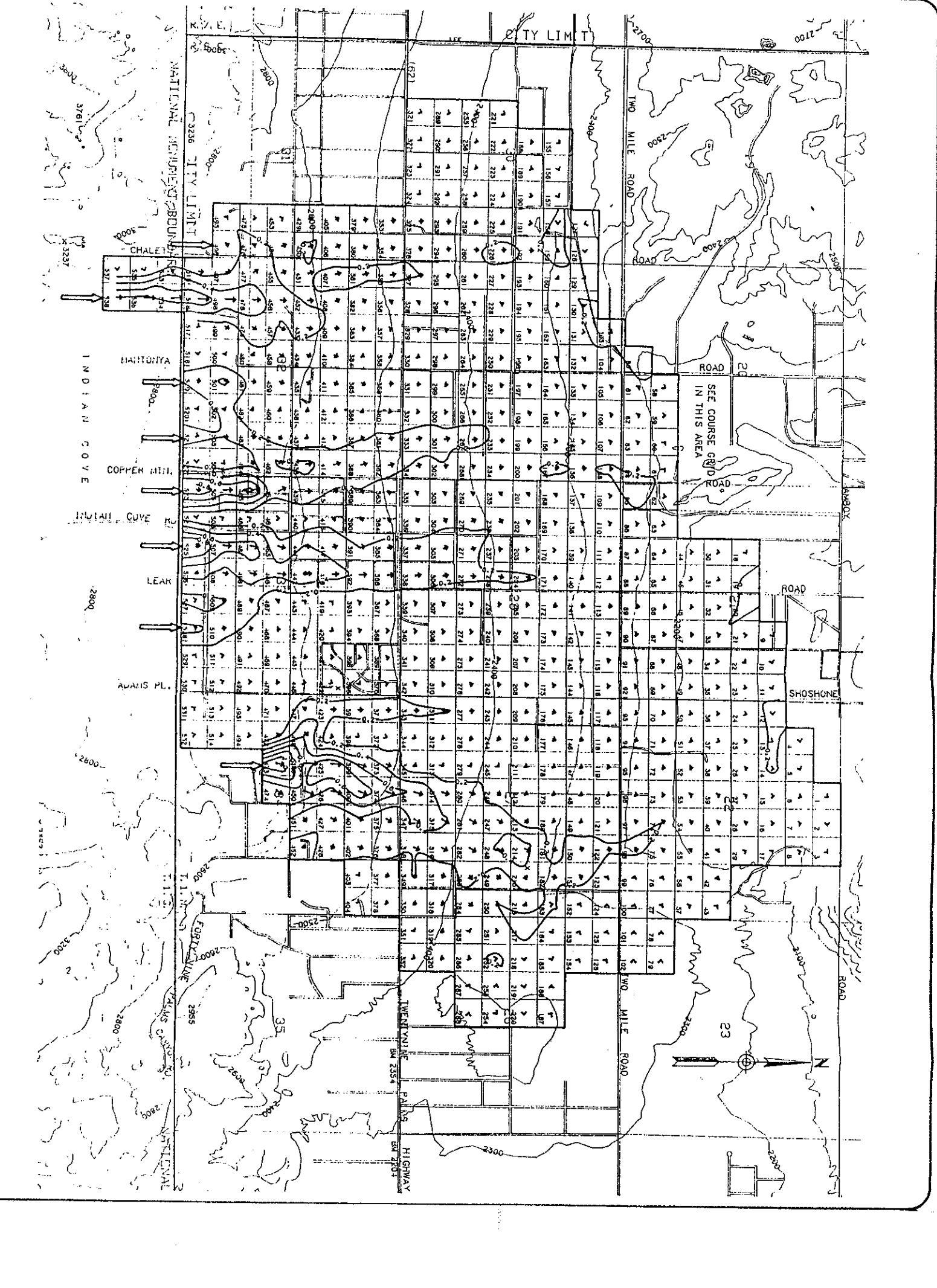
¹Professor, Depts. Of Mathematics, Environmental Studies, and Geology; Calif. State University, Fullerton, and Principal, Exponent Failure Analysis Associates.











CITY LIMIT

NATIONAL MONUMENT BOUNDARY

CHALEY

INDIAN COVE

HAHONYA

COPPER HILL

LEAK

ADAMS PL.

