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WINZLER & KELLY

Consulting Engineers

WK GROUP

RENO DRAINAGE STUDY

ANALYSIS OF THE REWANA FARMS DRAINAGE DEFICIENCY AREA

Area 5 of 21

July 1985

Prepared for:

City of Reno

Prepared by:

Winzler and Kelly
1201 Terminal Way, Suite 215
Reno, Nevada 89502

A. INTRODUCTION

The drainage deficiency area north of Peckam called Rewana Farms is a small, flat drainage system consisting of approximately 125 acres. (Refer to Figure 1.)

The flows begin in the southern boundary of the drainage basin and flow north via the drainage ditches along the streets. The northern boundary of the drainage basin is Glen Street where flows enter the major drainage ditch running east.

Since this area is a prime candidate for future growth, both as a residential site and a distribution/warehousing site, some sort of drainage planning should be completed prior to any further development.

B. FIELD ANALYSIS

The Rewana Farms drainage area is shown as a 100% single family residential area based on the present land use map. This is slated for significant change on the future land use map, which calls for approximately 75% distribution and warehousing/residential and 25% public facility. There are very few drainage facilities for this flat drainage area, considering its potential future development.

The flows begin in the south and exit into a big drainage ditch at the northern boundary of this drainage area via three separate routes. The flows generated at the southeast, mainly consisting of street flows from Karen and Pamela, proceed north, some in the roadside ditches and some as overland flow. Once these flows reach the intersection of Karen and Model, they cross Model Way via a 12-inch RCP and continue flowing towards the north in the roadside ditches along Karen. Then they turn east on Rewana and north on Pamela and proceed north until they intersect to the big ditch running east.

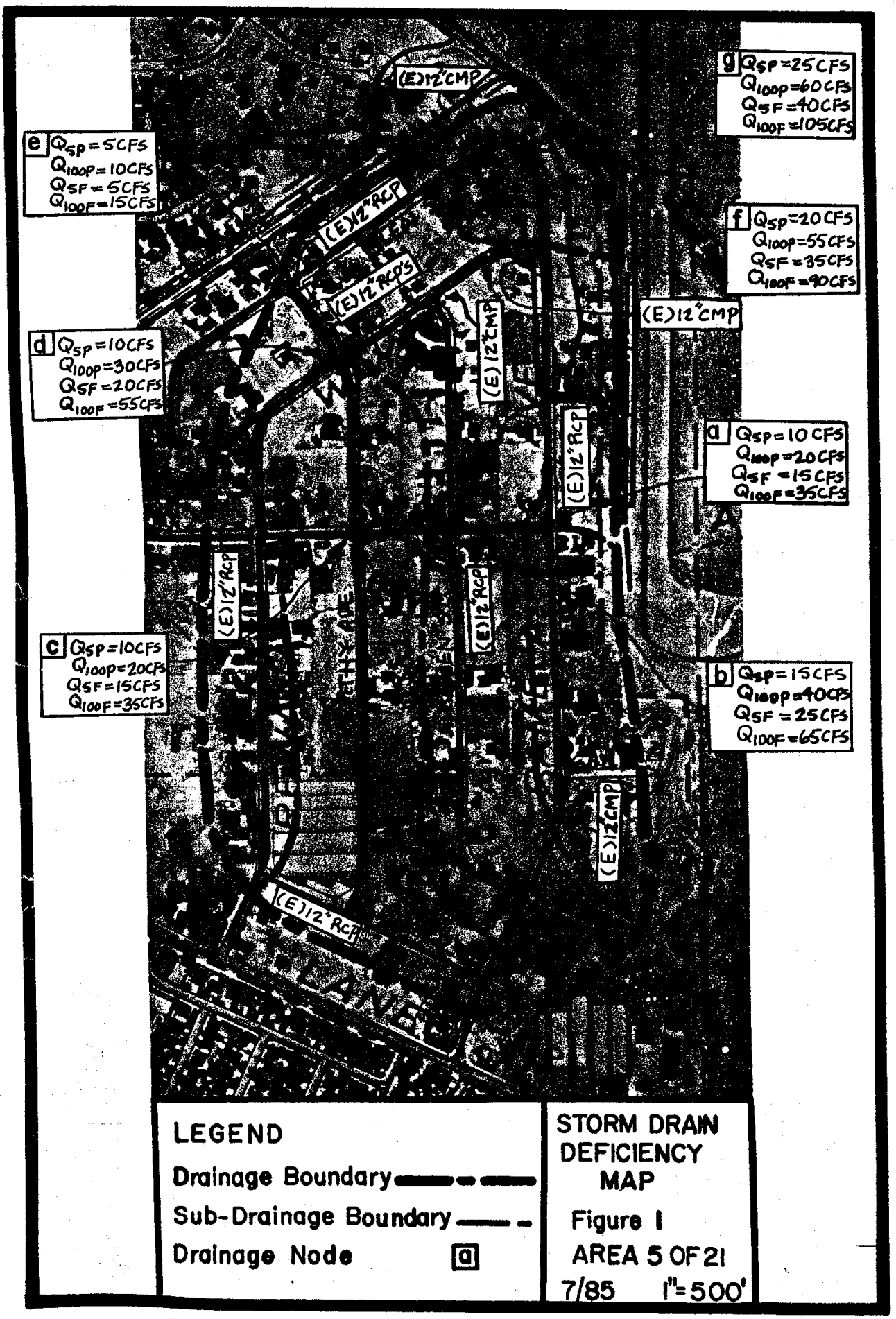
The street flows from Donald proceed north in the shallow ditches along Cathy. Street flows on Model Way proceed east and west to the intersection with Cathy and turn north in roadside ditches on Cathy. There are two 12-inch RCP's crossing Cathy from west to east at the intersection of Rewana and Cathy. Flows from Cathy turn east into a ditch on the south side of Rewana Way, joining the previously mentioned flows and reach the big ditch after turning north on Pamela..

