Peterson Air Force Base Colorado Springs, Colorado

Type "A" Report Basewide Storm Drainage Study Peterson Project No. 91-1061E for 1003 CES/DEED, Stop 37, Peterson AFB, Colorado 80914

March 31, 1992

100% Submittal

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GENERAL DESCRIPTION

1.1 <u>Purpose:</u>

The purpose of this report is to provide Type "A" services for Peterson AFB, Project 91-1061E, Basewide Storm Drainage Study. The existing storm drainage system was constructed in phases without the benefit of a comprehensive drainage plan. The result is an incohesive and inadequate system. This report will identify existing problem drainage areas and make recommendations for improving the major drainage system. Future development will also be anticipated. Drainage system improvements will comply with future flows and drainage patterns.

1.2 <u>Project Description:</u>

The study area includes all of Peterson AFB north and east of the existing runways except Peterson East. The area is approximately 1,000 acres of mostly developed land. The storm water runoff will be analyzed using the Army Corps of Engineers hydraulics computer program HEC-1. Hydrographs and rainfall rates are provided by the City of Colorado Springs. Future drainage requirements will be anticipated and incorporated into the proposed drainage plan.

1.3 <u>Authorization:</u>

This Type "A" report was authorized by 3 SSW/PKBAC Contract No. DACA21-90-00004, "Basewide Storm Drainage Study, No. 91-1061E".

1.4 <u>Criteria Used:</u>

1.4.1 City of Colorado Springs and El Paso County, Drainage Criteria Manual, 1987.

1.4.2 All applicable Air Force regulations.

ANALYSIS CRITERIA AND METHODS

2.1 <u>General:</u>

The City of Colorado Springs and El Paso County have developed a Drainage Criteria Manual which presents analysis criteria and methods appropriate for use by Peterson Air Force Base. That manual is generally the basis of all storm water analysis presented in this report. The City of Colorado Springs will be supplied with copies of all phases of this report. Final review and approval of this report will not be made by the City, although it is technically in their jurisdiction. Air Force personnel are solely responsible for internal drainage issues. The City of Colorado Springs comments, suggestions, and guidance are always welcome.

2.2 Storm Water Runoff:

The general approach to determining the storm water runoff for Peterson AFB is first to identify drainage patterns, organize the site into drainage areas, determine the hydraulic properties of each drainage area, and develop computer models which describes the behavior of storm water. For this site the existing drainage areas are organized according to the underground storm sewer collector to which it contributes. The main exception to this rule is when a storm sewer diverts flow from the natural surface drainage pattern and it is known that the culvert will not receive or convey a significant percentage of the flow generated by that drainage area.

The hydraulic properties of the site are determined by first considering the type of soil on the site, the type and condition of vegetation covering the site, the percent of the site with impervious cover, the slope of the surface, and the storm water collection system. All of these variables are subject to some judgment and no two hydrologists will reach exactly the same conclusions.

Runoff can be modeled by two methods: the Rational Method or the Soil Conversation Service (SCS) Hydrograph Method. The rational method is appropriate for drainage areas of less than 100 acres and is easily performed by hand calculations. The hydrograph method is appropriate for large areas and requires computer analysis. It is determined that the hydrograph method should be used for this site due to the large basin sizes and the flexibility of computer analysis. The Drainage Criteria Manual has no preferences as to the computer program used to generate storm water runoff from the SCS Type IIA, 24-hour hydrograph. The Army Corps of Engineers HEC-1 program is acceptable and is used in this report. HEC-1 is powerful, flexible and is completely appropriate for this site.

Two storm reoccurrence frequencies are recommended by the Drainage Criteria Manual; the 10-year and 100-year intervals. The storm sewer system should be capable of conveying the 10-year rainfall. The 100-year runoff should be considered in the storm sewer system design; however, a system capable of conveying a 100-year storm would be expensive and generally not cost effective. A well designed system will adequately convey frequent storms without disrupting normal activities or resulting in damage. Low reoccurrence frequency storms will result in some flooding, and minor damage should be tolerated.

2.3 <u>Storm Sewers and Hydraulic Structures:</u>

Storm sewers, drop structures and other structures are designed based on the criteria provided in the drainage manual. Storm sewers are intended to function at capacity for the 10-year storm. This means the culvert will be flowing full with maximum depth in the inlets and manholes. Rainfall exceeding the 10-year event will flow on the surface.

2.4 Roads and Inlets:

The size and spacing of inlets is to be determined using the Drainage Criteria Manual. The intent is to provide a system which allows normal traffic patterns during minor storms and allows access of emergency vehicles during major events. These criteria should apply to both new systems and improvements to existing storm sewers.

EXISTING CONDITIONS

3.1 <u>General:</u>

The study area encompasses approximately 1,000 acres of mostly developed land. The slope of the site is generally to the south at approximately 1 1/2 percent. The natural soil type is SCS Type A, Blakeland Sandy Loam, which is highly porous. Vegetation cover is generally good. There are no natural drainage features on the site, although Sand Creek passes along the northwest corner. The area in the vicinity of the creek slopes to the west.

3.2 Existing Collector System:

The existing storm drain system can be divided into seven main collectors. They are:

- 3.2.1 Main line in Hamilton Avenue. This line ties most of the onsite storm sewers to a swale which discharges into the recreational pond at the southern most limits of the study area. The storm sewer is 72" from the discharge headwall to Peterson Boulevard. Between Peterson Boulevard and Otis Street the pipe diameter decreases in stages to a final diameter of 24". Either directly or indirectly drainage areas A, B, C, D, E, and F contribute to this storm sewer. (Refer to map in the Appendix).
- 3.2.2 A 36" collector runs up Mitchell Street from the 72" main line in Hamilton Avenue to Stewart Avenue. It continues north in Mitchell Street as a 21" line which collects storm water from the family housing area. A second 36" line branches west in Stewart Avenue and collects additional runoff from family housing to the north. Drainage area B is the main source of runoff for this storm sewer.
- 3.2.3 A major collector ties to the 72" main line in Hamilton Avenue and runs north along Peterson Boulevard to almost Paine Street. The line is tied to a secondary network of storm sewers and inlets which collect runoff from a large area west of Peterson Boulevard. The line diameter is 48" at Hamilton Avenue and decreases in stages to a final 18" diameter. Drainage Area E contributes to this storm sewer.
- 3.2.4 A 21" storm sewer extends north along Otis Street from Hamilton Avenue to approximately Ent Avenue. From there it branches into a system of minor roof and parking lot drains. Much of the flow in this storm sewer comes from drainage Area F. Some flow is diverted from drainage Area D.
- 3.2.5 Space Command Headquarters has a 48" storm sewer system which collects flow in the vicinity of the building and conveys it west to Sand Creek. Drainage Area H is the main contributor to this storm sewer.

- 3.2.6 A storm sewer system in the area near the west entrance to the base collects flow from a large area west of Peterson Boulevard and generally north of Paine Street. The system varies in size but discharges to Sand Creek as a 54" pipe. This storm sewer conveys storm water from Drainage Area G.
- 3.2.7 A 30" storm sewer extends west from the intersection of Hamilton Avenue and Paine Street. This line discharges into a swale which discharges into Sand Creek. Drainage Area F is the main source of storm water for this storm sewer.

Numerous minor culverts and storm sewers exist onsite which collect roof and surface runoff. Some are tied to the above mentioned storm sewer collectors while others daylight and surface flow to an inlet or other collection structure.

3.3 <u>Major Drainage Areas:</u>

The study area has been divided into nine existing major drainage areas: one for each of the seven main collectors and two which contribute directly to detention pond #3. The drainage areas are:

- 3.3.1 Drainage Area A consists mainly of the golf course located at the south end of the Base. A large pond in the center of the basin receives much of the runoff. A 36" pipe at Kincheloe Loop ties this basin to the 72" Hamilton Avenue Main Collector. The vegetation cover is good and very little impervious cover exists. Calculations indicate the runoff from this area to be 32 cfs and 87 cfs for the 10year and 100-year events, respectively. These numbers ignore the detention affects of the existing pond and other depressions. Considering this the actual runoff from Drainage Area A is probably much less.
- 3.3.2 Drainage Area B is the largest of all the drainage areas encompassing almost all of the family housing area and a large area north of the Family Housing Area to State Highway 94. All this drainage flows into the Mitchell Street Collector. The storm water runoff from this 292 acre area is relatively modest at 73 cfs and 213 cfs for the 10-year and 100-year rainfalls respectively. This is mainly due to good vegetation cover, Type A soil north of the family housing area and low impervious cover. Planned development in the area north of family housing and south of State Highway 94 will significantly increase runoff.
- 3.3.3 Drainage Area C is small at 14 acres. Minor culverts tie the area to both the Mitchell Street and Hamilton Avenue Collectors. However, the majority of the 37 cfs/63 cfs runoff surface flows to a sump area south of Hamilton Avenue.
- 3.3.4 Drainage Area D consists of all areas which flow directly into the Hamilton Avenue Collector west of Mitchell Street. The basin encompasses 136 acres of mostly developed land. There is some overlap between these drainage areas and other collectors: however, their diversion is assumed minimal. The calculated runoff is 90 cfs and 207 cfs for the 10-year and 100-year events.
- 3.3.5 Drainage Area E contributes to the Peterson Boulevard Collector. This area is 80 acres of developed land with a high percentage of impervious cover. As a result, the runoff is high at 152 cfs and 277 cfs for the 10-year and 100-year

storms. The area is covered with a network of secondary storm sewers which collect roof and surface runoff.

- 3.3.6 Drainage Area F is unusual in that four different collectors intercept some flow from the basin, however, none to a degree which affects the general surface flow patterns. Field investigations indicate the majority of the flow enters the Hamilton Avenue Collector near Paine Street. The basin size is approximately 57 acres. Storm water runoff is calculated to be 63 cfs and 134 cfs for the 10year and 100-year events. Significant development opportunities exist in this basin. Future development will significantly increase flows and should be anticipated with drainage improvements.
- 3.3.7 Drainage Area G consists of 197 acres mostly west of Peterson Boulevard and north of Paine Street. The basin flows into the 54" collector to Sand Creek. The area is generally not developed with a relatively low percent impervious cover. The calculated flows are 102 cfs and 257 cfs for the 10-year and 100year events, respectively. Future development in this basin will increase flows significantly.
- 3.3.8 Drainage Area H encompasses Space Command Headquarters and flows into a 48" storm sewer to Sand Creek. This area is 51 acres with a modest percent impervious cover. Storm water runoff is 64 cfs and 133 cfs for the 10-year and 100-year events, respectively. No further development is anticipated in this drainage area.
- 3.3.9 Drainage Area I consists of the golf course, shooting range and an undeveloped area. Impervious cover is very low. This area surface flows to a sump inlet which discharges directly into City Detention Pond # 11. Calculated runoff is very low at 29 cfs and 90 cfs. Little future development is anticipated.
- 3.4 Locations of Special Concern

Throughout Peterson Air Force Base there are localized areas which exhibit frequent flooding. These areas are numerous with existing conditions; however, considerable relief of this flooding will be realized by the major drainage system improvements presented in this report.

3.5 Analysis of Existing Storm Sewer System:

In general, the storm sewer system is not capable of conveying the 10-year event. Flows were calculated based on existing conditions and compared with the capacity of the existing collectors. Those findings are presented in Table 1. No effort was made to confirm the adequacy of the existing inlets to divert surface flow to the collectors.

- 3.6 Analysis of Detention Ponds
 - City Detention Pond #11 is the only existing detention pond which is designed to accept flow from the study area. That pond has been analyzed in previous reports and found

to have adequate capacity. It is not analyzed in detail in this report; however, it is included in the computer model. The intent of doing this is to provide an approximate water surface elevation which will indicate if further detailed analysis is warranted.

Incorporating local detention ponds into the future drainage system was not considered, due to the high value of the limited remaining space available for development.

3.7 Offsite Drainage Areas

There are no offsite drainage areas which contribute significant flow to the study area. There is a small area on the north side of State Highway 94 which flows into existing Drainage Area B. Runoff from this area is minor and is due to a low percent impervious cover and high infiltration rate.

TABLE 1 EXISTING MAJOR DRAINAGE COLLECTOR							
COLLECTOR	EXISTING CAPACITY (CFS)	EXISTING FLOWS (CFS) 10-YEAR	EXISTING FLOWS (CFS) 100-YEAR				
Hamilton Avenue - Peterson to Mitchell - Mitchell to Det. Pond #3	250 310	262 316	536 662				
Mitchell Street	60	73	213				
Peterson Boulevard	130	152	277				
Space Command 48"	125	64	133				
Sand Creek 54"	220	102	257				
Sand Creek 30"	70	63	134				

FUTURE DEVELOPMENT

4.1 <u>General:</u>

The study area is generally developed; however, opportunities exist for further development. The major area for development is the open area east of Space Command Headquarters, between State Highway 94 and the Family Housing area. This area encompasses approximately 100 acres. This area is now in a relatively natural state and runoff is light. Major drainage improvements will be required to protect existing facilities from increased flows resulting from the development of this area.

Additional development is also planned for a 20 acre area west of Peterson Boulevard and north of Paine Street. This area will also require storm sewer improvements when developed.

Numerous smaller areas onsite will also be developed. Computer models used in the analysis of the future sites are adjusted for maximum buildout.

PROPOSED DRAINAGE IMPROVEMENTS

5.1 Proposed Major Drainage Areas:

The proposed drainage areas are delineated by generally the same boundaries as the existing drainage area. The main difference between the existing and proposed areas is that additional basins were created where key flows were needed. These key flows were necessary to size diversions which convey flow from the existing storm sewer system or to confirm the capacity of the existing system. The proposed diversions are detailed in Section 5.2.

- 5.1.1 Drainage Area A consists of 47 acres of mainly golf course with little impervious cover. Vegetation cover is in good condition. A pond is located roughly in the center of the drainage area. The flow direction is to the southwest at 2 percent. Computer analysis indicates runoff from this area to be 15 cfs and 45 cfs for the 10-year and 100-year events respectively. These flows do not account for the detention provided by the pond and other depressions. The actual flows will probably be considerably less. No significant future development is anticipated in this area.
- 5.1.2 Drainage Area B is 40 acres of mostly open space. Included is a portion of the family housing area and part of the shooting range. Some building and road improvements are expected in the area. Flow is to the west at approximately 1 percent. The calculated flows from this basin are 12 cfs and 38 cfs for the 10-year and 100-year events respectively.
- 5.1.3 Drainage Area C encompasses 147 acres of mostly family housing. No further development is anticipated in this area. The surface flow is to the south at 1.2 percent. The calculated flows from this area are 145 cfs and 316 cfs for the 10-year and 100-year storms. Flow from this area will be collected in an improved Stewart Avenue storm sewer and diverted east to a new swale.
- 5.1.4 Drainage Area D is relatively small with 28 acres. Future land use indicates the area will be administrative, community commercial, community services, and housing. A high impervious cover is assumed. All flow from this basin enters the Mitchell Street Collector. The calculated flows will be 75 cfs and 126 cfs for the 10-year and 100-year storms.
- 5.1.5 Drainage Area E is very small at 14 acres of mostly administrative use. The open space in the basin is assumed to be fully developed. Impervious cover will be high. Flow is to the south at 1 1/2 percent.

This basin contributes to both the Mitchell Street and Hamilton Avenue Collector. The total calculated flow is 38 cfs and 63 cfs for the 10-year and 100-year events.

- 5.1.6 Drainage Area F covers 121 acres which will be fully developed. The land use categories included are administrative, industrial, community commercial, aircraft O&M, and outdoor recreation. The majority of storm water from this area flows south to the Hamilton Avenue Collector. The flows are 63 cfs and 184 cfs for the 10-year and 100-year storms.
- 5.1.7 Drainage Area G encompasses 34 acres of medical, community commercial, community services, and administrative land use. The area is now fully developed and no significant changes in cover are anticipated. The direction of flow is to the south at approximately 1 1/2 percent. All the runoff from this area goes into the Peterson Boulevard Collector system. The calculated flows are 91 cfs and 151 cfs for the 10-year and 100-year events.
- 5.1.8 Drainage Area H is 48 acres of fully developed land. Land use is administrative, community commercial, and community services. No additional development is anticipated. The entire drainage area now flows into the Peterson Boulevard collector. This drainage area was added to define the flow converging at Peterson Boulevard and Stewart Avenue. That intersection is a convenient location to construct a diversion storm sewer in Stewart Avenue which will convey flow from the overloaded Peterson Boulevard and Hamilton Avenue Collectors. The calculated flows are 124 cfs and 204 cfs for the 10-year and 100year events.
- 5.1.9 Drainage Area I covers 52 acres of industrial, open space, administrative, community commercial and community services. The majority of flow from this area goes to the 30" storm sewer to Sand Creek however some flow is diverted to the Otis Street Collector and to Sand Creek in the 54" Collector. There are opportunities for development in this drainage area. It is considered fully developed in the flow rate calculations. The 10-year and 100-year flows are 136 cfs and 227 cfs.
- 5.1.10 Drainage Area J is large at 105 acres. Land use will be outdoor recreation, industrial, community services, and community commercial. All storm water runoff from this drainage area enters the 54" collector which flows directly to Sand Creek. Some future development will be made. The calculated flow rates are 161 cfs and 325 cfs for the 10-year and 100-year storms.
- 5.1.11 Drainage Area K encompasses 31 acres. The land use will be mostly special space missions with some community commercial. The drainage area was added because future development will require a storm sewer system to tie into. Diverting flow from this area to Sand Creek will help

reduce the load on down stream collectors. The calculated flow rates are 83 cfs and 138 cfs for the 10-year and 100-year events.