CITY LIMIT

TWO MILE ROAD

INDIAN COVE ROAD

SHOSHONE ROAD

ADAMS PL.

TWO MILE ROAD

NATIONAL MONUMENT BOUNDARY

INDIAN COVE

HAHONYA

COPPER HILL

LEAK

ADAMS PL.

TWO MILE ROAD

INDIAN COVE ROAD

SHOSHONE ROAD

ADAMS PL.

TWO MILE ROAD

SEE COURSE GRID
IN THIS AREA



B.M. 2554

B.M. 2703

HIGHWAY

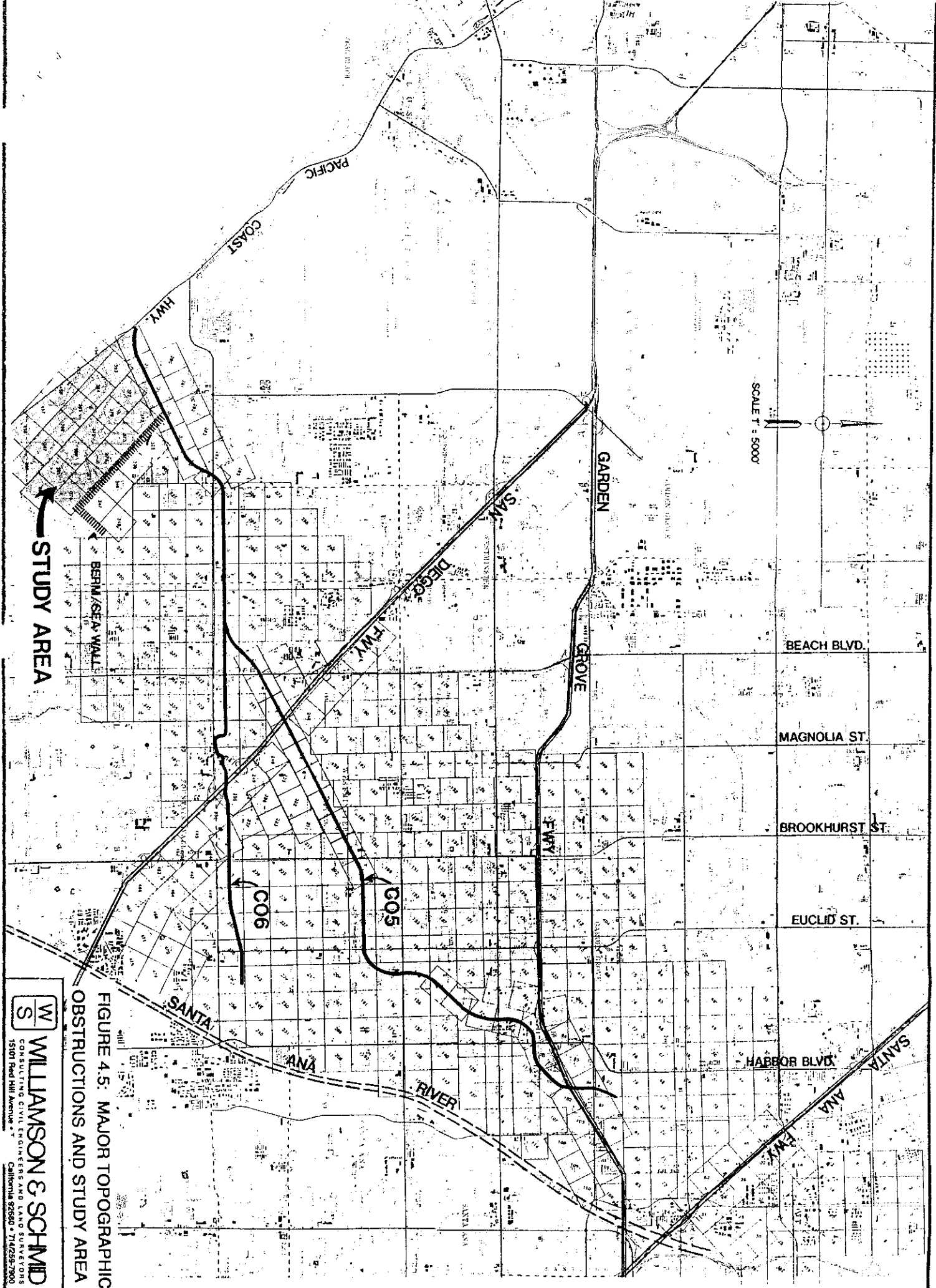

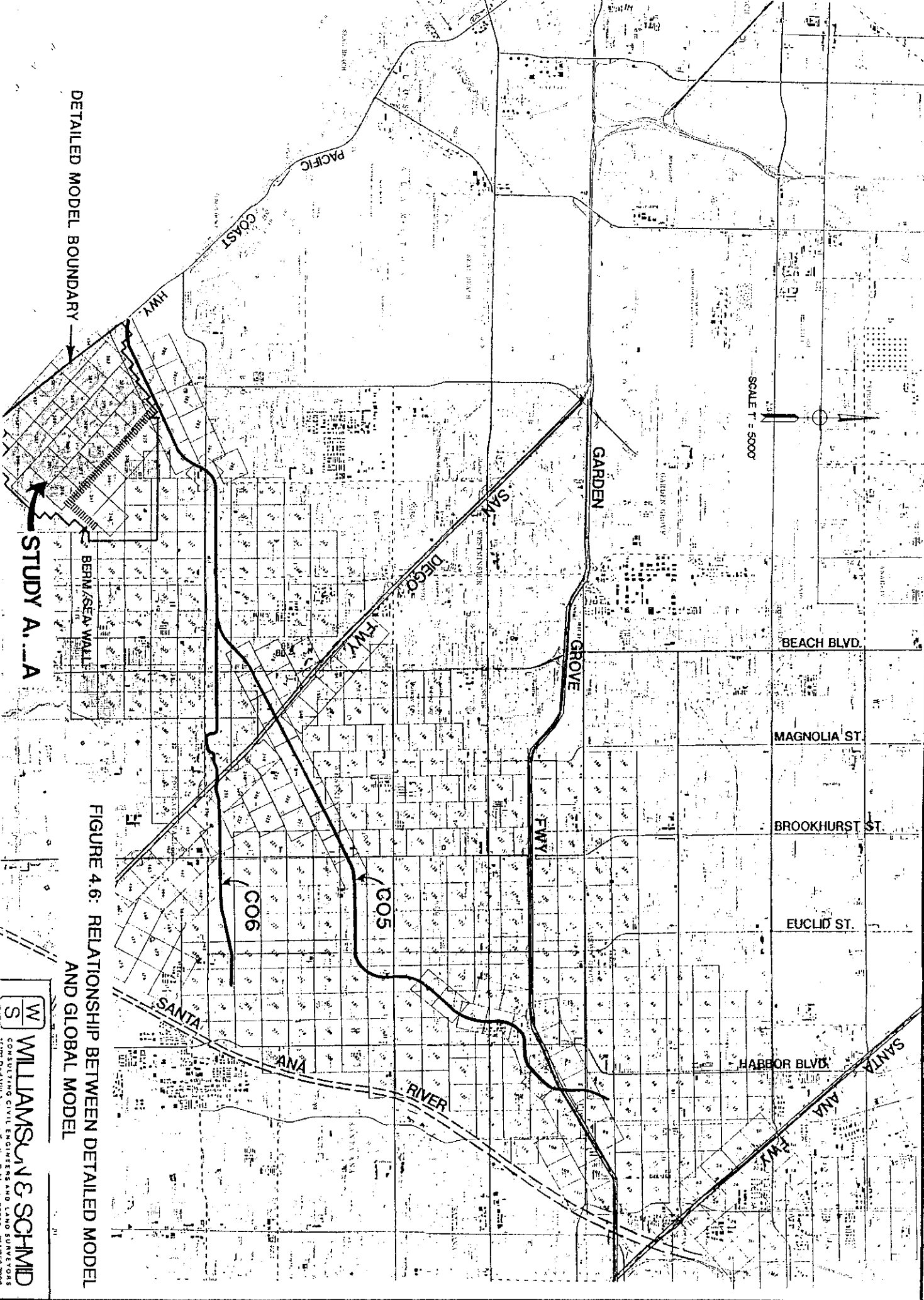


FIGURE 4.5: MAJOR TOPOGRAPHIC OBSTRUCTIONS AND STUDY AREA


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DETAILED MODEL BOUNDARY

STUDY A..A

SCALE 1" = 5000'