The remaining flows consist of some street flows from Rewana Way and some overland flows from the area between Rewana Way and the western boundary of this drainage basin. These flows turn north on Cathy to the intersection with Glen Street. A 12-inch RCP crosses Cathy from west to east on the south side of Glen Street. Once flows cross Cathy, they flow towards the northeast on Glen to Pamela, eventually reaching the big ditch running east.

It should be noted that the majority of the drainage pipes located at the various intersections are badly silted in, and need to be cleaned if they are not replaced by a new drainage system in the near future.

C. ESTIMATED STORM RUNOFF

Estimated storm runoff is calculated for both the 5-year and the 100-year storm at selected nodes. These nodes are shown on Figure 1, the project boundary map. Table 1 summarizes these nodes, giving location, description of node, capacity of node and estimated storm runoff at the node. The existing capacity assumes inlet control. Generally a range is given. The lower value assumes no head at the inlet while the higher value is at maximum head on the culvert.


(E)12"CMP
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e QSP=5CFS Q100P=10CFS QSF=5CFS Q100F=15CFS
g QSP=25CFS Q100P=60CFS QSF=40CFS Q100F=105CFS
f QSP=20CFS Q100P=55CFS QSF=35CFS Q100F=90CFS
d QSP=10CFS Q100P=30CFS QSF=20CFS Q100F=55CFS
a QSP=10CFS Q100P=20CFS QSF=15CFS Q100F=35CFS
c QSP=10CFS Q100P=20CFS QSF=15CFS Q100F=35CFS
b QSP=15CFS Q100P=40CFS QSF=25CFS Q100F=65CFS
LEGEND
Drainage Boundary
Sub-Drainage Boundary
Drainage Node a
STORM DRAIN DEFICIENCY MAP
Figure 1
AREA 5 OF 21
7/85 1"=500'

Table 1. Rewana Farms Existing Drainage Facilities Summary

Node and Location	Existing Storm Drainage System	Existing Capacity (CFS)	Estimated Flows Present Land Use		Estimated Flows Future Land Use	
			Q_5 (CFS)	Q_{100} (CFS)	Q_5 (CFS)	Q_{100} (CFS)
a - Pamela Avenue and Model Way	12" RCP and ditch system	3-4 3	10	20	15	35
b - Karen Street and Model Way	12" RCP and ditch system	3-4 3	15	40	25	65
c - Cathy Avenue and Model Way	Drainage ditch	3	10	20	15	35
d - Cathy Avenue and Rewana Way	2 - 12" RCP's and ditch system	6-10 5	10	30	80	55
e - Cathy Avenue and Glen Street	12" RCP and ditch system	3-5 8	5	10	5	15
f - Pamela Avenue and Rewana Way	12" CMP and ditch system	3-4	20	55	35	90
g - Pamela Avenue and Glen Street	Drainage ditch	144	25	60	40	105

It should be noted that winter and summer storms are of approximately equal intensity and storm runoff calculations are the same for either case (refer to the wet and dry isopleth maps in the Reno Drainage Study Preliminary Report: Analysis of Drainage Deficiency Areas within the City Limits, December 1984).

D. CONCLUSIONS

It is obvious from Table 1 that the majority of existing stormwater facilities are significantly undersized for the estimated 5-year storm flows. Because of potential future growth of this rather flat drainage area as a distribution and warehousing site, storm drainage planning should be considered before the existing runoff is increased as additional development occurs.

It should be noted that there is no pipe found at the Cathy-Model intersection. The only way the flows can proceed north is to sheet across Model Way as street flows. Thus, installing a pipe carrying flows north at this intersection is highly recommended.

In general, upsizing all the ditches and pipe systems, as well as proper maintenance to reduce siltation of the new drainage structures, is advised, so that the flows can run toward the major ditch at the northern boundary of this drainage area without causing any flooding. The culvert and ditch system should be sized to handle the 5-year storm. It should be noted that installing culverts of adequate size to handle the projected flows may, in some cases, cause overly deep and wide ditches. There comes a point where it is no longer feasible to proceed as ditch flow, but rather to install a storm drain pipe network.