- 5.1.12 Drainage Area L is 53 acres of administrative land. No further development is anticipated. The impervious cover is moderate with considerable open space. All the storm water runoff from this area flows to a 48" collector to Sand Creek. No other drainage areas contribute significant flow to this culvert. The calculated flows are 74 cfs and 151 cfs for the 10-year and 100-year storms.
- 5.1.13 Drainage Area M encompasses 62 acres of land dedicated for administrative use. The area is open space at present so considerable development will occur. This basin slopes to the south at approximately 2 percent. At present this area sheet flows south across the north boundary of the existing family housing. The extensive development anticipated will require a storm sewer system. It is recommended a diversion storm sewer be constructed to convey flow from this area through family housing to a new swale. The flow rates are 160 cfs and 270 cfs for the 10-year and 100-year events.
- 5.1.14 Drainage Area N is a long thin drainage area along the east boundary of the study area. The area is now open space and is expected to remain so. Paine Street will ultimately be extended to the north end of this area. It is not known how much it will affect storm water runoff in the area. All the flow from this site will be collected into a swale which runs from the southeast corner of Drainage Area M to City Detention Pond # 11. The calculated flows are 21 cfs and 74 cfs for the 10-year and 100-year storms.
- 5.1.15 Drainage Area O is 117 acres of land reserved for outdoor recreation. Vegetation cover is good and very little impervious cover exists. The flow direction is to the south at an average slope of 2 percent. A sump inlet into City Detention Pond #11 receives the runoff. No further development is anticipated in this drainage area. The calculated flows are 34 cfs and 108 cfs for the 10-year and 100-year storms.
- 5.1.16 Drainage Area P is approximately 17 acres of land mostly dedicated for highway use with some commercial zoning. At present, most of this area flows into a detention area created by State Highway 94. When development occurs in this area it is assumed a culvert will be constructed under the highway which will allow flow to impact the site. It is recommended that a 48" storm sewer be constructed along the north Peterson property line to intercept this flow. Calculations indicate the flow rates to be 2 and 14 for the 5-year and 100-year events.
- 5.1.17 Drainage Area Q is a 100 acre offsite flow which combines with Drainage Area P at the north property line. At present, the area discharges very little flow; however, once development occurs the runoff will be significant, 216 cfs and 372 cfs. It is recommended that a 60" storm sewer be constructed to intercept this flow and divert it to the new

5.2 <u>Major New Drainage Improvements:</u>

The existing storm sewer system is undersized for existing conditions based on the 10year storm. Future development will increase drainage problems on site. To help eliminate the need to perform expensive replacement of undersized existing collectors it is recommended that where possible storm water be diverted away from these collectors. The following new drainage systems are recommended:

- 5.2.1 The East Swale is a swale to be constructed from the northeast corner of the Family Housing Area to City Detention Pond # 11. The swale would collect and divert flow away from the existing undersized storm sewer system. The swale should be grass lined and designed with a slope gradual enough to prevent erosion during minor storm events. Drop structures consisting of a concrete runoff wall and extensive riprap will be required at intervals varying with the slope of the surface. Drainage areas C, H, M and N contribute to this swale.
- 5.2.2 The North 60" Storm Sewer is a 60" RCP to be constructed from the north side of the Family Housing Area to the East Swale. Temporary swales would be constructed along the north side of the family housing area to divert flow into the 60" pipe. The temporary swales could be replaced by culverts and inlets when the area is further developed. Drainage Area M contributes to this storm sewer.
- 5.2.3 The East 72" Storm Sewer is necessary to lessen the required improvements to the Mitchell Street Collector and Hamilton Avenue Collector. A 72" RCP should be constructed from Mitchell Street at Stewart Avenue east to the new swale east of the golf course. This line, in conjunction with the new north 60" storm sewer, would reduce the flow to the Mitchell Street Collector to its existing capacity. Drainage Areas H and C contribute to this storm sewer.
- 5.2.4 The Sand Creek 48" storm sewer should extend from Sand Creek at the west entrance east to Peterson Boulevard. Development west of Peterson Boulevard and north of Paine Street will be tied to this line. Drainage Area K contributes to this storm sewer.
- 5.2.5

The Stewart Avenue 54" storm sewer is required to relieve the undersized Peterson Boulevard Collector. Rather than replacing the existing Peterson Boulevard Collector it would be preferable to extend the new 72" culvert mentioned in paragraph 5.2.3 at Stewart Avenue and Mitchell Street along Stewart Avenue to Peterson Boulevard. This extension should be 54" diameter. The flow in the 42" storm sewer in Peterson Boulevard could then be diverted east relieving the load on the Peterson Boulevard and Hamilton Avenue Collectors. Drainage Area H contributes to this storm sewer.

5.2.6

Northeast 60" diversion is a 60" storm sewer which will collect offside flows entering the north property line east of Space Command Headquarters. This storm sewer should start approximately 1,500 feet east of Peterson Boulevard and extend east 1,200 feet to the existing fence line. At the fence it will run south approximately 3,000 feet where it will discharge into the proposed East Swale. Drainage Areas P and Q contributed to this culvert.

5.3 Major Existing Drainage Structure Improvements:

The proposed new storm sewers and swale will divert enough flow away from the existing system that no major reconstruction will be required for the existing system. Minor improvements such as inlet replacements will still be required. See Table 2 for a summary of the Flowrates after the Proposed Drainage Improvements.

TABLE 2 FUTURE MAJOR DRAINAGE COLLECTORS						
COLLECTOR	CAPACITY (CFS)	FUTURE FLOWS 10-YEAR	FUTURE FLOWS 100-YEAR			
Hamilton Avenue - Peterson to Mitchell - Mitchell to Det. Pond #3	250 310	154 290	335 602			
Mitchell Street	60	86	161			
Peterson Boulevard	130	91	151			
Space Command	125	74	151			
Sand Creek 54"	220	161	325			
Sand Creek 30"	70	136	227			
East Swale (15', 3:1, S=0.0025)	1,200	647	1,180			
New North 60"	190	160	270			
New East 72"	300	269	534			
New Sand Creek 48"	110	83	138			
New Stewart Avenue 54"	140	124	207			
New Northeast 60"	190	218	387			

PHASING OF IMPROVEMENTS

- 1. Improve inlets in Peterson Boulevard.
- 2. Improve inlets in Mitchell Street.
- 3. Improve inlets and ditch along Hamilton Boulevard.
- 4. Construct East Swale from City Detention Pond #11 to the East 72".
- 5. Construct the East 72", Stewart Avenue 54" and Stewart Avenue 48" Storm Sewers. Improve inlets in Stewart. Tie the Stewart Avenue 48" to existing Peterson Boulevard 42" storm sewer.
- 6. Extend the East Swale from the East 72" to a point approximately 1,100 feet north of family housing. Much of this swale will be temporary and will be replaced by the Northeast 60" storm sewer.
- 7. Construct the 60" Family Housing storm sewer and the 60" Northeast storm sewer. Both of these lines will be constructed prior to development of Drainage Area M. However, prior to development, the temporary portion of the East Swale can divert much of the flow from Family Housing. Area development of the west portion of Drainage Area O north of State Highway 94 may require construction of the Northeast 60" prior to construction of the Family Housing 60" line.
- 8. Construction of the 48" Sand Creek Line should be coordinated with development west of Peterson Boulevard and north of Pain Street.

SUMMARY

7.1 General:

The storm sewer system in the study area can be improved to adequately convey the 10year storm by the construction of new storm sewers and swales to divert storm water runoff form existing undersized storm sewers. By diverting flows away from developed areas, removal and replacement of existing storm sewers can be minimized which will minimize cost and disruption of normal base operations.

REFERENCES

- 1) Base Comprehensive Plan, Phase I, Peterson Air Force Base, Colorado Springs, Colorado, December, 1990
- 2) Drainage Criteria Manual, City of Colorado Springs / El Paso County, October, 1987
- 3) Peterson Field Drainage Basin Master Plan Update, City of Colorado Springs, Colorado, URS, August, 1984

APPENDIX

GENERAL INFORMATION

TABLE 5-7 RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL-COVER COMPLEXES URBAN AND SUBURBAN CONDITIONS <u>1</u> / (For Antecedent Moisture Condition <u>III</u>) (From: U.S. Department of Agriculture, Soil Conservation Service, 1977)		NOTE: THIS TABLE TO BE USED FOR 2-HOUR STORM ONLY.			
Land Use	<u>Hydr</u>	ologic (<u>B</u>	Soil Gro <u>C</u>	<u>oup</u> D	
Open spaces, lawns, parks, golf courses, cemeteries, etc.					
Good condition: grass cover on 75% or more of the area	59*	78	88	91	
Fair conditon: grass cover on 50% to 75% of the area	69*	84	91	93	
Commercial and business areas (85% impervious)	96*	97	98	98	
Industrial districts 72% impervious)	92*	95	97	98	
Residential: <u>2</u> /					
Average % Acres per Dwelling Unit impervious	s ³ /				
1/8 acre or less 65 1/4 acre 38 1/3 acre 30 1/2 acre 25 1 acre 20	89* 78* 75* 73* 70*	88 86	96 93 92 91 91	97 95 94 94 93	
Paved parking lots, roofs, driveways, etc.	99	99	99	99	
Streets and roads: paved with curbs and storm sewers gravel dirt	99 89* 86*	99 94 92	99 96 95	99 97 96	

1/ For a more detailed description of agricultural land use curve numbers, refer to in the National Engineering Handbook (U.S. Dept. of Agriculture, Soil Conservation Service, 1972).
2/ Curve numbers are computed assuming the runoff from the house and driveway

<u>2</u>/ Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.

3/ The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

* Not to be used wherever overlot grading or filling is to occur.

	Cover Treatment	Hydrologic		noff cu drologi		
Land Use	or Practice	Condition	A	B	<u><u>C</u></u>	D
Fallow	Straight Row		89	94	97	98
Row crops	Straight Row	Poor	86	92	95 94	97 96
	Straight Row	Good Poor	83 85	90 91	94 93	90 95
	Contoured	Good	82	88	92	94
	Contoured Cont. and terraced	Poor	82	88	91	92
	Cont. and terraced	Good	79	86	90	92
Small grain	Straight Row	Poor	82	8 9	93	95
-	-	Good	80	88	93	95
	Contoured	Poor	80	88	92	94
		Good	78	87	92	93
	Cont. and terraced	Poor	78	86	91	92
		Good	77	85	90	92
Close-seeded	Straight Row	Poor	82	89	94	96
legumes <u>1</u> /	Straight Row	Good	76	86	92	94
or	Contoured	Poor	81	88	93	94
rotation	Contoured	Good	74	84	90	93
meadow	Cont. and terraced	Poor	80	87	91	93
	Cont. and terraced	Good	70	83	89	91
Pasture or range		Poor	84	91	94	96
		Fair	69	84	91	93
		Good	59	78	88	91
	Contoured	Poor	67	83	92	95
	Contoured	Fair	64	77	88	93
	Contoured	Good	15	55	85	91
Meadow		Good	50	76	86	90
Woods		Poor	65	82	89	93
		Fair	56	78	87	91
		Good	43	74	85	89
Farmsteads			77	88	92	94
Roads (dirt) 2/			8 6	92	95	96
(hard surfa	ace) <u>2</u> /		88	93	96	97
•	-					

 $\frac{1}{2}$ Close-drilled or broadcast $\frac{2}{2}$ Including right-of-way

TABLE 5-5 RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL-COVER COMPLI URBAN AND SUBURBAN CONDITIONS (For Antecedent Moisture Condition (From: U.S. Department of Agricu Soil Conservation Service, 1973	NOTE: THIS TABLE TO BE USED FOR 24-HOUR STORM ONLY.				
Land Use		<u>Hydro</u> <u>A</u>	<u>logic S</u>	<u>oil Gro</u>	<u>D</u>
Open spaces, lawns, parks, golf courses, cemeteries, etc.					
Good condition: grass cover on 75% more of the area	or	39*	61	74	80
Fair conditon: grass cover on 50% 75% of the area	to	49*	69	79	84
Commercial and business areas (85% impervious)			92	94	95
Industrial districts 72% impervious)		81*	88	91	93
Residential: <u>2</u> /					
Acres per Dwelling Unit imp	rage % ervious ³ /				
1/8 acre or less 1/4 acre 1/3 acre 1/2 acre 1 acre	65 38 30 25 20	77* 61* 57* 54* 51*	85 75 72 70 68	90 83 81 80 79	92 87 86 85 84
Paved parking lots, roofs, driveways, etc	•	98	98	98	98
Streets and roads: paved with curbs and storm sewers gravel dirt		98 76* 72*	98 85 82	98 89 87	98 91 89

1/ For a more detailed description of agricultural land use curve numbers, refer to in the National Engineering Handbook (U.S. Dept. of Agriculture, Soil Conservation Service, 1972).

- 2/ Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.
- 3/ The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

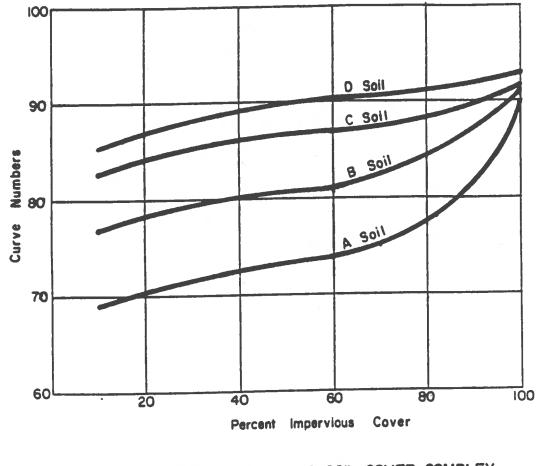
* Not to be used wherever overlot grading or filling is to occur.

TABLE 5-4 RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL-COVER COMPLEXES--RURAL CONDITIONS (Antecedent Moisture Condition <u>II</u>, and I_a = 0.2 S) (From: U.S. Dept. of Agriculture, Soil Conservation Service, 1977)

NOTE: THIS TABLE TO BE USED FOR 24-HOUR STORM ONLY.

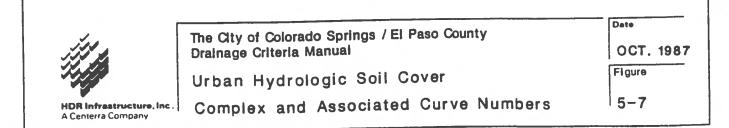
	Cover Treatment	Hydrologic		noff cu drologi		
Land Use	or Practice	Condition	A	<u>B</u>	<u><u><u>C</u></u></u>	D
Fallow	Straight Row		77	86	91	94
Row crops	Straight Row	Poor	72	81	88	91
	Straight Row	Good	67	78	85	89
	Contoured	Poor	70 65	79 75	84	88
	Contoured	Good	65 66	75	82 80	86
	Cont. and terraced	Poor	62	74	78	82 81
	Cont. and terraced	Good			78	01
Small grain	Straight Row	Poor	65	76	84	88
-	-	Good	63	75	83	87
	Contoured	Poor	63	74	82	85
		Good	61	73	81	84
	Cont. and terraced	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded	Straight Row	Poor	66	77	85	89
legumes <u>l</u> /	Straight Row	Good	58	72	81	85
or	Contoured	Poor	64	75	83	85
rotation	Contoured	Good	55	69	78	83
meadow	Cont. and terraced	Poor	63	73	80	83
	Cont. and terraced	Good	51	67	76	80
Pasture or range		Poor	68	79	86	89
5		Fair	4 9	69	79	84
		Good	39	61	74	80
	Contoured	Poor	47	67	81	88
	Contoured	Fair	25	59	75	83
	Contoured	Good	6	35	70	79
Meadow		Good	30	58	71	78
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	25	55	70	77
Farmsteads			59	74	82	86
Roads (dirt) 2/			72	82	87	89
(hard surfa	ace) <u>2</u> /		74	84	90	92

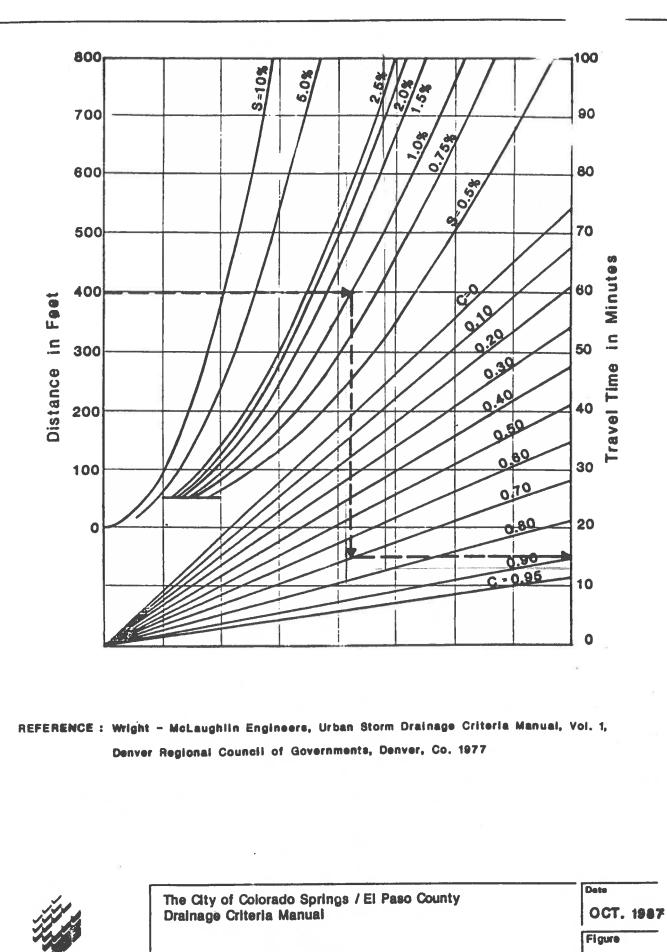
 $\frac{1}{2}$ Close-drilled or broadcast $\frac{2}{2}$ Including right-of-way



URBAN HYDROLOGIC SOIL COVER COMPLEX & ASSOCIATED CURVE NUMBERS

REFERENCE : Pikes Peak Area Council of Governments Areawide Urban Runoff Control Manual