FIGURE 4.6: RELATIONSHIP BETWEEN DETAILED MODEL AND GLOBAL MODEL

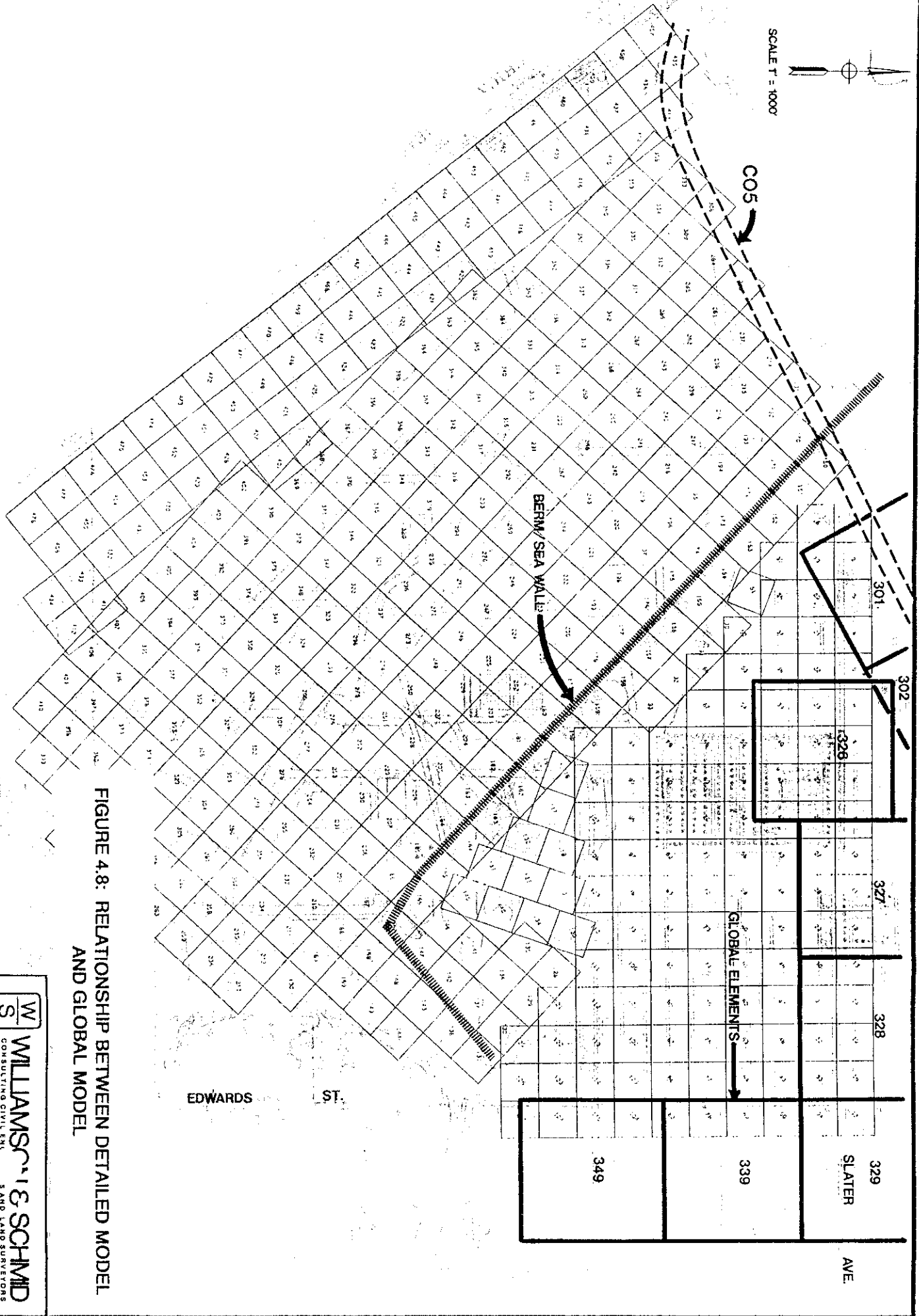
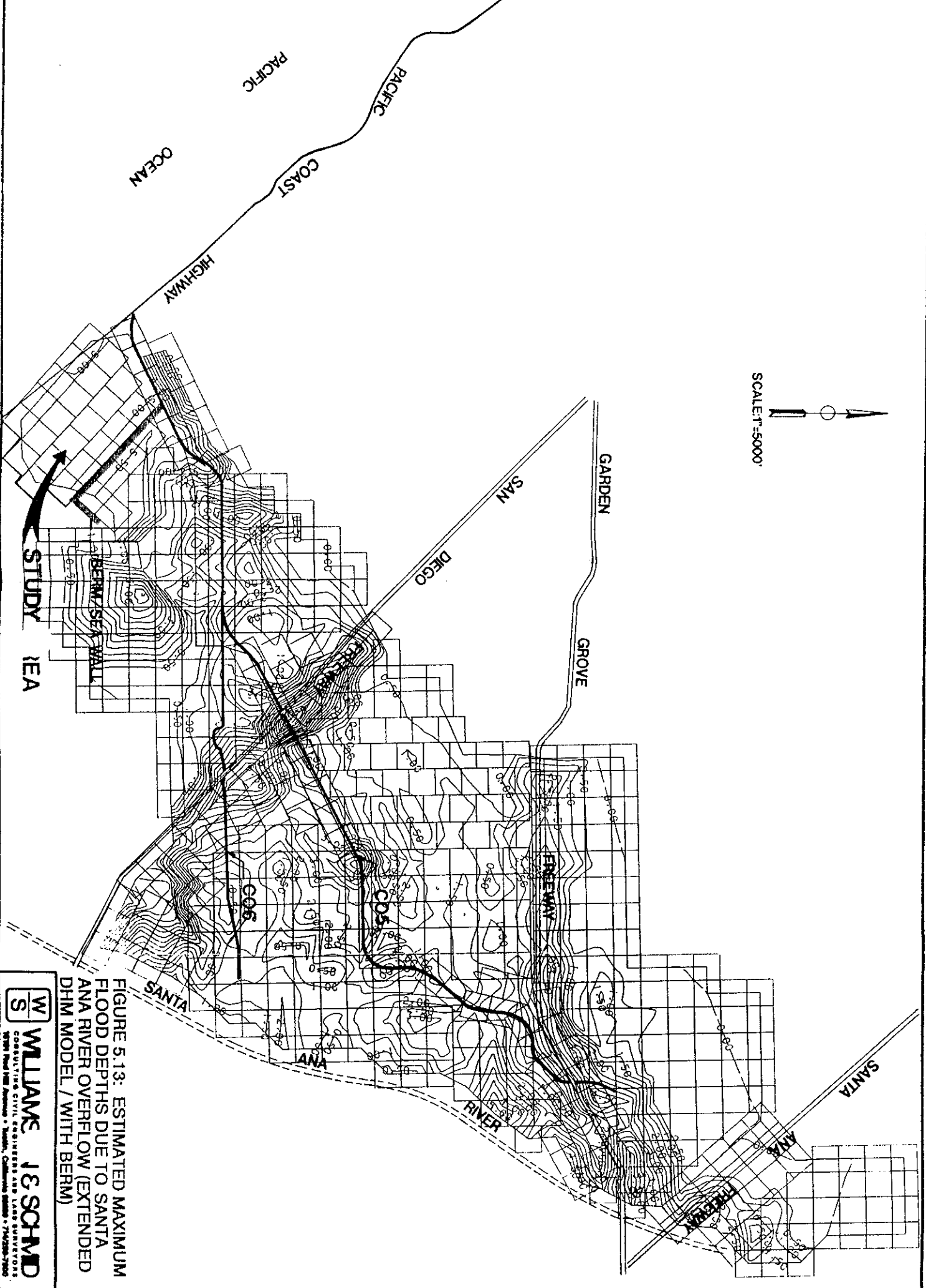


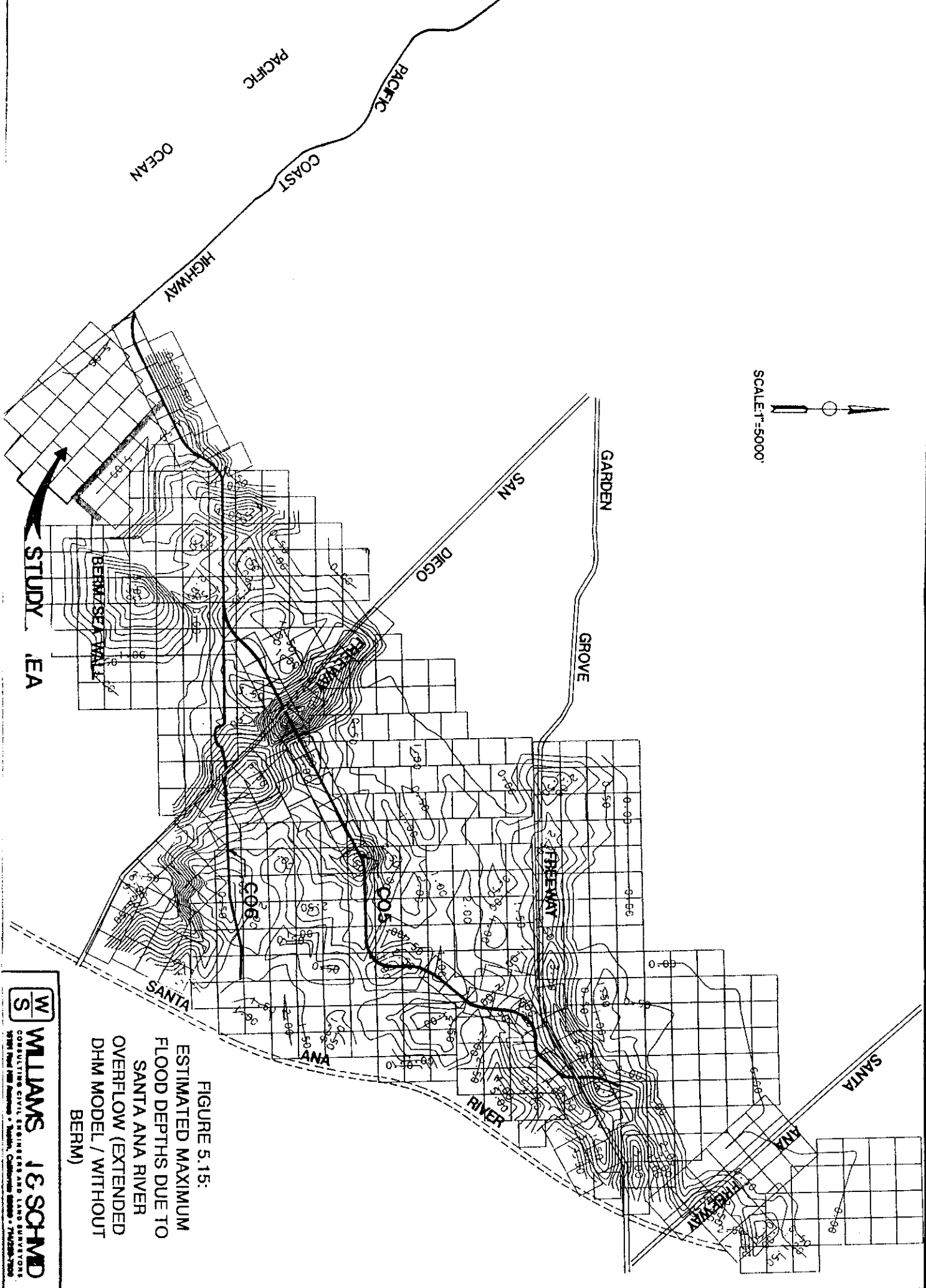
FIGURE 4.8: RELATIONSHIP BETWEEN DETAILED MODEL AND GLOBAL MODEL



SCALE 1"=5000'

FIGURE 5.13: ESTIMATED MAXIMUM FLOOD DEPTHS DUE TO SANTA ANA RIVER OVERFLOW (EXTENDED DHM MODEL / WITH BERM)

W S WILLIAMS & SCHMID
 CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
 3800 Pacific Avenue • Santa Ana, California 92704 • Telephone 714/533-7100



SCALE 1"=5000'