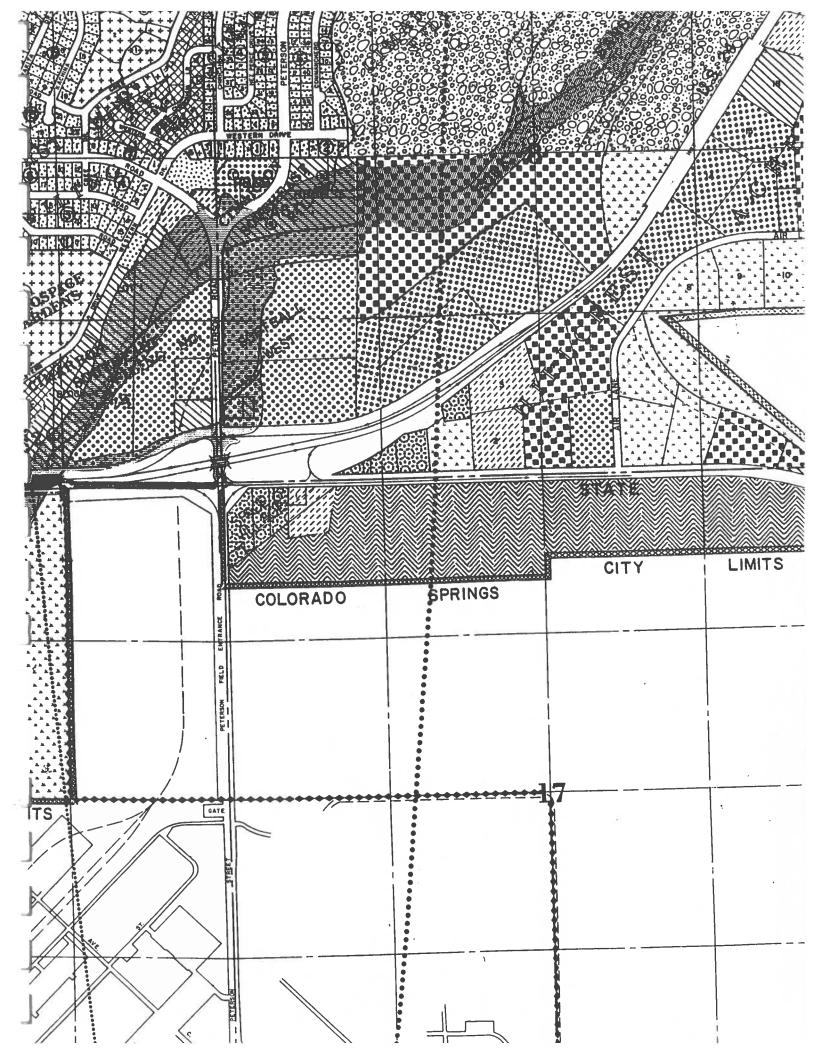


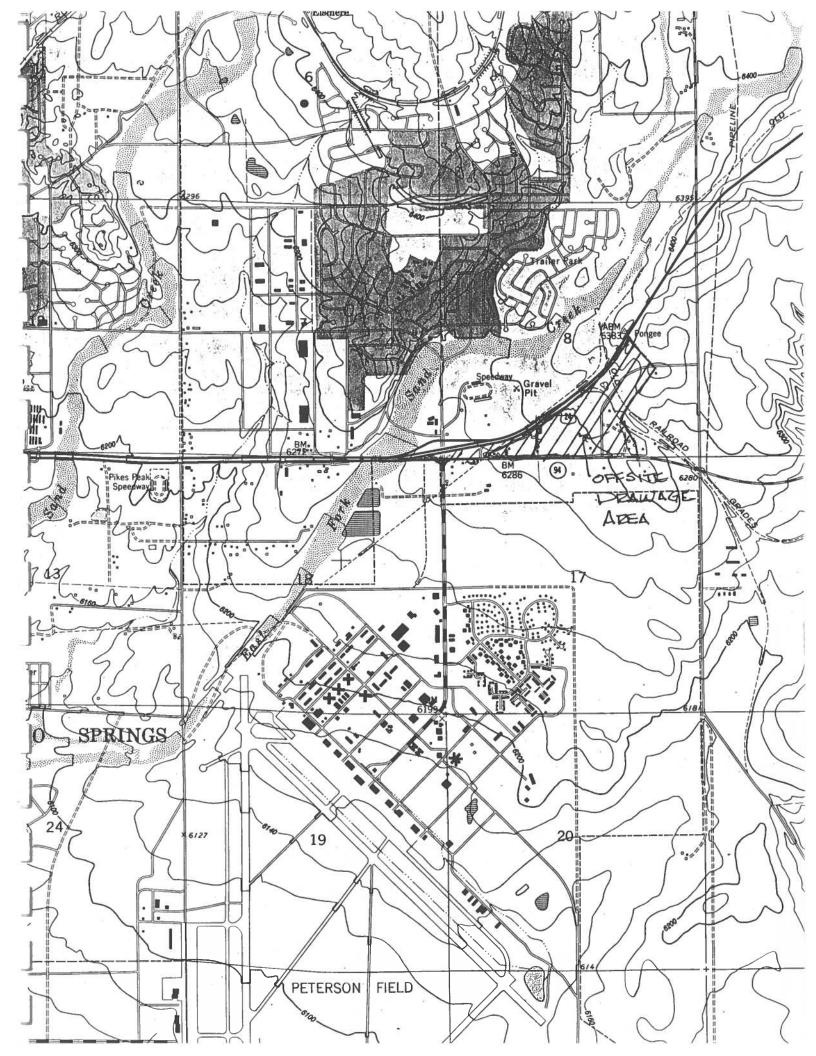


HDR Infrastructure, Inc. A Centerra Company

Overland Flow Curves

5-2

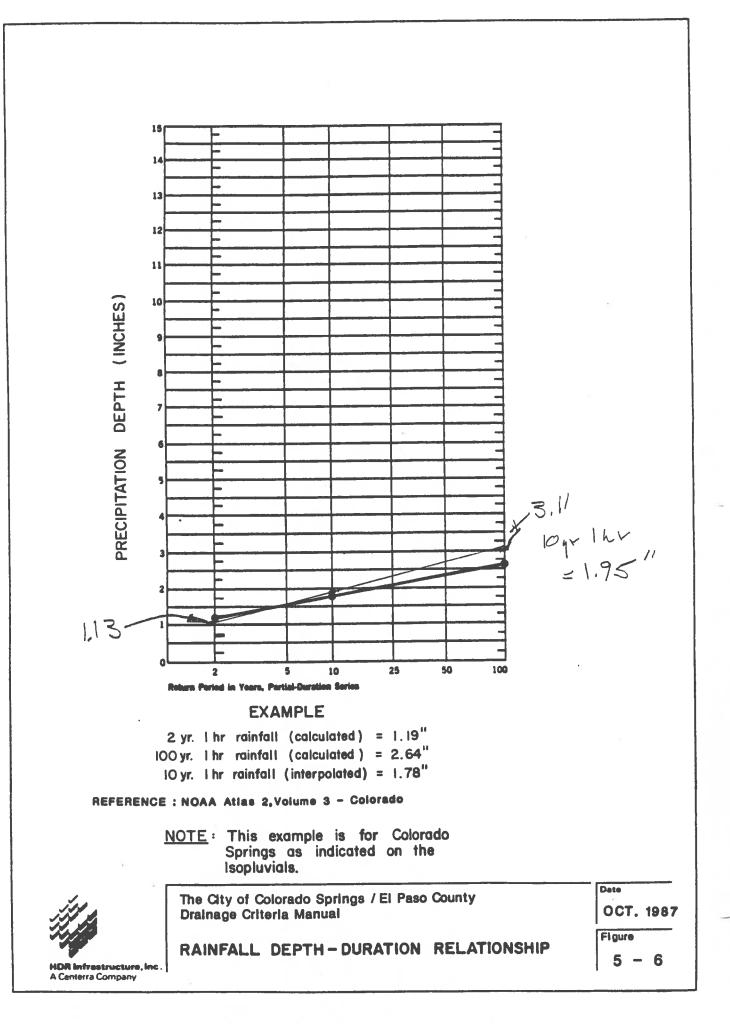






Title PAFB JRAWAGE Date Job No. RAWFALL JUTESITY BY RHS Sheet of

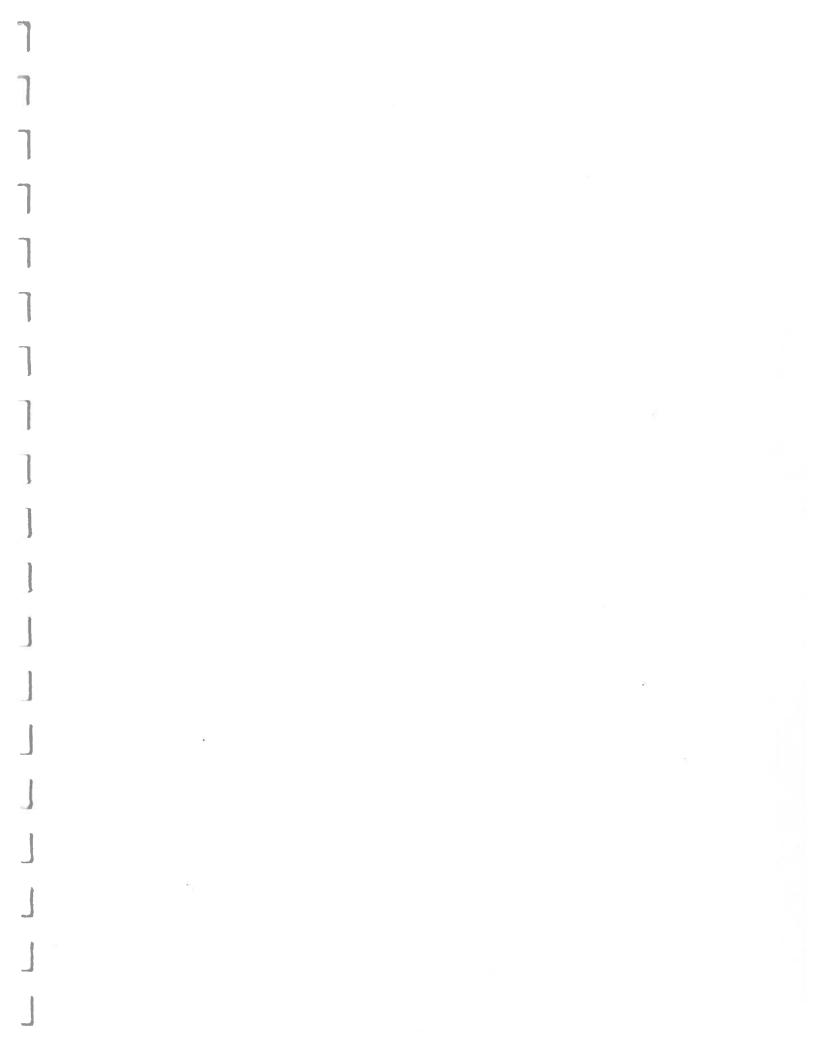
1) Z- YZ 6 HZ X1 = 1.6 Z-4R Z4HR XZ= 2.0 100-42 GHZ X3 = 3.6 10042 - 24HZ X4 = 4.5 7.=6.2 2) 42= 0,218+0.709 [(1.6)(1.6/2.0)]=1.13 \mathcal{O} 3) 4100= 1.8974 0,439 [(3.6)(3.6/4.5)] - 0.008 (6.2) = 3.11



EXISTING CONDITION HEC-1 OUTPUT

*FIX	*FIX	003
TI AGRAM	*DIAGRAM	002
PETERSON AIR FORCE BASE, COLORADO SPRINGS, CO	ID	036
ID HEC1 INPUT FILE PAFBFIX.HC1	ID	036
ID 10 AND 100-YEAR EVENTS - 24 HOUR DURATION - TYPE IIA	ID	036
15 25JAN92 0 100	IT	040
4 1	10	039
IN 15 25JAN92 0	IN	038
JR PREC .67 1.0	JR *	043 001
	KK	045
H SPACE COMMAND DRAINAGE AREA AT NORTH CENTER	KO	047
KO 21 60 PA .0799	BA	008
4.5	PB	069
0.0000 0.0005 0.0015 0.0030 0.0045 0.0060 0.0080 0.0100 0.0120	0.0143PC	070
PC0.0165 0.0188 0.0210 0.0233 0.0255 0.0278 0.0320 0.0390 0.0460		070
0.0600 0.0750 0.1000 0.4000 0.7000 0.7250 0.7500 0.7650 0.780	0.7900PC	070
0.8000 0.8100 0.8200 0.8250 0.8300 0.8350 0.8400 0.8450 0.8500	0.8550PC	070
PC0.8600 0.8638 0.8675 0.8713 0.8750 0.8788 0.8825 0.8863 0.8900	0.8938PC	070
PC0.8975 0.9013 0.9050 0.9083 0.9115 0.9148 0.9180 0.9210 0.924	0.9270PC	070
0.9300 0.9325 0.9350 0.9375 0.9400 0.9425 0.9450 0.9475 0.950	0.9525PC	070
0.9550 0.9575 0.9600 0.9625 0.9650 0.9675 0.9700 0.9725 0.975		070
PC0.9800 0.9813 0.9825 0.9838 0.9850 0.9863 0.9875 0.9888 0.990		070
PC0.9925 0.9938 0.9950 0.9963 0.9975 0.9988 1.0000	PC	070
0 80	LS	056
0.19	UD *	112 001
*	— кк	001
G DRAINAGE AREA AT NORTHWEST CORNER	KO	045
21 60	BA	008
oA .3085	LS	056
LS 0 72	UD	112
0.38	*	001
KK F CENTRAL DRAINAGE AREA TO WEST END OF HAMILTON	KK	045
KO 21 60	КО	047
.0889	BA	008
0 80	LS	056
UD 0.22	UD	112
*	*	001
E CENTRAL AREA TO PETERSON BLVD	KK	045
21 60	KO	047
BA0.1257	BA	008
S 0 87	LS	056
0.19	UD	112
1 n [#]	*	001
KK D AREA WHICH FLOWS DIRECTLY INTO HAMILTON	KK KO	045 047
21 60	BA	047
0.2121	LS	056
LS 0 76	UD	112
UD 0.41	*	001
DEF COMBINE AREAS D E AND F AT PETERSON AND HAMILTON	кк	045
HC 3	HC	030
*	*	001
B-1 OFFSITE NORTH OF 94 AND SOUTH OF U.S. 24	КК	045
0.125	BA	008
LS 0 30	LS	056
p .33	UD	112
	*	001
KK B EAST AREA WHICH INCLUDES MOST OF FAMILY HOUSING AND AREAS TO T		045
ко 21 60	ко	047
40.4568	BA	800
5 0 68	LS	056
UD 0.65	UD	112
*	*	001
K B-TOT COMBINED OFFSITE AND ONSITE AT B	KK	045

1			
HC 2		HC	030
		*	001
c	SMALL AREA ON MITCHELL	KK	045
8A.02270		BA	008
LS 0	90	LS	056
0.08		UD	112
		*	001
<u>кк</u> во	COMBINE DRAINAGE AREAS B AND C AT HAMILTON AND MICHELL	KK	045
HC 2		HC	030
		*	001
BCDE	COMBINE DRAINAGE AREAS BC AND DE AT HAMILTON AND MICHELL	KK	045
HC 2		HC	030
A8		*	001
	WEST SIDE OF GOLF COURSE	КК	045
DA .0740		BA	008
LS (68	LS	056
0.11		UD	112
		*	001
KK DEBC	COMBINE DRAINAGE AREAS DEBC AND A NEAR MICHELL	KK	045
HC a		HC	030
		*	001
ł :	EAST SIDE OF GOLF COURSE AND SOME OFFSITE	KK	045
BA .256		BA	008
LS I	65	LS	056
0.7		UD	112
		*	001
KKDEBCA	COMBINE DRAINAGE AREAS DEBCA AND I AT DETENTION POND #2	KK	045
31		HC	030
		*	001
_]L		*	001
KK D	DETENTION VOLUME REQUIRED	KK	045
Þ	21 60	ко	047
	TETIION BASIN #1	KM	046
	ELEV 6110.5	RS	092
SA .	I 4.14 5.82 6.47 7.84 9.17 10.55	SA	096
6110.	6111 6113 6115 6120 6125 6130	SE	099
b	1 4 20 30 34 36 40	SQ	104
SE6110.	4 6111 6113 6115 6120 6125 6130	SE	099
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*	*
FLOOD HYDROGRAPH PACKAGE (HEC-1)	*
SEPTEMBER 1990	*
* VERSION 4.0	*
*	*
RUN DATE 03/25/1992 TIME 14:32:08	*
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*		*
*	U.S. ARMY CORPS OF ENGINEERS	*
*	HYDROLOGIC ENGINEERING CENTER	*
*	609 SECOND STREET	*
*	DAVIS, CALIFORNIA 95616	*
*	(916) 756-1104	*
*		*
***	******	***

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::: Full Microcomputer Implementation :	::	:
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::: Haestad Methods, Inc.	: :	:
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC1 S/N:

HEC-1 INPUT

PAGE 1

7	LINE	ID.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10	
***	FIX ***												
		*D1	AGRAM										
- 1	1	10		ON AIR F	ORCE BAS	E. COLOR	ADO SPRI	NGS, CO					
	2	ID			E PAFBFI			•					
	3	ID			R EVENTS		UR DURAT	ION - TY	PE IIA				
	4	IT		25JAN92	0	100							
- 1	5	10	4	1	•								
	6	IN		25 JAN 92	0								
	7	JR	PREC	.67	1.0								
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	8	KK	н	SPACE CC	MMAND DR	AINAGE A		ORTH CEN					
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1	10	BA	.0799										
	11	PB	4.5										
	12	PC	0.0000	0.0005	0.0015	0.0030	0.0045	0.0060		0.0100	0.0120	0.0143	
ר	13	PC	0.0165	0.0188	0.0210	0.0233	0.0255	0.0278	0.0320	0.0390	0.0460	0.0530	
- E	14	PC	0.0600	0.0750	0.1000	0.4000	0.7000	0.7250	0.7500	0.7650	0.7800	0.7900	
	15	PC	0.8000	0.8100	0.8200	0.8250	0.8300	0.8350	0.8400	0.8450	0.8500	0.8550	
	16	PC	0.8600	0.8638	0.8675	0.8713	0.8750	0.8788	0.8825	0.8863	0.8900	0.8938	
	17	PC	0.8975	0.9013	0.9050	0.9083	0.9115	0.9148	0.9180	0.9210	0.9240	0.9270	
- 1	18	PC	0.9300	0.9325	0.9350	0.9375	0.9400	0.9425	0.9450	0.9475	0.9500	0.9525	
	19	PC	0.9550	0.9575	0.9600	0.9625	0.9650	0.9675	0.9700	0.9725	0.9750	0.9775	
	20	PC	0.9800	0.9813	0.9825	0.9838	0.9850	0.9863	0.9875	0.9888	0.9900	0.9913	
- 1	21	PC	0.9925	0.9938	0.9950	0.9963	0.9975	0.9988	1.0000				
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	26	BA		70									
	27	LS	0	72									
	28	UD *	0.38										
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1	38	UD *	0.19										
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			HEC-1 INPUT
LINE	ID	1	2
39	кк	D	AREA WHICH FLOWS DIRECTLY INTO HAMILTON
40	ко		21 60
41	BA	0.2121	
42	LS	0	76
43	UD *	0.41	
44	КК		COMBINE AREAS D E AND F AT PETERSON AND HAMILTON
45	HC *	3	
46	кк		OFFSITE NORTH OF 94 AND SOUTH OF U.S. 24
47	BA	0.14	
48	LS	0	30
49	UD *	.023	
50	кк	В	EAST AREA WHICH INCLUDES MOST OF FAMILY HOUSING AND AREAS TO THE NORTH
51	KO		21 60
52	BA		
53	LS	0	68
54	UD *	0.65	
55	кк		COMBINED OFFSITE AND ONSITE AT B
56	HC *	2	
57	КК	c	SMALL AREA ON MITCHELL
58	BA	.02270	SMALL AREA ON MITCHELL
59	LS	.02270	90
60	UD	0.08	
	*		
61	кк	BC	COMBINE DRAINAGE AREAS B AND C AT HAMILTON AND MICHELL
62	HC	2	
	*		
63	КК		COMBINE DRAINAGE AREAS BC AND DE AT HAMILTON AND MICHELL
64	HC *	2	
65	КК		WEST SIDE OF GOLF COURSE
66	BA		
67	LS	0	
68	UD *	0.11	
69	кк	DERCA	COMBINE DRAINAGE AREAS DEBC AND A NEAR MICHELL
70	HC	2	
	*	2	

PAGE 2

HEC-1	INPUT
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LINE	ID.	1.	2.	3.	4	5	6	7	8	9.	10
71	кк	I	EAST SID	e of goli	F COURSE	AND SOME	OFFSITE	E			
72	BA	.2561									
73	LS	0	65								
74	UD	0.72									
	*										
75	KK	DEBCAI	COMBINE	DRAINAGE	AREAS DE	BCA AND	I AT DE	FENTION P	OND #2		
76	HC	2									
	*										
	*										
77	~~~	51	DETENTIO		DEOUTDEE	、 、					
77	KK	וט	DETENTIO	IN VULUME	REQUIRED	21		60			
78	KO					21		00			
79	KM		TIION BA								
80	RS	1	ELEV	6110.5							
81	SA	.1	4.14	5.82	6.47	7.84	9.17	10.55			
82	SE	6110.4	6111	6113	6115	6120	6125	6130			
83	SQ	1	4	20	30	34	36	40			
84	SE	6110.4	6111	6113	6115	6120	6125	6130			
	*										
85	zz										

	SCHEMATIC	DIAGR	AM OF STREAM NETW	ORK	
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N:

iii)

7*********	*************
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* FLOOD HYDROGRAPH PACKAGE (HEC-1) *	* U.S. ARMY CORPS OF ENGINEERS *
SEPTEMBER 1990 *	* HYDROLOGIC ENGINEERING CENTER *
VERSION 4.0 *	* 609 SECOND STREET *
* *	* DAVIS, CALIFORNIA 95616 *
A RUN DATE 03/25/1992 TIME 14:32:08 *	* (916) 756-1104 *
*	* *
***************************************	******************
Г	
PETERSON AIR FORCE	BASE, COLORADO SPRINGS, CO
HEC1 INPUT FILE PA	
" 10 AND 100-YEAR EV	NTS - 24 HOUR DURATION - TYPE IIA
5 10 OUTPUT CONTROL VARIABLES	
1	I CONTROL
IPLOT 1 PLO	CONTROL
QSCAL 0. HYD	DGRAPH PLOT SCALE
IT HYDROGRAPH TIME DATA	
NMIN 15 MIN	TES IN COMPUTATION INTERVAL
IDATE 25JAN92 STA	TING DATE
ITIME 0000 STA	TING TIME
NQ 100 NUM	ER OF HYDROGRAPH ORDINATES
NDDATE 26JAN92 END	NG DATE
NDTIME 0045 END	NG TIME
I CENT 19 CEN	JRY MARK
	5 HOURS
TOTAL TIME BASE 24.	5 HOURS
ENGLISH UNITS	
DRAINAGE AREA SQUARE M	IFS
PRECIPITATION DEPTH INCHES	
LENGTH, ELEVATION FEET	
	T PER SECOND
STORAGE VOLUME ACRE-FEE	
SURFACE AREA ACRES	
TEMPERATURE DEGREES	AHRENHEIT
2	
JP MULTI-PLAN OPTION	
NPLAN 1 NUM	ER OF PLANS
JR MULTI-RATIO OPTION	
RATIOS OF PRECIPITATION .67 1.00	
.07 1.00	
	* ***

J ************************************	
	DRAINAGE AREA AT NORTH CENTER
* *	

9 KO OUTPUT CONTROL VARIABLES	
V COTFOI CONTROL VARIADLES	

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	JXDATE	25JAN92	STARTING	DATE							
	JXTIME	0	STARTING	TIME							
	SUBBASIN RUNOFF	DATA									
7140 04											
10 BA	SUBBASIN CHAR										
1	TAREA	.08	SUBBASIN	AKEA							
	PRECIPITATION	ΠΑΤΑ									
7	FRECIFICATION										
11 PB	STORM	4.50	BASIN TOT	AL PRECI	PITATION						
-											
12 PI	INCREMENTAL	PRECIPITAT	ION PATTER	N							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
)	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
1	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
-	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
22 LS	SCS LOSS RATE										
	STRTL		INITIAL A	RSTRACTIO	ON						
-	CRVNBR		CURVE NUM		•						
1	RTIMP		PERCENT I		S AREA						
1											
23 UD	SCS DIMENSION	LESS UNITGR	RAPH								
	TLAG	.19	LAG								

						ADU					
1					NIT HYDROGR -OF-PERIOD						
	112. 70.	18.	5.	0 END 1.		UKDINATES					
		10.		1.	0.						
* *** ***	* *** *** *** *** **	* *** *** *	*** *** ***	*** ***	*** *** **	* *** *** *	** *** *	** *** ***	*** *** **	** *** *** *	** *** ***
1											

	* *										
24 KK	* G *	DRAINAGE	AREA AT NO	RTHWEST	CORNER						
	* *										

25 ко	OUTOUT CONTROL										
25 KU	OUTPUT CONTRO IPRNT		PRINT CON	TPOI							
1	IPKNI		PRINT CON PLOT CONT								
	QSCAL		HYDROGRAP		CALE						
	IPNCH		PUNCH COM								
	IPNUN	0	FUNCE LUM		DKOGKAPN						

IOUT	21	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
I SAV2	60	LAST ORDINATE PUNCHED OR SAVED
TIMINT	.250	TIME INTERVAL IN HOURS

SUBBASIN RUNOFF DATA

26 BA	SUBBASIN CHARACTER	ISTICS		
	TAREA	.31	SUBBASIN	AREA

PRECIPITATION DATA

11 РВ	STORM	4.50	BASIN TOT	TAL PRECIP	TATION						
12 PI	INCREMENTAL	PRECIPITAT		211							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
7	.00	.00	.00	.00		.00		.00		.00	
					.00		.01		.01		
1	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
-	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
j.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
27 LS	SCS LOSS RATE										
1	STRTL	.78	INITIAL /	ABSTRACTIC	NC						
1	CRVNBR	72.00	CURVE NUI	MBER							
1	RTIMP	.00	PERCENT	IMPERVIOUS	S AREA						
28 UD	SCS DIMENSIONL	ESS UNITGR	АРН								
J	TLAG	.38	LAG								

1					NIT HYDROGR						
					-OF-PERIOD	ORDINATES					
1	137. 297.	206.	86.	39.	17.	8.	4.	2.	0.		
***	* *** *** *** *** ***		** *** **	* *** ***		* *** ***	*** *** **	* *** ***			

1	* *										
29 кк											
CA KK	* F *	CENTRAL U	KAINAGE A	REA TO WE	ST END OF H	IAMILION					

1	*******										
70 100											
30 ко	OUTPUT CONTROL										
	IPRNT	4	PRINT CO								
	IPLOT	1	PLOT CON								
	QSCAL	0.	HYDROGRA	PH PLOT S	CALE						
	IPNCH	0	PUNCH CO	MPUTED HY	DROGRAPH						
	IOUT	21	SAVE HYD	ROGRAPH O	N THIS UNIT						
1	I SAV1	1			NCHED OR SA						
	I SAV2	60			CHED OR SAV						
	TIMINT		TIME INT								
	I SPISIO I	.250		LKVAL IN I	NOOKS						
	SUBBASIN RUNOFF	DATA									
31 BA	SUBBASIN CHAR	ACTERISTICS	3								

TAREA .09 SUBBASIN AREA

PRECIPITATION DATA

1

11 PB	STORM	4.50	BASIN TO	TAL PRECI	PITATION						
12 PI	INCREMENTAL	PRECIPITA	ION PATTE	RN							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
32 LS	SCS LOSS RATE										
	STRTL	.50	INITIAL	ABSTRACTIO	NC						
	CRVNBR	80.00	CURVE NU	MBER							
	RTIMP	.00	PERCENT	IMPERVIOU	S AREA						
33 UD	SCS DIMENSIONL										
	TLAG	.22	LAG								

				U	NIT HYDROGI	RAPH					
				6 END	-OF-PERIOD	ORDINATES					
,	103. 89.	26.	8.	2.	1.						
** *** ***	*** *** *** ***	****	*** *** **	* *** ***	*** *** *:	kale akaleate akaleate a	*** ****	** *** ***	*** *** *:	kak akakak akakak	*** *** *
]	*** *** *** ***	* *** ***	*** ***	* *** ***	*** *** *	** *** *** *	*** *** *1	** *** ***	*** ***	** ***	*** *** **
	* *	* *** ****	*** *** **	* *** ***	*** *** *	** *** ***	*** *** *1	** *** ***	*** *** *	** *** ***	*** *** **
** *** *** 34 KK	*** *** *** *** *** ************ * E * * E *	CENTRAL	*** *** ** Area to pe	* *** ***	*** *** **	** *** ***	*** *** **	** *** ***	*** ***	** *** ***	*** *** **
** *** ***]] ³⁴ КК	* *	CENTRAL	*** *** ** Area to pe	* *** ***	*** *** *'	** *** *** '	*** *** **	** *** ***	*** *** *	** *** ***	*** *** **
J	* * * * E * * *			* *** ***	*** *** **	** *** ***	*** *** *1	** *** ***	*** ***	** *** ***	*** *** **
34 KK	* * E * * * * * OUTPUT CONTROL	. VARIABLE	S		*** *** **	** *** ***	*** *** *	** *** ***	*** ***	** *** ***	*** *** **
J	* * E * * E * * * OUTPUT CONTROL IPRNT	. VARIABLE 4	S PRINT CC	NTROL	*** *** * [;] VD	** *** ***	*** ***	** *** ***	*** ***	** *** ***	*** *** *
J	* * E * * E * * * OUTPUT CONTROL IPRNT IPLOT	. VARIABLE 4 1	S PRINT CC PLOT CON	NTROL ITROL		** *** *** '	*** *** **	** *** ***	*** ***	** *** ***	*** *** *
J	* * E * * E * * * OUTPUT CONTROL IPRNT IPLOT QSCAL	. VARIABLE 4 1 0.	S PRINT CC PLOT CON HYDROGRA	NTROL ITROL IPH PLOT S	CALE	** *** *** '	*** *** **	** *** ***	*** *** *	** ***	*** *** *
J	* * E * * E * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH	. VARIABLE 4 1 0. 0	S PRINT CO PLOT CON HYDROGRA PUNCH CC	ONTROL ITROL IPH PLOT S MPUTED HY	CALE DROGRAPH	** *** *** '	*** *** **	** *** ***	*** *** *	** ***	*** *** *
J	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT	. VARIABLE 4 1 0. 0 21	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O	CALE DROGRAPH N THIS UNI		*** *** **	** *** ***	*** *** *	** ***	*** *** **
J	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1	. VARIABLE 4 1 0. 0 21 1	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O IDINATE PU	CALE DROGRAPH N THIS UNI NCHED OR S	AVED	*** *** **	** *** ***	*** *** *	** ***	*** *** **
J	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV2	. VARIABLE 4 1 0. 0 21 1 60	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O IDINATE PUN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	AVED	*** *** **	** *** ***	*** *** *	** ***	*** *** **
J	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1	. VARIABLE 4 1 0. 0 21 1 60	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O IDINATE PUN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	AVED	*** *** *	** *** ***	*** *** *	** *** ***	*** *** *1
J	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV2	. VARIABLE 4 1 0. 21 1 60 .250	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O IDINATE PUN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	AVED	*** *** *	** *** ***	*** *** *	** ***	*** *** **
J	* E * * E * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV2 TIMINT	. VARIABLE 4 1 0. 21 1 60 .250	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O IDINATE PUN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	AVED	*** *** *	** *** ***	*** *** *	** *** ***	*** *** **
J	* E * * E * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV2 TIMINT	. VARIABLE 4 1 0. 21 1 60 .250 DATA	S PRINT CO PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD TIME INT	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O DINATE PUN INATE PUN IRATE IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	AVED	*** *** *	** *** ***	*** *** *	** ***	*** *** **
] 35 ко]]	* E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHAR/	. VARIABLE 4 1 0. 21 1 60 .250 DATA ACTERISTIC .13	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD TIME INT	NTROL ITROL IPH PLOT S MPUTED HY ROGRAPH O DINATE PUN INATE PUN IRATE IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	AVED	*** *** *	** *** ***	*** *** *	** ***	*** *** **
] 35 ко]]	* E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHAR/ TAREA	- VARIABLE 4 1 0. 21 1 60 .250 DATA ACTERISTIC .13 DATA	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD TIME INT	INTROL ITROL IPH PLOT S MPUTED HY IROGRAPH O IDINATE PUN INATE PUN IRATE PUN IRATE IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA HOURS	AVED	*** *** *	** *** ***	*** *** *	** *** ***	*** *** *
] 35 КО]] 36 ВА	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION	- VARIABLE 4 1 0. 0 21 1 60 .250 DATA ACTERISTIC .13 DATA 4.50	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD TIME INT S SUBBASIN BASIN TC	NTROL ITROL PH PLOT S MPUTED HY ROGRAPH O DINATE PUN INATE PUN TERVAL IN TERVAL IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA HOURS	AVED	*** *** *	** *** ***		** *** ***	*** *** *
35 KO	* * E * * E * * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHAR/ TAREA PRECIPITATION STORM	- VARIABLE 4 1 0. 0 21 1 60 .250 DATA ACTERISTIC .13 DATA 4.50	S PRINT CC PLOT CON HYDROGRA PUNCH CC SAVE HYD FIRST OR LAST ORD TIME INT S SUBBASIN BASIN TC	NTROL ITROL PH PLOT S MPUTED HY ROGRAPH O DINATE PUN INATE PUN TERVAL IN TERVAL IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA HOURS	AVED	.00	.00	.00	.00	*** *** *1

	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
7 LS	SCS LOSS RATE										
	STRTL	.30	INITIAL	ABSTRACTIO	DN						
	CRVNBR	87.00	CURVE NU	JMBER							
	RTIMP	.00	PERCENT	IMPERVIOUS	S AREA						
58 UD	SCS DIMENSION	LESS UNITG	RAPH								
	TLAG		LAG								

				U	NIT HYDROGI	арн					
					-OF-PERIOD						
	175. 109.	29.	8.	2.	0.						
*** **	* *** *** *** ***	* *** ***	*** *** **	** *** ***	*** *** **	** *** ***	*** *** **	** *** ***	*** *** **	** *** *** **	*** ***

	* *										
9 KK	* D *	AREA WHI	CH FLOWS [DIRECTLY I	NTO HAMILTO	NC					
	* *										

0 ко	OUTPUT CONTRO	L VARIABLE	s								
	IPRNT	4	PRINT C	ONTROL							
	IPLOT	1	PLOT CO	NTROL							
	QSCAL	0.	HYDROGR	APH PLOT S	CALE						
	IPNCH	C	PUNCH C	OMPUTED HY	DROGRAPH						
	IOUT				N THIS UNI						
	ISAV1				NCHED OR SA						
	I SAV2				CHED OR SA	VED					
	TIMINT	.250) TIME IN	TERVAL IN	HOURS						
	SUBBASIN RUNOFF	DATA									
41 BA	SUBBASIN CHAR	ACTERISTIC	s								
	TAREA	.21	SUBBASI	N AREA							
R	PRECIPITATION	DATA									
11 PB	STORM	4.50) BASIN T	OTAL PRECI	PITATION						
2 PI	INCREMENTAL	PRECIPITA	TION PATT	ERN							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.01	.00	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
<i>p</i>											
							.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00		.00	.00	.00	

42 LS	505 I	OSS RATE										
42 13	303 L	STRTL	.63	INITIAL A	ABSTRACTION							
		CRVNBR		CURVE NUN								
		RTIMP	.00	PERCENT	IMPERVIOUS	AREA						
43 UD	SCS D		SS UNITGR	APH								
		TLAG		LAG								

						T HYDROGR	APH ORDINATES					
	80.	191.	150.	67.	32.	15.	0KD1NATE5 7.	3.	2.	1.		
* *** ***	* *** *** **	* *** ***	*** *** *	** *** ***	* *** *** *	** *** **	* *** *** *	*** *** **	* *** ***	*** *** **	** *** *** *	*** *** **
	*******	: Ne ske ske ske										
	*	*										
44 KK	* DE *	F* (COMBINE A	REASDE	AND F AT PE	TERSON AN	ID HAMILTON					
	******	****										
15 110												
45 HC	HTDRU	GRAPH COMB		NUMBER O	F HYDROGRAF	HS TO COM	BINE					