FIGURE 5.15:
 ESTIMATED MAXIMUM
 FLOOD DEPTHS DUE TO
 SANTA ANA RIVER
 OVERFLOW (EXTENDED
 DHM MODEL / WITHOUT
 BERM)

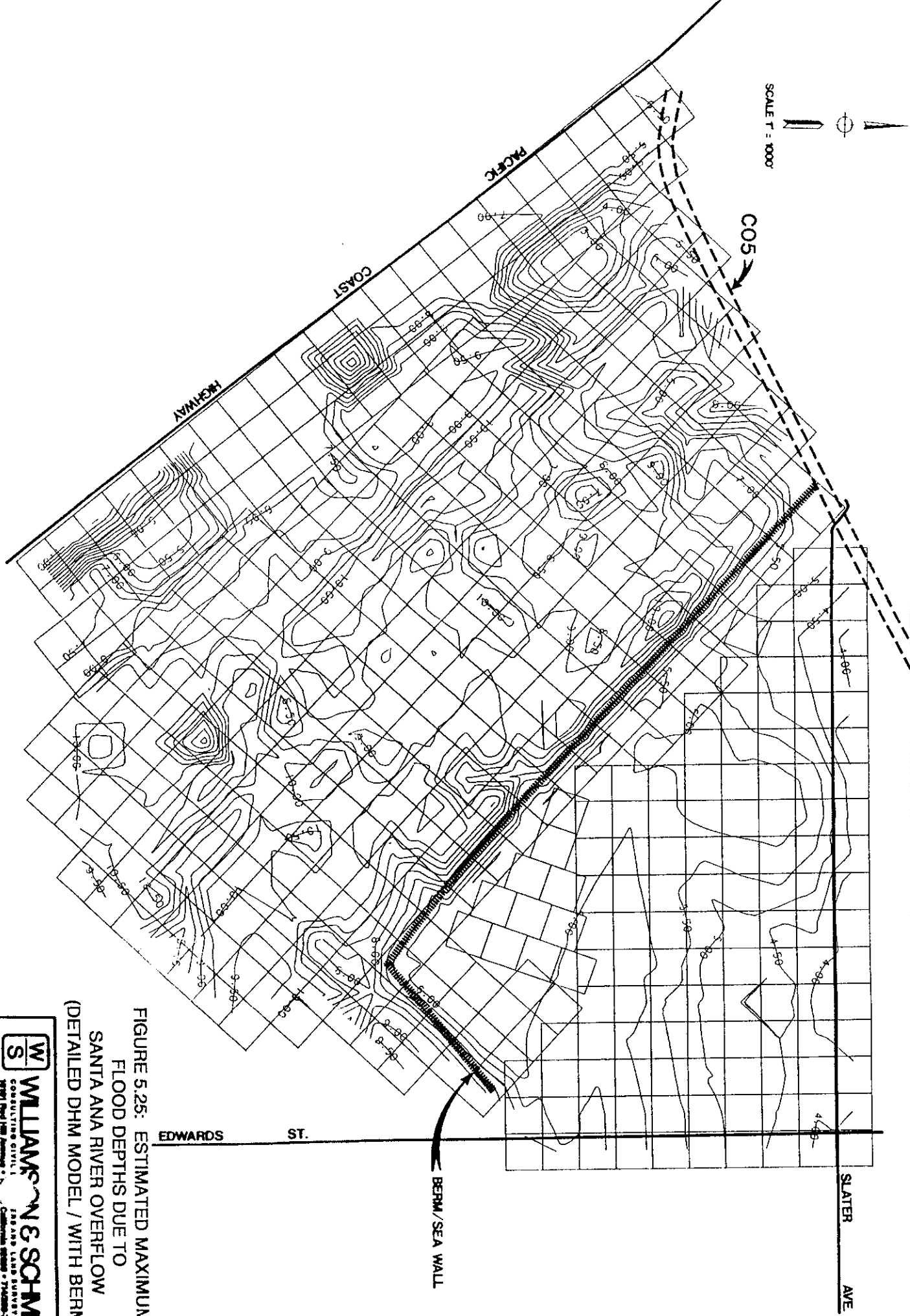


FIGURE 5.25: ESTIMATED MAXIMUM FLOOD DEPTHS DUE TO SANTA ANA RIVER OVERFLOW (DETAILED DHM MODEL / WITH BERM)