** *** **	* *** *** **	* *** *** *	*** *** *	entente atenten atenten	* *** *** *	entente notativate atenti	****	*** ***	** *** ***	*** *** *	** *** ***	*** *** **
** *** **1	* *** *** **	****	*** *** *	entente ntentente ntenten	* *** ***	***	****	*** *** **	* *** ***	*** *** *	** *** *** :	*** *** **
** *** **1	* *** *** **	t de de de de	*** *** *	*** *** **	* *** *** *	***	*****	k Wak - Mc Wak - Mc W	****	*** *** *	** *** *** :	*** *** **
	*******	****						*** *** **	*** ***	*** *** *1	** *** ***	*** ***
** *** *** 46 KK		****			* *** *** * 4 AND SOUT			*** *** *1	* *** ***	*** *** *	** *** ***	*** ***
	********* * * B-	***** * •1 * (*** *** **	*** ***	*** *** *	** *** *** :	*** *** **
	********** * B- *	***** * •1 * (OFFSITE N					*** ***	* *** ***	*** *** *:	** *** *** :	*** *** **
46 KK	********** * B- * * \$UBBAS1	***** 1 * 0 * * IN RUNOFF D	OFFSITE N ATA	NORTH OF 94				*** *** *1	* *** ***	*** *** *	** *** ***	** ***
	********** * B- * * \$UBBAS1	***** 1 * 0 * * IN RUNOFF DA ASIN CHARAC	OFFSITE N ATA TERISTICS	IORTH OF 94	4 and sout)			*** ***	* *** ***	*** *** *	** *** *** :	*** *** **
46 KK	********** * B- * * \$UBBAS1	***** 1 * 0 * * IN RUNOFF D	OFFSITE N ATA TERISTICS	NORTH OF 94	4 and sout)			*** *** *1	* *** ***	*** *** *	** *** *** :	*** *** **
46 KK	********** * B- * * SUBBAS I SUBBA	***** 1 * 0 * * IN RUNOFF DA ASIN CHARAC	OFFSITE N ATA TERISTICS .14	IORTH OF 94	4 and sout)			*** ***	* *** ***	*** *** *	** *** ***	*** *** **
46 KK 47 BA	********** * B- * * SUBBAS I SUBBA	***** * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA	NORTH OF 94 S SUBBASIN	4 AND SOUT	I OF U.S.		*** ***	* *** ***	*** *** *	** *** ***	*** *** **
46 KK 47 BA	********** * B- * * SUBBAS I SUBBA	***** 1 * 0 * * IN RUNOFF DA ASIN CHARAC TAREA	OFFSITE N ATA TERISTICS .14 ATA	NORTH OF 94 S SUBBASIN	4 and sout)	I OF U.S.		*** ***	* *** ***	*** *** *	** *** ***	*** *** **
46 KK 47 BA	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT	NORTH OF 94 S SUBBASIN BASIN TO	4 AND SOUT AREA TAL PRECIPI	I OF U.S.	24					*** *** *
46 KK 47 BA 11 PB	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT .00	NORTH OF 94 S SUBBASIN BASIN TO TION PATTEL .00	4 AND SOUT AREA TAL PRECIPI RN .00	I OF U.S.	.00	.00	.00	.00	.00	*** *** *1
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAN .00 .00	S SUBBASIN BASIN TO TION PATTEL .00 .00	4 AND SOUT AREA TAL PRECIPI RN .00 .00	OF U.S.	24 .00 .00	.00 .01	.00 .01	.00 .01	.00 .01	*** *** **
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE M ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .00 .02	S SUBBASIN BASIN TO TION PATTER .00 .00 .30	4 AND SOUT AREA TAL PRECIPI RN .00 .00 .30	OF U.S.	24 .00 .00 .02	.00 .01 .01	.00 .01 .01	.00 .01 .01	.00 .01 .01	*** *** **
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAN .00 .00	NORTH OF 94 S SUBBASIN BASIN TO ION PATTEL .00 .00 .30	4 AND SOUT AREA TAL PRECIPI RN .00 .00	OF U.S.	24 .00 .00	.00 .01	.00 .01	.00 .01	.00 .01	*** *** **
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE M ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .00 .02 .01	S SUBBASIN BASIN TO TION PATTER .00 .00 .30 .00	4 AND SOUT AREA TAL PRECIP RN .00 .30 .00 .30 .00	OF U.S.	24 .00 .00 .02 .00	.00 .01 .01 .01	.00 .01 .01 .00	.00 .01 .01 .00	.00 .01 .01 .00	*** *** **
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE M ATA TERISTICS .14 ATA 4.50 RECIPITAN .00 .00 .02 .01 .00	S SUBBASIN BASIN TO TION PATTER .00 .00 .30 .00 .00 .00	4 AND SOUT AREA TAL PRECIP RN .00 .00 .30 .00 .00 .00	OF U.S. ITATION .00 .03 .00 .00	24 .00 .00 .02 .00 .00	.00 .01 .01 .01	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	*** *** *
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * * * * * * * * * * *	OFFSITE M ATA TERISTICS .14 ATA 4.50 RECIPITAN .00 .00 .02 .01 .00 .00 .00 .00	SUBBASIN BASIN TO FION PATTEL .00 .00 .30 .00 .00 .00 .00 .00	4 AND SOUT AREA TAL PRECIP: RN .00 .00 .30 .00 .00 .00 .00 .00	OF U.S. ITATION .00 .00 .03 .00 .00 .00	24 .00 .00 .02 .00 .00 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00 .00	*** *** *
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * 1 * * 1 * * 1 * * 1 * 1 *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .02 .01 .00 .00 .00 .00	SUBBASIN BASIN TO ION PATTEL 00 00 .00 .30 .00 .00 .00 .00 .00 .00	4 AND SOUT AREA TAL PRECIP: RN .00 .00 .30 .00 .00 .00 .00 .00 .00	TATION .00 .00 .00 .00 .00 .00 .00 .00	24 .00 .00 .02 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00	.00 .01 .01 .00 .00 .00	.00 .01 .01 .00 .00 .00	.00 .01 .01 .00 .00 .00	*** *** *;
46 КК 47 ва 11 рв	*********** * B- * * SUBBAS] SUBBA SUBBA	***** * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * * 1 * 1 * * * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .02 .01 .00 .00 .00 .00 .00	SUBBASIN BASIN TO ION PATTEL 00 00 .00 .00 .00 .00 .00 .00 .00 .00	4 AND SOUT AREA TAL PRECIPT RN .00 .00 .00 .00 .00 .00 .00 .00	TATION .00 .00 .00 .00 .00 .00 .00 .00 .00	24 .00 .00 .00 .00 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	*** *** **
46 KK 47 BA 11 PB 12 PI	**************************************	***** * 1 * 0 * * * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .02 .01 .00 .00 .00 .00 .00 .00 .00	NORTH OF 94 S SUBBASIN BASIN TO 10N PATTEL .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	4 AND SOUT AREA TAL PRECIPT RN .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	TATION .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	24 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	*** *** *1
46 KK 47 BA 11 PB	**************************************	***** * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * * * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	ORTH OF 94 S SUBBASIN BASIN TO DO .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	4 AND SOUT AREA TAL PRECIPT RN .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	TATION .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	24 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	*** *** **
47 BA 11 PB 12 PI	**************************************	***** * 1 * 0 * * * * * * * * * * * * *	OFFSITE N ATA TERISTICS .14 ATA 4.50 RECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	ORTH OF 94 S SUBBASIN BASIN TO DO .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	4 AND SOUT AREA TAL PRECIP: RN .00 .00 .00 .00 .00 .00 .00 .0	TATION .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	24 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	*** *** **

49 UD	SCS DIMENSION	LESS UNITGR	APH								
1	TLAG	.02	LAG								

_											
1				UN	IT HYDROGR	APH					
				5 END-	OF-PERIOD	ORDINATES					
	268. 75.	15.	3.	0.							
				•••							
ר ר											
1											
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	* *										
50 KK	* 8*				T OF FAMIL						
50 KK	* B *	EAST AKEA	WHICH IN	LLUDES MUS	OF FAMIL	T HOUSING	AND AREAS T	U THE NUK	1 H		
1	* *****										

51 KO	OUTPUT CONTRO			UTDC:							
i.	IPRNT		PRINT CO								
	IPLOT		PLOT CON								
1	QSCAL			PH PLOT SC							
	IPNCH	0	PUNCH CO	MPUTED HYD	ROGRAPH						
1	IOUT	21	SAVE HYD	ROGRAPH ON	I THIS UNIT	r					
	I SAV1	1	FIRST OR	DINATE PUN	ICHED OR SA	AVED					
۳ 1	I SAV2	60	LAST ORD	INATE PUNC	HED OR SAN	/ED					
	TIMINT	.250	TIME INT	ERVAL IN H	IOURS						
1											
1	SUBBASIN RUNOFF	DATA									
1											
52 BA	SUBBASIN CHAR	ACTERISTICS	;								
	TAREA	.46	SUBBASIN	AREA							
]	PRECIPITATION	DATA									
11 PB	STORM	4.50	BASIN TO	TAL PRECIE	PITATION						
🤳 12 PI		. PRECIPITAT	ION PATTE	RN							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00					
53 LS	SCS LOSS RATE										
	STRTL	94	ΙΝΙΤΙΔΙ	ABSTRACTIO	NC						
	CRVNBR	68.00									
	RTIMP	.00		IMPERVIOUS							
	K I I III	.00	FERGENI	THE FLATOR	ANEA						
54 UD	SCS DIMENSION		ADH								
P4 00											
	TLAG	.02	LAG								

1					***						
					117 11/00000						
					IT HYDROG						
					OF-PERIOD						
	62. 209.	285.	248.	156.	89.	54.	32.	19.	11.		

156. 89.

54.

32. 19. 11.

62.

209. 285. 248.

	7. 4.	2.	1.	0.							
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7	*****										
	* *										
-55 KK	* B-TOT *	COMBINED	OFFSITE ANI	D ONSITE /	AT B						
	* *										
76 HC	HYDROGRAPH CO ICOMP		NUMBER OF	HYDROGRAF	РНЅ ТО СО	MBINE					
٦					***						
*** *** **	* ***	* *** *** *	** *** ***	*** *** *	*** *** *	** *** *** *	** *** **	** *** ***	*** *** **	****	* *** ***
-	*****										
1	* *										
57 KK	* C *	SMALL ARE	A ON MITCH	ELL							

1											
	SUBBASIN RUNOFF	DATA									
58 BA	SUBBASIN CHAR										
	TAREA	.02	SUBBASIN	AREA							
J	PRECIPITATION	I DATA									
11 рв	STORM	4.50	BASIN TOT	AL PRECIP	ITATION						
12 PI	INCREMENTAL	PRECIPITAT	ION PATTER	N							
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02 .01	.02 .01	.30 .00	.30	.03	.02	.01	.01	.01	.01	
1	.00	.00	.00	.00 .00	.00. .00	.00 .00	.01 .00	.00 .00	.00 .00	.00 .00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
59 LS	SCS LOSS RATE										
77 13	SCS LOSS KATE		INITIAL A	RSTPACTIO	N						
	CRVNBR	90.00	CURVE NUM								
	RTIMP		PERCENT I		AREA						
1											
50 UD	SCS DIMENSION										
	TLAG	.08	LAG								
1					***						
1000				UN	IT HYDROG	RAPH					
						ORDINATES					
	44. 12.	2.	0.	0.							

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2. A. 1. 414	* *										
61 KK	* BC * * *	COMBINE D	RAINAGE /	AREAS B AND	C AT HAMI	LION AND M	ICHELL				

-62 HC	HYDROGRAPH COM	BINATION									
	I COMP	2	NUMBER	OF HYDROGRA	PHS TO COM	BINE					

*** *** **	* *** *** *** *** ***	*** *** *	** *** *	** *** ***	*** *** **	* *** ***	*** *** **	* *** ***	*** *** **	* *** *** **	** *** ***

53 KK	* * *			AREAS BC AN		MILTON AND	MICHELL				
	* *	CONDINE D	KAINAGE I	AREAS DO AN			MIGHELL				

64 HC	HYDROGRAPH COM	BINATION									
P* 110	ICOMP		NUMBER	OF HYDROGRA	PHS TO COM	IBINE					

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	* *										
65 KK	* A *	WEST SIDE	OF GOLF	COURSE							
	* *										
	SUBBASIN RUNOFF	DATA									
66 ВА	SUBBASIN CHARA										
	TAREA	.07	SUBBASI	N AREA							
	PRECIPITATION	DATA									
11 PB	STORM	4.50	BASIN T	OTAL PRECIP							
1110	U UNIT	4.50	bhorn i	OTAL TREGIT	Intrion						
12 PI	INCREMENTAL					00	00			00	
	.00 .00	.00 .00	.00 .00	.00 .00	.00. .00	.00 .00	.00 .01	.00 .01	.00 .01	.00 .01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
1	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1-5	.00	.00	.00	.00	.00	.00					
67 LS	SCS LOSS RATE										
	STRTL			ABSTRACTIC	DN						
	CRVNBR		CURVE N								
	RTIMP	.00	PERCENT	IMPERVIOUS	AREA						

68 UD	SCS DIMENSIONL										
	TLAG	.11	LAG								

				UN	IT HYDROGR	RAPH					
- 65					OF-PERIOD						
	142. 40.	8.	2.	0.							
-											
-12											
1											
*** *** ***	* *** *** *** *** ***	*** *** *	** *** **	* *** ***	*** *** **	** *** ***	*** *** **	*** ***	*** *** **	** *** *** *	** *** ***
1	****										
	* *										
69 KK	* DEBCA *	COMBINE D	RAINAGE A	REAS DERC	AND A NEAR	MICHELL					
	* *	CONDINE D				(HIGHEEE					

70 HC	HYDROGRAPH COM	BINATION									
1	I COMP	2	NUMBER O	F HYDROGRA	PHS TO CON	IBINE					

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* *** ***	* *** *** *** ***	*** *** *	** *** **	* *** ***	*** *** **	** *** ***	*** *** **	* *** ***	*** *** **	* *** *** *	** *** ***
3											

	* *										
71 KK	* I *	EAST SIDE	OF GOLF	COURSE AND	SOME OFFS	SITE					
	* *										
- 1	*****										
1	SUBBASIN RUNOFF	UATA									
72 BA	SUBBASIN CHARA	CTERISTICS									
	TAREA		SUBBASIN	AREA							
	PRECIPITATION	DATA									
1											
1 PB	STORM	4.50	BASIN TO	TAL PRECIP	PITATION						
12 PI	INCREMENTAL										
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
1	.01 .00	.01 .00	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00 .00	.00. .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
- 11 - 11 - 11 - 11 - 11 - 11 - 11 - 1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
3 LS	SCS LOSS RATE										
1	STRTL			ABSTRACTIC	N						
	CRVNBR	65.00	CURVE NU								
1	RTIMP	.00	PERCENT	IMPERVIOUS	S AREA						
4 UD	SCS DIMENSIONL										
	TLAG	.72	LAG								

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					IT HYDROGI							
l.	27 0/		477		OF-PERIOD							
	27. 94. 5. 3.		137.	102.	60.	37.	23.	14.		9.		
1	5. 3.	2.	1.	1.	0.							
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1												

7	* *											
75 KK	* DEBCAI *	COMBINE I		REAS DEBC	A AND I AT	DETENTION	POND #2					
1º nit	* *	oonbine i				DETENTION						

76 HC	HYDROGRAPH C	OMBINATION										
	I COMP	2	NUMBER C	F HYDROGR/	APHS TO CO	MBINE						

1					***							
- T												
* *** **	* *** *** *** *** *	** *** ***	*** *** **	* *** ***	*** *** *	** *** ***	*** *** *	** *** ***	*** **	* *** **	* *** ***	*** ***
1												

J	* * * D1 *	DETENTIO		FOULDED								
77 KK	* Di *	DETENTIO	N VOLUME F	EQUIRED								
1	*****											
78 KO	OUTPUT CONTR	OL VARIABLE	s									
	IPRNT	4	PRINT CO	NTROL								
	IPLOT	1	PLOT CO	ITROL								
3	QSCAL			PH PLOT S								
	IPNCH			MPUTED HY		_						
	IOUT				N THIS UNI							
	ISAV1				NCHED OR S CHED OR SA							
	ISAV2 TIMINT			ERVAL IN		VED						
1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		TINE IN	EVANE 14 1	10000							
		DETETIION B	ASIN #1									
ĩ	HYDROGRAPH ROL	JTING DATA										
BO RS	STORAGE ROUT											
	NSTPS			F SUBREAC								
1	ITYP RSVRIC			INITIAL CONDITION								
	X			AND D CO								
	X		workting		CITICICAL							
B1 SA	AREA	.1	4.1	5.8	6.5	7.8	9.2	10.6				
82 SE	ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00				
33 SQ	DISCHARGE	1.	4.	20.	30.	34.	36.	40.				
		/										
84 SE	ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00				

			(VATION DAT	٨					

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.98	10.89	23.17	58.89	101.38	150.64	
ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00	
			COMPUTI	ED STORAGE	OUTFLOW-EI	LEVATION D	ATA	
STORAGE	.00	- 98	10.89	23.17	58.89	101.38	150.64	

STORAGE	.00	.98	10.89	23.17	58.89	101.38	150.64	
OUTFLOW	1.00	4.00	20.00	30.00	34.00	36.00	40.00	
ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00	

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES TIME TO PEAK IN HOURS

					RA	TIOS APPLIED	TO PRECIPITATION
OPERATION	STATION	AREA	PLAN		RATIO 1	RATIO 2	
7					.67	1.00	
HIDROGRAPH AT	н	.08	1	FLOW	64.	133.	
				TIME	6.00	6.00	
Г							
PROGRAPH AT	G	.31	1	FLOW	102.		
				TIME	6.25	6.25	
ROGRAPH AT	F	.09	1	FLOW	63.	134.	
[-	TIME	6.00	6.00	
						•	
HYDROGRAPH AT	E	.13	1	FLOW	152.	277.	
				TIME	6.00	6.00	
HYDROGRAPH AT	D	.21	1	FLOW	90.	207.	
1				TIME	6.25	6.25	
1							
J COMBINED AT	DEF	.43	1	FLOW	262.	536.	
				TIME	6.00	6.00	
DROGRAPH AT	B-1	.14	1	FLOW	0.	0.	
Productin At	5.	• • • •	•	TIME	.25	.25	
PROGRAPH AT	В	.46	1	FLOW	73.	213.	
1				TIME	6.50	6.50	
2 COMBINED AT	B-TOT	.60	1	FLOW	73.	213.	
	5 101	.00	'	TIME	6.50	6.50	
1							
HYDROGRAPH AT	С	.02	1		37.	63.	
				TIME	6.00	6.00	
COMBINED AT	BC	.62	1	FLOW	79.	222.	
	50	.02		TIME	6.50		
1							
COMBINED AT	BCDE	1.05	1	FLOW	316.		
				TIME	6.00	6.00	
I ROGRAPH AT		.07	1	FLOU	32.	87.	
I PROGRAFIL AT	~	.07	'	TIME	6.00	6.00	
					0.00		
2 COMBINED AT	DEBCA	1.12	1	FLOW	347.	749.	
				TIME	6.00	6.00	
HYDROGRAPH AT	I	.26	1	FLOW	29.	90.	
	1	.20	1	TIME	6.75	6.75	
				· · · · ·	0.15	0.15	
COMBINED AT	DEBCAI	1.38	1	FLOW	352.	771.	
				TIME	6.00	6.00	
F JTED TO	D1	1.38	1	EL OU	74	75	
JILU IU	01	1.30		FLOW TIME	31. 9.00	35. 13.25	
					/.00		
			**	PEAK STA	GES IN FEET		
			1	STAGE	6115.97		
				TIME	9.00	13.50	
1							

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NORMAL END OF HEC-1 *** I RMAL END OF HEC-1 FUTURE CONDITIONS HEC-1 OUTPUT

*F1X	*FIX	003
*DIAGRAM	*DIAGRAM	002
PETERSON AIR FORCE BASE, COLORADO SPRINGS, CO	ID	036
HEC1 INPUT FILE PAFB-P1.HC1, FUTURE FLOWS	ID	036
ID 10 AND 100-YEAR EVENTS - 24 HOUR DURATION - TYPE IIA	ID	036
15 25JAN92 0 100	IT	040
	10	039
15 25JAN92 0 JR PREC .67 1.0	IN JR	038
JR PREC .67 1.0	* JK	043 001
L NORTH CENTRAL DRAINAGE AREA EAST OF PETERSON AND NORTH OF PAINE	KK	045
21 60	ко	047
BA0.0825	BA	008
4.5	РВ	069
p.0000 0.0005 0.0015 0.0030 0.0045 0.0060 0.0080 0.0100 0.0120	0.0143PC	070
Pc0.0165 0.0188 0.0210 0.0233 0.0255 0.0278 0.0320 0.0390 0.0460	0.0530PC	070
PC0.0600 0.0750 0.1000 0.4000 0.7000 0.7250 0.7500 0.7650 0.7800	0.7900PC	070
0.8000 0.8100 0.8200 0.8250 0.8300 0.8350 0.8400 0.8450 0.8500	0.8550PC	070
D.8600 O.8638 O.8675 O.8713 O.8750 O.8788 O.8825 O.8863 O.8900 PC0.8975 O.9013 O.9050 O.9083 O.9115 O.9148 O.9180 O.9210 O.9240	0.8938PC	070 070
PC0.8975 0.9013 0.9050 0.9083 0.9115 0.9148 0.9180 0.9210 0.9240 PC0.9300 0.9325 0.9350 0.9375 0.9400 0.9425 0.9450 0.9475 0.9500	0.9270PC 0.9525PC	070
0.9550 0.9575 0.9600 0.9625 0.9650 0.9675 0.9700 0.9725 0.9750	0.9775PC	070
.9800 0.9813 0.9825 0.9838 0.9850 0.9863 0.9875 0.9888 0.9900	0.9913PC	070
PC0.9925 0.9938 0.9950 0.9963 0.9975 0.9988 1.0000	PC	070
'S 0 80	LS	056
0.16	UD	112
	*	001
*	*	001
K NORTH DRAINAGE AREA WEST OF PETERSON, NORTH AND SOUTH OF PAINE	KK	045
.0486	BA	800
LS 0 91 UD 0.09	LS	056
0.09	UD *	112 001
J NORTHWEST DRAINAGE AREA	KK	045
BA .1646	BA	008
15 0 80	LS	056
0.13	UD	112
	*	001
KK I WEST DRAINAGE AREA	KK	045
.0805	BA	008
0 91	LS	056
0.13	UD *	112
P OFFSITE BETWEEN 24 AND 94	ĸĸ	001 045
D.0268	BA	008
LS 0 57	LS	056
UD 0.13	UD	112
	*	001
Q OFFSITE AT NORTHEAST CORNER	кк	045
BA0.1575	BA	008
15 0 91	LS	056
0.22	UD	112
	*	001
KK PQ COMBINE NORTHEAST OFFSITE FLOWS AT NORTH PROPERTY LINE	KK	045 030
	HC *	030
M EAST OF SPACE COMMAND HEADQUARTERS	КК	045
KO 21 60	ко	047
.0975	BA	008
0 90	LS	056
UD 0.10	UD	112
* 1	*	001
PQM COMBINED FLOW IN EAST SWALE AT SOUTHEAST CORNER OF FAMILY HOUSIN	G KK	045
2	HC	030
*	*	001
H CENTRAL DRAINAGE AREA ON EAST SIDE OF PETERSON BLVD NORTH OF STE	WART KK	045

ко	Z	:1	60	ко	047
<u>8A</u> .0745				BA	800
0	91			LS	056
0.14				UD	112
*				*	001
KK C	FAMILY HOUSING AREA			KK	045
	Ĩ	21	60	ко	047
L. 2306				BA	800
LS 0	80			LS	056
0.25				UD	112
				*	001
	COMBINE BASINS H AND C, FLOW	IN EAST 60" STOR	RM SEWER	KK	045
HC 2				HC *	030
нором	COMPTHE PACTNE IL C AND N EL		ANN STODM SELIER		001 045
HC 2	COMBINE BASINS H, C, AND M, FI	OW IN SWALE AT	SU" STURM SEWER	KK HC	045
nt 2				*	001
	EAST DRAINAGE AREA TO PROPOSE			KK	045
		21	60	KO	047
BA0.1428				BA	008
1.5 0	63			LS	056
0.34				UD	112
				*	001
KKHCPQMN	COMBINE BASINS H,C,P,Q,M AND I	I, FLOW IN SWALE	E AT DETENTION POND #11	кк	045
<u> </u>		•		HC	030
				*	001
KK G	CENTRAL DRAIANGE AREA WEST OF	PETERSON BLVD	AND SOUTH OF STEWART	кк	045
КО	:	21	60	КО	047
0.0530				BA	008
0	91			LS	056
UD 0.08				UD	112
*				*	001
F	SOUTHWEST DRAINAGE AREA NORTH	OF HAMILTON AND	D WEST OF MICHELL	KK	045
J	i	21	60	ко	047
BA0.1883				BA	800
<u>۱</u>	67			LS	056
0.16				UD	112
,				*	001
	COMBINE BASINS G AND F, FLOW	IN HAMILTON COLI	LECTOR WEST OF MITCHELL	КК	045
²				HC *	030
J .	FACT DRALANCE ADEA FACT OF MI				001 045
KK B BA.06270	EAST DRAIANGE AREA EAST OF MI	SHELL AND NORTH	OF GOLF COURSE	KK BA	045
BA.00270	65			LS	056
0.25	65			UD	112
* 0.23				*	001
KK D	SOUTH CENTRAL DRAINAGE AREA W	EST OF MITCHELL	AND SOUTH OF STEWART	кк	045
.0441				BA	008
0	91			LS	056
UD 0.12				UD	112
*				*	001
BD	COMBINE BASINS B AND D, FLOW	IN MITCHELL COL	LECTOR	кк	045
				HC	030
*				*	001
ି	SOUTH DRAINAGE AREA WEST OF M	ITCHELL AND NOR	TH OF HAMILTON	КК	045
.0222				BA	800
LS 0	91			LS	056
UD 0.08				UD	112
				*	001
	COMBINE BASINS B,D AND E, FLO	W IN MITCHELL C	OLLECTOR AT HAMILTON	кк	045
HC 2				НС	030
*				*	001
	COMBINE BASINS G,F,B,D AND E,	TOTAL FLOW AT	HAMILTON AND MITCHELL	КК	045
2				HC	030
*				*	001
A	SOUTHEAST DRAINAGE AREA EAST	UF MITCHELL AND	NURTH OF HAMILTON	КК	045

									0/7
KO				21		60		ко	047
BA0.0741								BA	008
0	65							LS	056
0.25								UD	112
*								*	001
KKGFBDEA C	OMBINE B	ASINS G,	F,B,D,E /	AND A, T	OTAL FLO	DW IN H	AMILTON COLLECTOR	KK	045
2								HC	030
								*	001
KK OS	OUTHEAST	DRAIANG	E AREA G	OLF COUR	SE NORTH	OF DE	TENTION POND #11	КК	045
"				21		60		ко	047
0.1822								BA	008
J 0	65							LS	056
UD 0.34								UD	112
								*	001
								*	001
KK TOTAL T	OTAL FLO	W FROM S	TUDY ARE	A TO DET	ENTION F	POND #1	1	KK	045
HC 3								НС	030
7								*	001
								*	001
КК D1 С	ETENTION	VOLUME	REQUIRED					КК	045
KQ				21		60		ко	047
DETEN	IION BAS	SIN #1						KM	046
1	ELEV	6110.5						RS	092
SA .1	4.14	5.82	6.47	7.84	9.17	10.55		SA	096
~56110.4	6111	6113	6115	6120	6125	6130		SE	099
1	4	20	30	34	36	40		SQ	104
	6111	6113	6115	6120	6125	6130		SE	099
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HEC1 S/N:

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FLOOD HYDROGRAPH PACKAGE (HEC-1)	*
SEPTEMBER 1990	*
VERSION 4.0	*
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RUN DATE 04/02/1992 TIME 11:15:15	*
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U.S. ARMY CORPS OF ENGINEERS HYDROLOGIC ENGINEERING CENTER 609 SECOND STREET DAVIS, CALIFORNIA 95616 (916) 756-1104

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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT

LINE *** FIX *** *DIAGRAM PETERSON AIR FORCE BASE, COLORADO SPRINGS, CO 1 ID 2 HEC1 INPUT FILE PAFB-P1.HC1, FUTURE FLOWS ID 3 10 AND 100-YEAR EVENTS - 24 HOUR DURATION - TYPE IIA ID 4 IT 15 25JAN92 0 100 5 10 4 1 IN 15 25JAN92 0 6 7 JR PREC .67 1.0 * 8 KK L NORTH CENTRAL DRAINAGE AREA EAST OF PETERSON AND NORTH OF PAINE 9 KO 21 60 BA 0.0825 10 11 PB 4.5 12 PC 0.0000 0.0005 0.0015 0.0030 0.0045 0.0060 0.0080 0.0100 0.0120 0.0143 13 PC 0.0165 0.0188 0.0210 0.0233 0.0255 0.0278 0.0320 0.0390 0.0460 0.0530 PC 0.0600 0.0750 0.1000 0.4000 0.7000 0.7250 0.7500 0.7650 0.7800 0.7900 14 15 PC 0.8000 0.8100 0.8200 0.8250 0.8300 0.8350 0.8400 0.8450 0.8500 0.8550 16 PC 0.8600 0.8638 0.8675 0.8713 0.8750 0.8788 0.8825 0.8863 0.8900 0.8938 17 PC 0.8975 0.9013 0.9050 0.9083 0.9115 0.9148 0.9180 0.9210 0.9240 0.9270 18 PC 0.9300 0.9325 0.9350 0.9375 0.9400 0.9425 0.9450 0.9475 0.9500 0.9525 19 PC 0.9550 0.9575 0.9600 0.9625 0.9650 0.9675 0.9700 0.9725 0.9750 0.9775 PC 20 .9800 0.9813 0.9825 0.9838 0.9850 0.9863 0.9875 0.9888 0.9900 0.9913 21 PC 0.9925 0.9938 0.9950 0.9963 0.9975 0.9988 1.0000 22 LS 0 80 23 UD 0.16 * * 24 KK K NORTH DRAINAGE AREA WEST OF PETERSON, NORTH AND SOUTH OF PAINE 25 BA .0486 26 LS 0 91 27 UD 0.09 * 28 KK J NORTHWEST DRAINAGE AREA 29 BA .1646 30 LS 0 80 31 UÐ 0.13 * 32 KK I WEST DRAINAGE AREA 33 BA .0805 34 LS 0 91 35 UD 0.13 * 36 KK P OFFSITE BETWEEN 24 AND 94 37 BA 0.0268 38 LS 0 57 39 UD 0.13 *

HEC-1 INPUT

L	INE	ID.	1	2
	40	кк	۵	OFFSITE AT NORTHEAST CORNER
	41	BA		
	42	LS	0	91
	43	UD	0.22	
		*	0122	
	44	кк		COMBINE NORTHEAST OFFSITE FLOWS AT NORTH PROPERTY LINE
	45	HC *	2	
	46	кк	м	EAST OF SPACE COMMAND HEADQUARTERS
	47	ко		21 60
	48	BA	.0975	
	49	LS	0	90
	50	UD	0.10	
		*		
	51	кк	POM	COMBINED FLOW IN EAST SWALE AT SOUTHEAST CORNER OF FAMILY HOUSING
	52	HC	2	CONSTREST FROM IN EACH OWNER AT COOTHERCT CORRER OF TRATET HOODING
	26	*	-	
	53	кк	н	CENTRAL DRAINAGE AREA ON EAST SIDE OF PETERSON BLVD NORTH OF STEWART
	54	KO		21 60
	55	BA	.0745	
	56	LS	0	91
	57	UD *	0.14	
		×		
	58	KK	C	FAMILY HOUSING AREA
	59	KO		21 60
	60	BA	.2306	
	61	LS	0	80
	62	UD	0.25	
		*		
	63	KK	HC	COMBINE BASINS H AND C, FLOW IN EAST 60" STORM SEWER
	64	HC	2	
		*		
	65	кк	нсром	COMBINE BASINS H, C, AND M, FLOW IN SWALE AT 60" STORM SEWER
	66	HC	2	
		*		
	67	КК	N	EAST DRAINAGE AREA TO PROPOSED SWALE
	68	КО		21 60
	69 70		0.1428	
	70	LS	0	63
	71	UD	0.34	
		*		

PAGE 2

P	AG	E	3

LINE	ID.	1.	2
72	кк	HCPQMN	COMBINE BASINS H,C,P,Q,M AND N, FLOW IN SWALE AT DETENTION POND #11
73	HC	2	
	*		
74	КК	G	CENTRAL DRAIANGE AREA WEST OF PETERSON BLVD AND SOUTH OF STEWART
75	KO		21 60
76	BA	0.0530	
77	LS	0	
78	UD	0.08	
	*		
79	KK	F	SOUTHWEST DRAINAGE AREA NORTH OF HAMILTON AND WEST OF MICHELL
80	ко		21 60
81		0.1883	
82	LS	0	67
83	UD *	0.16	
84	КК	C.F.	COMBINE BASINS G AND F, FLOW IN HAMILTON COLLECTOR WEST OF MITCHELL
85	HC	2	
0,	*	-	
86	кк	В	EAST DRAIANGE AREA EAST OF MICHELL AND NORTH OF GOLF COURSE
87	BA		
88	LS		
89	UD	0.25	
	*		
90	КК	D	SOUTH CENTRAL DRAINAGE AREA WEST OF MITCHELL AND SOUTH OF STEWART
91	BA	.0441	
92	LS	0	91
93	UD	0.12	
	*		
94	KK		COMBINE BASINS B AND D, FLOW IN MITCHELL COLLECTOR
95	HC	2	
	*		
96	кк	E	SOUTH DRAINAGE AREA WEST OF MITCHELL AND NORTH OF HAMILTON
97	BA	.0222	
98	LS	0	91
99	UD	0.08	
	*		
100	кк	BDE	COMBINE BASINS B,D AND E, FLOW IN MITCHELL COLLECTOR AT HAMILTON
101	HC	2	
	*		
102	КК	GFBDE	COMBINE BASINS G,F,B,D AND E, TOTAL FLOW AT HAMILTON AND MITCHELL
103	HC	2	
	*		

I	LINE	ID.	1.	2.	3	4	5	6	7	89	10
	104	КК	A	SOUTHEAS	T DRAINAG	E AREA E	AST OF M	ITCHELL	AND NORTH	OF HAMILTON	
	105	КО					21		60		
	106	BA	0.0741								
	107	LS	0	65							
	108	UD *	0.25								
	109	кк	GFBDEA		BASINS G,	F,B,D,E	AND A, T	OTAL FLO	DW IN HAMIL	TON COLLECTOR	
	110	HC *	2								
	111	кк	0	SOUTHEAS	T DRAIANG	E AREA G	OLF COUR	SE NORTI	H OF DETENT	ION POND #11	
	112	ко					21		60		
	113	BA	0.1822								
	114	LS	0	65							
	115	UD *	0.34								
		*									
	116	кк	TOTAL	TOTAL FL	OW FROM S	TUDY ARE	A TO DET	ENTION	POND #11		
	117	HC	3								
		*									
		*									
	118	кк	D1	DETENTIO	N VOLUME	REQUIRED)				
	119	ко					21		60		
	120	KM	DET	ETIION BA	SIN #1						
	121	RS	1	ELEV	6110.5						
	122	SA	.1	4.14	5.82	6.47	7.84	9.17	10.55		
	123	SE	6110.4	6111	6113	6115	6120	6125	6130		
	124	SQ	1	4	20	30	34	36	40		
	125	SE *	6110.4	6111	6113	6115	6120	6125	6130		
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рит	SCHEMATIC	DIAG	RAM OF ST	FREAM NETWO	DRK			
INE	(V) ROUTING		(>)	DIVERSION	OR PUMP FL	.OW		
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HEC1 S/N:

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* FLOOD HYDROGRAPH PACKAGE (HEC-1) *	* U.S. ARMY CORPS OF ENGINEERS *
SEPTEMBER 1990 *	* HYDROLOGIC ENGINEERING CENTER *
VERSION 4.0 *	* 609 SECOND STREET *
* *	* DAVIS, CALIFORNIA 95616 *
" RUN DATE 04/02/1992 TIME 11:15:15 *	* (916) 756-1104 *
*	* *
~~************************************	******************************
PETERSON AIR FORCE BASE, COLORADO SPRINGS, CO	
HEC1 INPUT FILE PAFB-P1.HC1, FUTURE FLOWS	
10 AND 100-YEAR EVENTS - 24 HOUR DURATION - TYPE IIA	
5 IO OUTPUT CONTROL VARIABLES	
IPRNT 4 PRINT CONTROL	
IPLOT 1 PLOT CONTROL QSCAL 0, HYDROGRAPH PLOT SCALE	
QSCAL 0. HYDROGRAPH PLOT SCALE	
IT HYDROGRAPH TIME DATA	
NMIN 15 MINUTES IN COMPUTATION INTERVAL	
IDATE 25JAN92 STARTING DATE	
ITIME 0000 STARTING TIME	
NQ 100 NUMBER OF HYDROGRAPH ORDINATES	
NDDATE 26JAN92 ENDING DATE	
NDTIME 0045 ENDING TIME	
ICENT 19 CENTURY MARK	
COMPUTATION INTERVAL .25 HOURS	
TOTAL TIME BASE 24.75 HOURS	
ENGLISH UNITS	
DRAINAGE AREA SQUARE MILES	
PRECIPITATION DEPTH INCHES	
LENGTH, ELEVATION FEET	
FLOW CUBIC FEET PER SECOND	
STORAGE VOLUME ACRE-FEET	
SURFACE AREA ACRES	
TEMPERATURE DEGREES FAHRENHEIT	
JP MULTI-PLAN OPTION	
NPLAN 1 NUMBER OF PLANS	
JR MULTI-RATIO OPTION	
RATIOS OF PRECIPITATION	
.67 1.00	
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* *	
8 KK * L * NORTH CENTRAL DRAINAGE AREA EAST OF PETERSON AND NORT	TH OF PAINE
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9 KO OUTPUT CONTROL VARIABLES	

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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

L.	IPRNT	4	PRINT CO	NTROL							
_	IPLOT	1	PLOT CON	TROL							
	QSCAL	0.	HYDROGRAI	PH PLOT SC	CALE						
	IPNCH	0	PUNCH CO	MPUTED HYD	ROGRAPH						
	IOUT	21	SAVE HYD	ROGRAPH ON	THIS UNIT						
-	I SAV1	1	FIRST OR	DINATE PUN	ICHED OR SA	VED					
	I SAV2	60	LAST ORD	INATE PUNC	CHED OR SAV	/ED					
l.	TIMINT	.250	TIME INT	ERVAL IN H	IOURS						
Τ											
6 IN	TIME DATA FOR										
	JXMIN		TIME INT		IINUTES						
	JXDATE JXTIME	25JAN92	STARTING STARTING								
	JATIME	0	STAKTING	IIME							
	SUBBASIN RUNOFF	DATA									
10 BA	SUBBASIN CHAR/										
1	TAREA	.08	SUBBASIN	AREA							
	PRECIPITATION	DATA									
	PRECIPITATION	UATA									
11 PB	STORM	4.50	BASIN TO	TAL PRECIS	PITATION						
12 PI	INCREMENTAL	PRECIPITAT	ION PATTE	RN							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
1	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
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1											
2 2 LS	SCS LOSS RATE										
,	STRTL	.50		ABSTRACTI	ON						
	CRVNBR	80.00									
1	RTIMP	.00	PERCENT	IMPERVIOU	S AREA						
23 UD	SCS DIMENSION	FSS UNITO	DADH								
23 00	TLAG		LAG								
1	12/10		End								

1					NIT HYDROG						
				5 END	-OF-PERIOD	ORDINATES					
	136. 59.	14.	3.	1.							
1											
	* *** *** *** ***	* *** *** 1	*** *** **	* *** ***	*** *** *	** *** *** *	*** *** *	** *** ***	*** *** *	** *** *** **	* *** ***
1											