SCALE T = 1000'

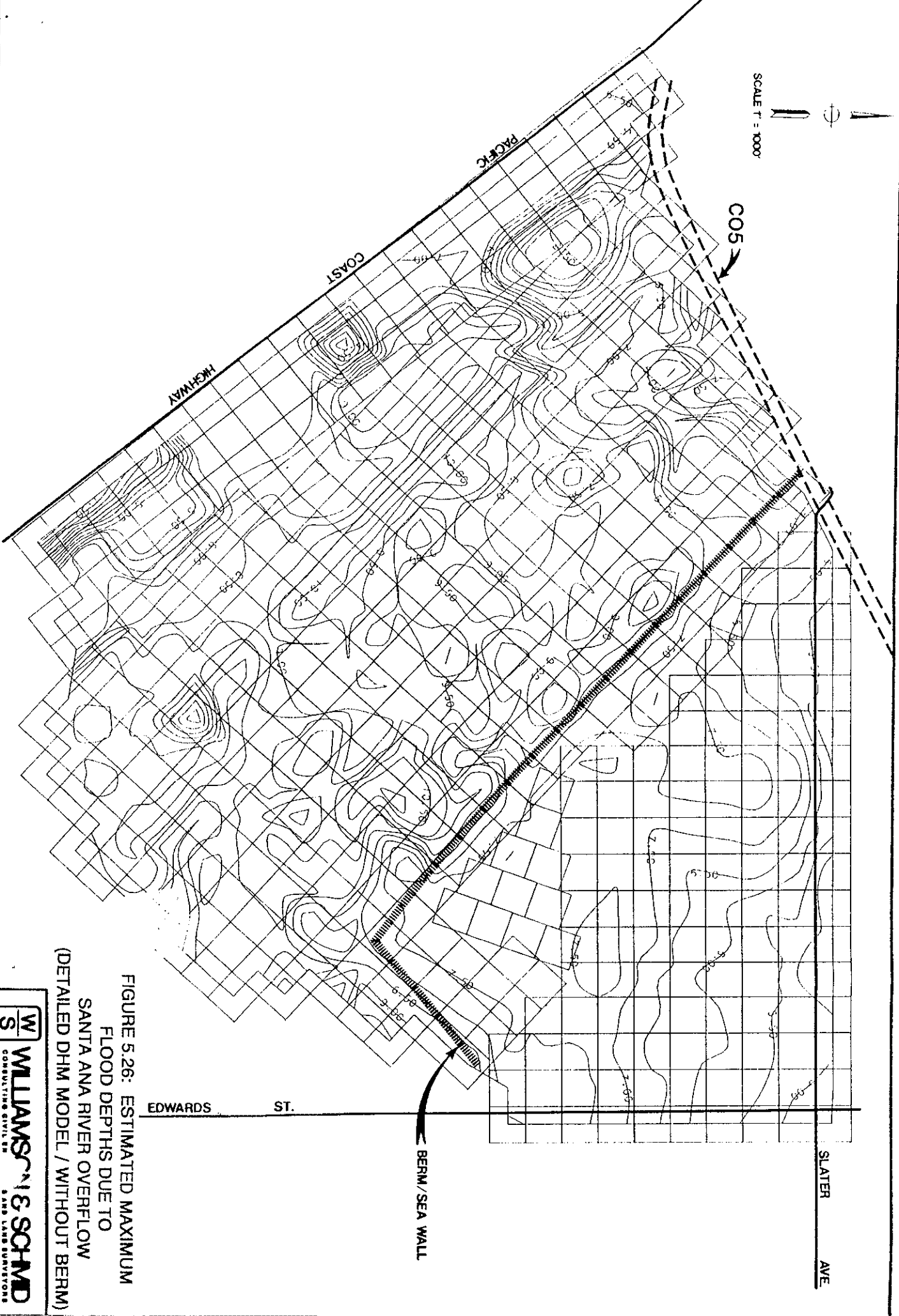
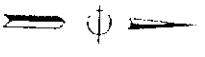


FIGURE 5.26: ESTIMATED MAXIMUM FLOOD DEPTHS DUE TO SANTA ANA RIVER OVERFLOW (DETAILED DHM MODEL / WITHOUT BERM)

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