	* *										
24 KK	* K*	NORTH DR/	AINAGE ARE	A WEST OF	PETERSON,	NORTH AND S	SOUTH OF	PAINE			
	* *										

1	SUBBASIN RUNOFF	DATA									
-125 BA	SUBBASIN CHAR										
	TAREA	.05	SUBBASIN	AREA							

PRECIPITATION DATA

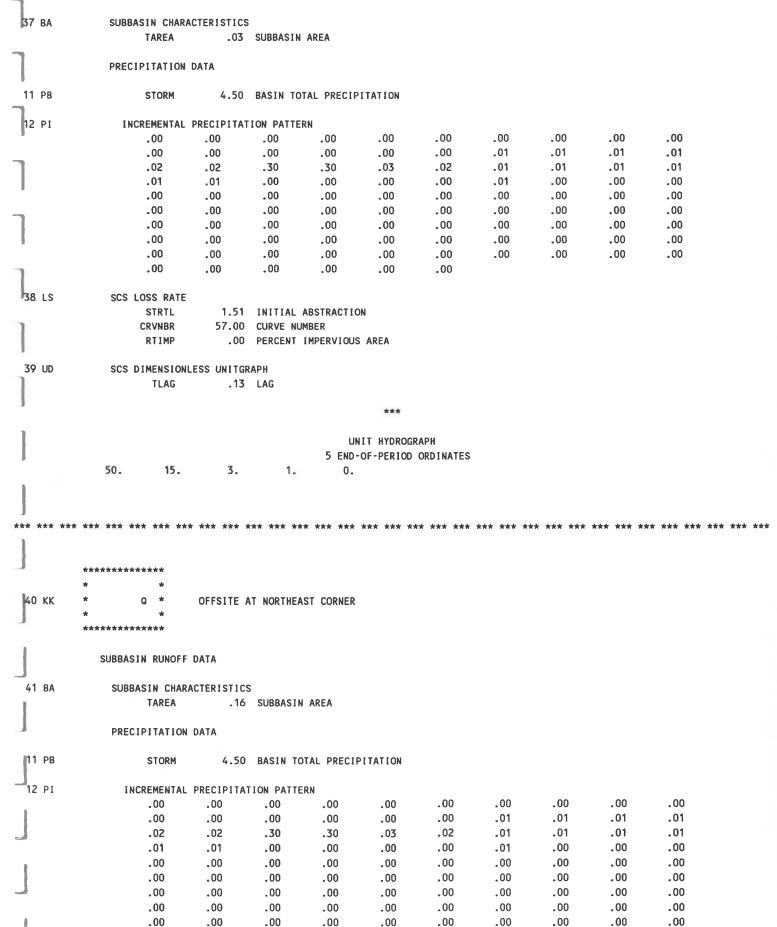
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11 PB	STORM	4.50	BASIN TO	TAL PRECIPI	TATION						
12 PI	INCREMENTAL	PRECIPITAT	ION PATTE	RN							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
1	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
-	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
l I	.00	.00	.00	.00	.00	.00					
26 LS	SCS LOSS RATE										
	SUS LOSS RATE	.20	INITIAL	ABSTRACTION							
	CRVNBR	91.00	CURVE NU								
	RTIMP	.00		IMPERVIOUS	ARFA						
		100	i anoani		incent .						
27 UD	SCS DIMENSIONL	ESS UNITGR	APH								
1	TLAG	.09	LAG								
1					***						
1											
					T HYDROGI						
	07 24	F			F-PERIOD	ORDINATES					
	93. 26.	5.	1.	0.							
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* *** ***	*** *** *** ***	*** *** *	** *** **	* *** *** *	** *** *	** *** ***	*** *** *:	** *** ***	*** *** **	*** ***	*** *** ***
1											
1	*****										
	* *										
) 28 кк	* * * ل *	NORTHWEST	DRAINAGE	AREA							
) _{28 кк}	* * * J * * *	NORTHWEST	DRAINAGE	AREA							
) _{28 KK}	* * * ل *	NORTHWEST	DRAINAGE	AREA							
) _{28 кк}	* * * J * * *		DRAINAGE	AREA							
) _{28 кк}	* * * J * * *		DRAINAGE	AREA							
]	* J * * J * * * SUBBASIN RUNOFF	DATA		AREA							
28 KK 29 BA	* J * * J * * SUBBASIN RUNOFF	DATA									
]	* J * * J * * * SUBBASIN RUNOFF	DATA	3								
]	* J * * J * * SUBBASIN RUNOFF	DATA CTERISTICS .16	3								
29 BA	* * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA	DATA CTERISTICS .16	3								
]	* * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA	DATA CTERISTICS . 16 DATA	SUBBASIN		TATION						
29 BA	* * J * * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM	DATA CTERISTICS .16 DATA 4.50	SUBBASIN BASIN TC	AREA Mal precipi	TATION						
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT	SUBBASIN BASIN TO TION PATTE	TAREA							
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00	SUBBASIN BASIN TO ION PATTE .00	AREA NTAL PRECIPI RN .00	.00	.00	.00	.00	.00	.00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00	SUBBASIN BASIN TO TION PATTE .00 .00	AREA NTAL PRECIPI RN .00 .00	.00	.00	.01	.01	.01	.01	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .02	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .02	SUBBASIN BASIN TO TION PATTE .00 .00 .30	AREA NTAL PRECIPI RN .00 .00 .30	.00 .00 .03	.00 .02	.01 .01	.01 .01	.01 .01	.01 .01	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .02 .01	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .02 .01	SUBBASIN BASIN TO TION PATTE .00 .00 .30 .00	AREA NTAL PRECIPI RN .00 .00 .30 .00	.00 .00 .03 .00	.00 .02 .00	.01 .01 .01	.01 .01 .00	.01 .01 .00	.01 .01 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .02 .01 .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .02 .01 .00	BASIN TO BASIN TO ION PATTE .00 .00 .30 .00 .00	AREA MTAL PRECIPI RN .00 .00 .30 .00 .00 .00	.00 .00 .03 .00	.00 .02 .00 .00	.01 .01 .01 .00	.01 .01 .00 .00	.01 .01 .00 .00	.01 .01 .00 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .02 .01 .00 .00 .00 .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .02 .01 .00 .00 .00	SUBBASIN BASIN TO ION PATTE .00 .00 .30 .00 .00 .00	AREA MTAL PRECIPI RN .00 .00 .30 .00 .00 .00 .00	.00 .00 .03 .00 .00	.00 .02 .00 .00	.01 .01 .01 .00 .00	.01 .01 .00 .00 .00	.01 .01 .00 .00	.01 .01 .00 .00 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .00 .00 .00 .00 .0	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .02 .01 .00 .00 .00 .00	SUBBASIN BASIN TO ION PATTE .00 .00 .00 .00 .00 .00 .00	AREA MTAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00	.00 .00 .03 .00 .00 .00	.00 .02 .00 .00 .00	.01 .01 .00 .00 .00	.01 .01 .00 .00 .00	.01 .01 .00 .00 .00	.01 .00 .00 .00 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .00 .00 .00 .00 .0	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .02 .01 .00 .00 .00 .00 .00	SUBBASIN BASIN TC .00 .00 .00 .00 .00 .00 .00 .00 .00	AREA MAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00 .00	.00 .03 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .00 .00 .00 .00 .0	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00	SUBBASIN BASIN TO .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	AREA AREA OTAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	.00 .03 .00 .00 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00 .00	.01 .01 .00 .00 .00	.01 .01 .00 .00 .00	.01 .01 .00 .00 .00	.01 .00 .00 .00 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .00 .00 .00 .00 .0	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .02 .01 .00 .00 .00 .00 .00	SUBBASIN BASIN TC .00 .00 .00 .00 .00 .00 .00 .00 .00	AREA MAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00 .00	.00 .03 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	
29 BA 11 PB 12 PI	* * J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .02 .01 .00 .00 .00 .00 .00 .00 .00 .00 .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00	SUBBASIN BASIN TO .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	AREA AREA OTAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	.00 .03 .00 .00 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	
29 BA	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .02 .01 .00 .00 .00 .00 .00 .00 .00 .00 .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00	BASIN TO BASIN TO ON PATTE .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	AREA TAL PRECIPI IRN .00 .00 .00 .00 .00 .00 .00 .0	.00 .03 .00 .00 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	
29 BA 11 PB 12 PI	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00	SUBBASIN BASIN TO TION PATTE .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	AREA TAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00 .0	.00 .03 .00 .00 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	
29 BA 11 PB 12 PI	* J * * J * * * SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .02 .01 .00 .00 .00 .00 .00 .00 .00 .00 .00	DATA CTERISTICS .16 DATA 4.50 PRECIPITAT .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	SUBBASIN BASIN TO TION PATTE .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	AREA TAL PRECIPI RN .00 .00 .00 .00 .00 .00 .00 .0	.00 .03 .00 .00 .00 .00 .00 .00	.00 .02 .00 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .01 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	.01 .00 .00 .00 .00 .00	

309. 93.		4.	5 END- 0.	NIT HYDROGR OF-PERIOD	ORDINATES					
* I * **** *** ***	* *** *** *		0.							
* I * **** *** ***	* *** *** *			*** *** **	** *** *** *					
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* ***********		***	* *** ***	*** *** **	** *** ***	مرور المراجع المراجع الم				
* ***********		***	* *** ***	*** *** **	****	والأرابية المتعادية				
* I * *							* *** ***	*** *** **	* *** *** **	* ***
* I * *										
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*	LICOT DOAT									
******	WEST DRAI	INAGE AREA	i							
SUBBASIN RUNOFF	DATA									
	ACTEDICT 100	2								
			AREA							
PRECIPITATION	DATA									
STORM	4.50	BASIN TO		PITATION						
oroni	4.50	Diterit Te								
INCREMENTAL	PRECIPITAT	ION PATTE	RN							
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
						.00	.00	.00	.00	
.00	.00	.00	.00	.00	.00					
SCS LOSS RATE										
	.20	INITIAL	ABSTRACTI	ON						
N I THE	.00	FERGENI	THE CRATOO	V ANEA						
TLAG	. 13	LAG								

151. 45	0	2			UKU INATES					
	<i>.</i>	L.	v.							
	TAREA PRECIPITATION STORM INCREMENTAL .00 .00 .00 .00 .00 .00 .00 .0	TAREA .08 PRECIPITATION DATA STORM 4.50 INCREMENTAL PRECIPITATION .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 SCS LOSS RATE .20 CRVNBR .91.00 .00 RTIMP .00 .00 SCS DIMENSIONLESS UNITGR TLAG .13	STORM 4.50 BASIN TO INCREMENTAL PRECIPITATION PATTER .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .01 .01 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 PERCENT .20 INITIAL .00 PERCENT .00 PERCENT .00 .00 .00 .00 .00 .00	TAREA .08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .01 .01 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 PECENT IMPERVIOUS .00 .00 .00 PECENT IMPERVIOUS .00 .00 .00 PECENT IMPERVIOUS	TAREA .08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .01 .01 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 PECENT IMPERVIOUS AREA	TAREA .08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 </td <td>TAREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 <t< td=""><td>TARA .08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 02 02 30 03 02 01 01 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00</td><td>TAREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 101 01 00 00 00 00 00 00 101 01 00 00 00 00 00 00 00 101 01 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 100 000 00 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00</td><td>TREA . 08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00<</td></t<></td>	TAREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 <t< td=""><td>TARA .08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 02 02 30 03 02 01 01 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00</td><td>TAREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 101 01 00 00 00 00 00 00 101 01 00 00 00 00 00 00 00 101 01 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 100 000 00 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00</td><td>TREA . 08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00<</td></t<>	TARA .08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 02 02 30 03 02 01 01 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	TAREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 101 01 00 00 00 00 00 00 101 01 00 00 00 00 00 00 00 101 01 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 100 000 00 00 00 00 00 00 00 00 100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	TREA . 08 SUBBASIN AREA PRECIPITATION DATA STORM 4.50 BASIN TOTAL PRECIPITATION INCREMENTAL PRECIPITATION PATTERN 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00<

SUBBASIN RUNOFF DATA



	.00	.00 .00	.00	.00	.00					
742 LS	SCS LOSS RATE STRTL CRVNBR RTIMP	91.00 CURVE	L ABSTRACTIC NUMBER IT IMPERVIOUS							
43 UD	SCS DIMENSION	.ESS UNITGRAPH .22 LAG								
٦				***						
1			U	IIT HYDROGI	RAPH					
]	182. 157.	47. 14		OF-PERIOD	ORDINATES					
]* *** ***	* *** *** *** ***	* *** *** *** ***	*** *** ***	*** *** *	** *** ***	*** *** ***	r *** ***	*** *** **	* *** *** **	* *** ***
]	*****									
44 KK	* PQ * * *	COMBINE NORTHEAS	ST OFFSITE FI	OWS AT NO	RTH PROPERT	Y LINE				
1	**********									
45 HC	HYDROGRAPH CO I COMP		OF HYDROGR	APHS TO CO	MRINF					
1	2001	E NORDER		***						
] *** *** ***	* *** *** *** *** ***	* *** *** ***	*** *** ***	*** ***	** ***	*** ***	* ****	*** *** **	* *** *** **	****
46 KK	* * * M *	EAST OF SPACE CO	OMMAND HEADQ	JARTERS						
	* *									
47 ко	OUTPUT CONTRO IPRNT IPLOT QSCAL	4 PRINT 1 PLOT (CALE						
	IPNCH IOUT ISAV1 ISAV2 TIMINT	21 SAVE 1 FIRST 60 LAST (COMPUTED HY HYDROGRAPH O ORDINATE PU DRDINATE PUN INTERVAL IN	N THIS UNI NCHED OR S CHED OR SA	AVED					
	SUBBASIN RUNOFF	DATA								
48 BA	SUBBASIN CHAR TAREA	ACTERISTICS .10 SUBBA	SIN AREA							
	PRECIPITATION	DATA								
11 PB	STORM	4.50 BASIN	TOTAL PRECI	PITATION						
12 PI		PRECIPITATION PA		00	00	00	00	00	00	
	.00 .00	.00 .00 .00 .00	.00 .00	.00 .00	.00 .00	.00 .01	.00 .01	.00 .01	.00 .01	

-										
			70	70	07					04
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01 .00
	.01	.01	.00	.00	.00	.00	.01	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.00	.00	.00	.00	.00	.00				
49 LS	SCS LOSS RATE									
-7 23	STRTL	22	INTTIAL	ABSTRACTI	กม					
	CRVNBR		CURVE N							
	RTIMP			IMPERVIOU	S ADEA					
ł	13.1.4.10		TERCENT	THE ERVICE.	JAREA					
50 UD	SCS DIMENSION	LESS UNITG	RAPH							
	TLAG		LAG							

					NIT HYDROG					
1			S.,		-OF-PERIOD	ORDINATES				
	187. 52.	10.	2.	0.						
,										
51 KK	* * * PQM * * *	COMBINED	FLOW IN	EAST SWALE	AT SOUTHE	AST CORNER	OF FAMILY	HOUSING		

ј 52 HC	HYDROGRAPH CO									
1	ICOMP		NUMBER	OF HYDROGR	APHS TO CO	MBINE				

* *** **	* *** *** *** ***	* *** ***	*** *** *	** *** ***	*** *** *	** *** ***	*** *** *	** *** ***	*** *** *	** *** *** ***

J	* *									
57 VV		CENTRAL						OF OTELIAD	•	
53 KK	* + *	CENTRAL	UKAINAGE	AKEA UN EA	ST SIDE OF	PETERSON E	SLVD NUKTH	UF SIEWAK	1	
1	****									
54 KO	OUTPUT CONTRO		s							
P4 NO	IPRNT		PRINT C	ONTROL						
1	IPLOT		PLOT CO							
	QSCAL			APH PLOT S	CALE					
1	IPNCH			OMPUTED HY						
1						т				
	IOUT ISAV1				N THIS UNI					
	ISAV1 ISAV2				INCHED OR SA					
l.	TIMINT			TERVAL IN	CHED OR SA	4CD				
ł	111111	.230	TIME IN	ILLANE IN	nooka					
	SUBBASIN RUNOFF	DATA								
1										
55 BA	SUBBASIN CHAR	ACTERISTIC	S							
	TAREA	.07	SUBBASI	N AREA						
1										

PRECIPITATION DATA

P8 STORK 4.50 RASIN TOTAL PRECIPITATION P1 INCREMENTAL PRECIPITATION PATTERN 100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00	INCREMENTAL PRECIPITATION PATTERN .00 <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>												
.00 .00 <td></td> <td>PB</td> <td>STORM</td> <td>4.50</td> <td>BASIN TO</td> <td>TAL PRECIP</td> <td>PITATION</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		PB	STORM	4.50	BASIN TO	TAL PRECIP	PITATION						
.00 .00 .00 .00 .00 .01 .01 .01 .01 .02 .02 .30 .00 .00 .01 .00 .	.00 .00 .00 .00 .01 .01 .01 .02 .02 .30 .03 .02 .01 .01 .01 .01 .01 .01 .00	PI	INCREMENTAL	PRECIPITAT	ION PATTE	RN							
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.01 .00 <td></td> <td></td> <td>.00</td> <td>.00</td> <td>.00</td> <td>.00</td> <td>.00</td> <td>.00</td> <td>.01</td> <td>.01</td> <td>.01</td> <td>.01</td> <td></td>			.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
.00 .00 <td>.00 .00<td></td><td>.02</td><td>.02</td><td>.30</td><td>.30</td><td>.03</td><td>.02</td><td>.01</td><td>.01</td><td>.01</td><td>.01</td><td></td></td>	.00 .00 <td></td> <td>.02</td> <td>.02</td> <td>.30</td> <td>.30</td> <td>.03</td> <td>.02</td> <td>.01</td> <td>.01</td> <td>.01</td> <td>.01</td> <td></td>		.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
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	.00 .00 .00 .00 .00 .00 .00 .00 .00 .00		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
LS SCS LOSS RATE STRT20 INITIAL ABSTRACTION CRIVING 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIJOUS AREA UD SCS DIMENSIONLESS UNITGRAPH TLAG .14 LAG *** UNIT MYDROGRAPH 5 END-07-PERIOD ORDINATES 134. 46. 10. 2. 0. KK * C * FAMILY HOUSING AREA ************************************	S SCS LOSS RATE STRIL . 20 INITIAL ABSTRACTION CRVIDER 91.00 CURVE NUMBER RTINP .00 PERCENT IMPERVIOUS AREA 		.00	.00	.00	.00	.00	.00	.00	.00	.00		
STRIL .20 INITIAL ASTRACTION CRWBR .00 PERCENT IMPERVIOUS AREA UD SCS DIMENSIONLESS UNITGRAPH TLAG .14 LINIT HYDROGRAPH 5 EMO-OF-PERIOD ORDINATES 134. .6. 134. .0. *** *** *** *** *** *** *** *** *** *** *** *** *** *** **** ************************************	STRUL . 20 INITIAL ABSTRACTION CRWBRR 91.00 CUPERCENT IMPERVIOUS AREA 30 SCS DIMENSIONLESS UNITGRAPH TLAG .14 LAG 		.00	.00		.00	.00	.00					
CRIVIAR 91.00 CLEVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA UD SCS DIMENSIONLESS UNITGRAPH TLAG .14 LAG 	CRVINB 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA D SCS DIMENSIONLESS UNITGRAPH TLAG .14 LAG UNIT MYDROGRAPH 5 END-0F-PERIOD ORDINATES 134. 46. 10. 2. 0. KC C FAMILY HOUSING AREA * CO OUTPUT CONTROL VARIABLES IPRNT 4 PRINT CONTROL IPRNT 1 FIRST ORDINATE PUNCHED OR SAVED TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN AREA PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	LS	SCS LOSS RATE										
RTIMP .00 PERCENT IMPERVIOUS AREA UD SCS DIMENSIONLESS UNITGRAPH TLAG .14 LINIT .14 LAG *** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. ***********************************	NIMP .00 PERCENT IMPERVIOUS AREA JD SCS DIMENSIONLESS UNITGRAPH TLAG .14 LNIT HYDOGGRAPH S END-OF-PERIOD ORDINATES		STRTL	.20	INITIAL	ABSTRACTIO	ИС						
UU SCS DIMENSIONLESS UNITCRAPH TLAG .14 LAG UNIT MYDROGRAPH 5 EMD-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. KK * C + FAMILY HOUSING AREA ************************************	UD SCS DIHENSIONLESS UNITGRAPH TLAG .14 LAG *** UNIT HYDROGRAPH S END-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. *** KK C FAMILY HOUSING AREA * *** SUBERSIN UNFOL VARIABLES IPENT POINT CONTROL PICT 1 PLOT CONTROL IPICT 1 PLOT CONTROL G SCAL 0. HYDROGRAPH PLOT SCALE IPICH PROCED PROCEORAPH IOUT 221 SAVE MYDROGRAPH NOT TAIS UNIT ISAV1 FIRST CODINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED ISAV2 50 DISIN TOTAL PRECIPITATION SUBBRASIN CHARACTERISTICS TAREA 23 SUBBRASIN AREA PEECIPITATION DATA PROCH 4.50 BASIN TOTAL PRECIPITATION PROCHITATION DATA		CRVNBR	91.00	CURVE NU	MBER							
TLAG 1.4 LAG UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. ***********************************	TLAG .14 LAG UNIT HYDROGRAPH 5 END-0F-PERIOD ORDINATES 134. 46. 10. 2. 0. ***********************************		RTIMP	.00	PERCENT	IMPERVIOUS	S AREA						
Image: Subset in Characteristics Subset in Characteristics Subset in Characteristics Subset in Characteristics PRECIPITATION DATA P8 Store Store A.S. P1 Incremental precipitation	UNIT HYDROGRAPH 5 END-07-PERIOD ORDINATES 134. 46. 10. 2. 0. ************************************	UD	SCS DIMENSIONL	ESS UNITGR	APH								
UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. ************************************	UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. ************************************		TLAG	.14	LAG								
5 END-OF-PERIOD ORDINATES 134. 46. 10. 2. 0. ***********************************	134. 46. 10. 2. 0. ***********************************						***						
134. 46. 10. 2. 0. ***********************************	134. 46. 10. 2. 0. ***********************************					U	NIT HYDROGI	RAPH					
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* ***********************************	* * * KO OUTPUT CONTROL VARIABLES IPRNT 4 IPLOT 1 IPLOT 0 QSCAL 0 INCH 0 PUNCH COMPUTED HYDROGRAPH 1 ISAVE HYDROGRAPH PUOT SCALE ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN CHARACTERISTICS TAREA .23 TAREA .23 SUBBASIN AREA PRECIPITATION DATA PRECIPITATION DATA PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00		*** *** *** *** ***	*** *** *	** *** **	* *** ***	*** *** *1	** *** ***	*** *** *1	* *** ***	*** *** *1	** *** ***	** *1
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KO OUTPUT CONTROL VARIABLES IPRNT 4 PRINT CONTROL IPLOT 1 PLOT CONTROL OSCAL 0. HYDROGRAPH PLOT SCALE IPNCH 0 PUNCH COMPUTED HYDROGRAPH IOUT 21 SAVE HYDROGRAPH ON THIS UNIT ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED INT .250 TIME INTERVAL IN HOURS BA SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN AREA PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION P1 INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	KO OUTPUT CONTROL VARIABLES IPRNT 4 PRINT CONTROL IPLOT 1 PLOT CONTROL OSCAL 0. HYDROGRAPH PLOT SCALE IPNCH 0 PUNCH COMPUTED HYDROGRAPH IOUT 21 SAVE HYDROGRAPH ON THIS UNIT ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN AREA PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	k k	* *				*** *** *1	** *** ***	*** *** *1	** *** ***	*** *** *	** *** *** *	** *
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ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA .23 PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION	ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN AREA PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	* * KK *	* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL	FAMILY HO VARIABLES 4 1 0.	USING ARE PRINT CO PLOT CON HYDROGRA	A NTROL TROL PH PLOT S	CALE	** *** ***	*** *** **	** *** ***	*** *** **	** *** *** *	** *
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TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN CHARACTERISTICS .23 PRECIPITATION DATA PRECIPITATION DATA PB STORM 4.50 PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	TIMINT .250 TIME INTERVAL IN HOURS SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN AREA PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	* * KK *	* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT	FAMILY HO VARIABLES 4 1 0. 0 21	DUSING ARE PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD	A NTROL TROL PH PLOT S MPUTED HY ROGRAPH O	CALE DROGRAPH N THIS UNI	т	*** *** **	** *** ***	*** *** **	** *** *** *	** *
SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA .23 SUBBASIN AREA PRECIPITATION DATA PRECIPITATION DATA .23 SUBBASIN TOTAL PRECIPITATION PB STORM 4.50 BASIN TOTAL PRECIPITATION	SUBBASIN RUNOFF DATA BA SUBBASIN CHARACTERISTICS TAREA 23 SUBBASIN AREA PRECIPITATION DATA PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00	* * KK *	* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1	FAMILY HO VARIABLES 4 1 0. 0 21 1	PUSING ARE PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD FIRST OR	A NTROL TROL PH PLOT S MPUTED HYI ROGRAPH O DINATE PU	CALE DROGRAPH N THIS UNI NCHED OR S	T AVED	*** *** **	** *** ***	*** *** **	** *** *** *	** *
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PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00 .01 .01 .01 .01	PB STORM 4.50 BASIN TOTAL PRECIPITATION PI INCREMENTAL PRECIPITATION PATTERN .00 .01 <t< td=""><td>* KK * KO</td><td>* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF</td><td>FAMILY HO VARIABLES 4 1 0. 21 1 60 .250 DATA</td><td>PRINT CO PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD FIRST OR LAST ORD TIME INT</td><td>A NTROL TROL PH PLOT S MPUTED HYI ROGRAPH O DINATE PU INATE PUN ERVAL IN</td><td>CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA</td><td>T AVED</td><td>*** *** **</td><td>** *** ***</td><td>*** *** *</td><td>** *** *** *</td><td>** *</td></t<>	* KK * KO	* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF	FAMILY HO VARIABLES 4 1 0. 21 1 60 .250 DATA	PRINT CO PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD FIRST OR LAST ORD TIME INT	A NTROL TROL PH PLOT S MPUTED HYI ROGRAPH O DINATE PU INATE PUN ERVAL IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	T AVED	*** *** **	** *** ***	*** *** *	** *** *** *	** *
PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	PI INCREMENTAL PRECIPITATION PATTERN .00 .00 .00 .00 .00 .00 .00 .00 .00 .00	* KK * KO	* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHARA TAREA	FAMILY HO VARIABLES 4 1 0. 21 1 60 .250 DATA	PRINT CO PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD FIRST OR LAST ORD TIME INT	A NTROL TROL PH PLOT S MPUTED HYI ROGRAPH O DINATE PU INATE PUN ERVAL IN	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA	T AVED	*** *** **	** *** ***	*** *** **	** *** *** *	** *1
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.00 .00 .00 .00 .00 .01 .01 .01 .01	.00 .00 .00 .00 .00 .01 .01 .01 .01 .02 .02 .30 .30 .03 .02 .01 .01 .01 .01	кк * ко ВА РВ	* * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM	FAMILY HO VARIABLES 4 1 0. 21 1 60 .250 DATA CTERISTICS .23 DATA 4.50	PRINT CO PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD FIRST OR LAST ORD TIME INT SUBBASIN BASIN TO	A NTROL TROL PH PLOT S MPUTED HYI ROGRAPH O DINATE PUN ERVAL IN ERVAL IN AREA TAL PRECI	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA HOURS	T AVED	*** *** **	** *** ***	*** *** **	** *** *** *	** *
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		кк * ко ВА РВ	* * C * * C * * C * * * OUTPUT CONTROL IPRNT IPLOT QSCAL IPNCH IOUT ISAV1 ISAV1 ISAV2 TIMINT SUBBASIN RUNOFF SUBBASIN CHARA TAREA PRECIPITATION STORM INCREMENTAL .00 .00	FAMILY HO VARIABLES 4 1 0. 0 21 1 60 .250 DATA CTERISTICS .23 DATA 4.50 PRECIPITAT .00 .00	PRINT CO PRINT CO PLOT CON HYDROGRA PUNCH CO SAVE HYD FIRST OR LAST ORD TIME INT SUBBASIN BASIN TO TION PATTE .00 .00	A NTROL TROL PH PLOT S MPUTED HYN ROGRAPH O DINATE PUN ERVAL IN ERVAL IN AREA TAL PRECI RN .00 .00	CALE DROGRAPH N THIS UNI NCHED OR SA CHED OR SA HOURS PITATION .00 .00	T AVED VED .00 .00	.00 .01	.00 .01	.00 .01	.00 .01	** *1

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65 KK	* HCPQM * * * *******************************	DMBINATION				' STORM SEI	IER			
Ĩ	* HCPQM * * *	DMBINATION	NS H, C, AND M, MBER OF HYDROGRA			' STORM SE	IER			
Ĩ	* HCPQM * * * *******************************	DMBINATION		NPHS TO CO		' STORM SE	IER			
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Ĩ	* HCPQM * * * *******************************	DMBINATION		NPHS TO CO		' STORM SEN	IER			
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Ĩ	* НСРQМ * * * ***************** НYDROGRAPH CO I СОМР	DMBINATION 2 NU		NPHS TO CO	MBINE			*** *** *	** *** *** *** **	* ***
Ĩ	* НСРQМ * * * ***************** НYDROGRAPH CO I СОМР	DMBINATION 2 NU	MBER OF HYDROGRA	NPHS TO CO	MBINE			*** *** *1	** *** *** ***	* ***
Ĩ	* HCPQM * * * *******************************	DMBINATION 2 NU	MBER OF HYDROGRA	NPHS TO CO	MBINE			*** *** *1	** *** *** ***	* ***
Ĩ	* HCPQM * * * HYDROGRAPH CO I COMP	DMBINATION 2 NU	MBER OF HYDROGRA	NPHS TO CO	MBINE			*** *** *1	** *** *** ***	* ***
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Ĩ	* HCPQM * * ** HYDROGRAPH CC I COMP * *** *** *** *** *** *	OMBINATION 2 NU ** *** *** ***	MBER OF HYDROGRA	\PHS TO CO ***	MBINE			*** *** **	** *** *** ***	* ***
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66 нс] * *** ** 67 кк	* HCPQM * * *********************************	DMBINATION 2 NU ** *** *** *** EAST DRAINAG	MBER OF HYDROGRA *** *** *** ***	\PHS TO CO ***	MBINE			*** *** *1	** *** *** **	* ***
66 нс]* *** **	* HCPQM * * *********************************	DMBINATION 2 NU ** *** *** *** EAST DRAINAG DL VARIABLES	MBER OF HYDROGRA *** *** *** *** E AREA TO PROPOS	\PHS TO CO ***	MBINE			*** *** *1	** *** *** **	* ***
66 нс] * *** ** 67 кк	* HCPQM * * *********************************	DMBINATION 2 NU ** *** *** *** EAST DRAINAG DL VARIABLES	MBER OF HYDROGRA *** *** *** ***	\PHS TO CO ***	MBINE			*** *** *1	** *** *** **	* **

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1	IPLOT	1	PLOT CON	TROL							
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69 BA	SUBBASIN CHAR										
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	PRECIPITATION	DATA									
11 PB	STORM	4,50	BASIN TO	TAL PRECIP	TATION						
Γ											
12 PI	INCREMENTAL	PRECIPITAT	ION PATTE	RN							
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2/	* *										
72 KK	* HCPQMN *		BASINS H C		N, FLOW			POND #11			
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73 HC	HYDROGRAPH CO ICOMP				APHS TO CON						
	I COMP	4	NUMBER C	r httkogki	APRS TO COM	IDINE					

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74 KK * G * CENTRAL DRAIANGE AREA WEST OF PETERSON BLVD AND SOUTH OF STEWART * * 75 KO OUTPUT CONTROL VARIABLES IPRNT 4 PRINT CONTROL IPLOT 1 PLOT CONTROL		
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75 KO OUTPUT CONTROL VARIABLES IPRNT 4 PRINT CONTROL		
IPRNT 4 PRINT CONTROL		
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QSCAL 0. HYDROGRAPH PLOT SCALE		
IPNCH O PUNCH COMPUTED HYDROGRAPH		
IOUT 21 SAVE HYDROGRAPH ON THIS UNIT		
ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED		
ISAV2 60 LAST ORDINATE PUNCHED OR SAVED		
TIMINT .250 TIME INTERVAL IN HOURS		
SUBBASIN RUNOFF DATA		
76 BA SUBBASIN CHARACTERISTICS		
TAREA .05 SUBBASIN AREA		
PRECIPITATION DATA		
11 PB STORM 4.50 BASIN TOTAL PRECIPITATION		
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12 PI INCREMENTAL PRECIPITATION PATTERN		
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77 LS SCS LOSS RATE		
STRTL .20 INITIAL ABSTRACTION		
CRVNBR 91.00 CURVE NUMBER		
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA		
78 UD SCS DIMENSIONLESS UNITGRAPH		
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA		
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08		
78 UD SCS DIMENSIONLESS UNITGRAPH		
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CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG *** UNIT HYDROGRAPH		
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG **** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES		
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG *** UNIT HYDROGRAPH		
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG **** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES		
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CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG **** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1. 0.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG **** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1. 0.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1. 0.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG **** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1. 0.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1. 0.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORD INATES 102. 28. 6. 1.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1.	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG *** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 6. 1. 0. *** *******************************	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 UNIT HYDROGRAPH 102. 28. 102. 28. 103. 104. 105. 107. 108. 109. KK F ************************************	** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 102. 28. 102. 28. 103 .00 104 .00 105 .00 107 KK * * .08 LAG .09 KK * * .02. 28. .03 .04. .04. .05. .05 .07. .07 KK * * .08 .08 .09 KO .017 .017 .017 .0170 .0170 .0170 .020 .01700 .030 .01700 .040 .01700 .050 .000000000 .060	** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 UNIT HYDROGRAPH 102. 28. 102. 28. 102. 28. 103 .00 104 .00 105 .00 106 .00 1079 KK * * **** .00 \$0 K0 OUTPUT CONTROL VARIABLES	** *** *** *** *** ***	***
CRVNBR 91.00 CURVE NUMBER RTIMP .00 PERCENT IMPERVIOUS AREA 78 UD SCS DIMENSIONLESS UNITGRAPH TLAG .08 LAG .08 UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 102. 28. 102. 28. 102. 28. 103 .00 104 .00 105 .00 107 KK * * .08 LAG .09 KK * * .02. 28. .03 .04. .04. .05. .05 .07. .07 KK * * .08 .08 .09 KO .017 .017 .017 .0170 .0170 .0170 .020 .01700 .030 .01700 .040 .01700 .050 .000000000 .060	** *** *** *** *** ***	***

	IPNCH	0	PUNCH CO	OMPUTED HYD	OROGRAPH						
	IOUT	21	SAVE HYD	DROGRAPH ON	THIS UNIT						
	ISAV1	1	FIRST OF	RDINATE PUN	ICHED OR SA	VED					
	I SAV2	60	LAST ORD	DINATE PUNC	CHED OR SAV	/ED					
	TIMINT	.250	TIME INT	TERVAL IN H	IOURS						
	SUBBASIN RUNOFF	DATA									
BA	SUBBASIN CHARA	ACTERISTICS	\$								
UN	TAREA		SUBBASIN	N AREA							
	PRECIPITATION	DATA									
РВ	STORM	4.50	BASIN TO	OTAL PRECIP	PITATION						
PI	INCREMENTAL										
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00	.00	.00	.00	
S	SCS LOSS RATE										
_	STRTL	_99	INITIAL	ABSTRACTIC	ON						
	CRVNBR	67.00									
	RTIMP			IMPERVIOUS	S AREA						
JD	SCS DIMENSION	LESS UNITGR	RAPH								
	TLAG	.16	LAG								

					NIT HYDROG -OF-PERIOD						
	310. 134.	32.	8.								
				-							
*** **:	* *** *** *** ***	* *** *** *	*** *** *	** *** ***	*** *** *:	** *** ***	*** *** *:	** *** ***	*** *** *:	** *** ***	*** *** *
				~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~							

кк	* GF *		RACING					F MITCHELL			
NN.	* ur *	COMBINE E	DADING U	AND F, FLOW	W IN MAMIL	IUN CULLEC	TOK WEST O	7 MITCHELL			

нс	HYDROGRAPH COM	MBINATION									
	I COMP	2	NUMBER	OF HYDROGRA	APHS TO CO	1BINE					

*** **:	* *** *** *** ***	* *** *** :	*** *** *	** *** ***	*** *** *:	** *** ***	*** *** *	** *** ***	*** *** *	** *** ***	*** *** *

~~	* *		14400		MANUEL		001 0 00110	or			
KK	* 8*	EAST DRA	IANGE ARE	A EAST OF I	MICHELL AN) NORTH OF	GOLF COUR	SE			

*

SUBBASIN RUNOFF DATA

*

TAREA .06 SUBBASIN AREA

PRECIPITATION DATA

	PRECIPITATION	DATA									
11 РВ	STORM	4.50	BASIN TOT	AL PRECIP	TATION						
12 PI	INCREMENTAL	DRECIDITAT		N							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.02	.02	.00	.00	.00	.02	.01	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
U	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
88 LS	SCS LOSS RATE										
1	STRTL	1.08	INITIAL A	ABSTRACTIC	N						
,	CRVNBR	65.00	CURVE NUM	IBER							
	RTIMP	.00	PERCENT	IMPERVIOUS	S AREA						
89 UD	SCS DIMENSION	LESS UNITGR	APH								
	TLAG	.25	LAG								

2				U	NIT HYDROGI	RAPH					
1					OF-PERIOD						
	61. 67.	22.	8.	3.	1.	0.					
* *** ***	61. 67.	22.					*** *** *	** *** ***	*** *** *1	** *** *** **	** *** ***
]* *** ***	*** *** *** *** **	22.					*** *** *	** *** ***	*** *** *1	** *** *** **	** *** ***
]	*** *** *** *** **	22.					*** *** *	** *** ***	*** *** *1	** *** ***	** *** ***
]]* *** ***]	*** *** *** *** ** *******************	* *** *** *	** *** **	* *** ***	*** *** *1	** *** ***			*** *** *1	** *** *** **	** *** ***
) * *** *** 90 KK	*** *** *** *** **********************	* *** *** *	** *** **	* *** ***	*** *** *1	** *** ***	*** *** *: 0 SOUTH OF		*** *** *1	** *** *** **	** *** ***
) * *** *** 90 кк	*** *** *** *** * *** * D * * *	* *** *** *	** *** **	* *** ***	*** *** *:	** *** ***			*** *** *1	** *** *** **	** *** ***
у 90 кк	*** *** *** *** **********************	* *** *** *	** *** **	* *** ***	*** *** *:	** *** ***			*** *** *	** *** *** **	** *** ***
) * *** *** 90 КК	*** *** *** *** * *** * D * * *	* *** *** * South cen	** *** **	* *** ***	*** *** *:	** *** ***			*** *** *1	** *** *** **	** *** ***
	*** *** *** *** *** ************ * D * * * *	* *** *** * South cen Data	*** *** ***	* *** ***	*** *** *:	** *** ***			*** *** *	** *** *** **	** *** ***
) * *** *** 90 кк 91 ва	*** *** *** *** *** * * * * * * SUBBASIN RUNOFF SUBBASIN CHAR	* *** *** * SOUTH CEN DATA ACTERISTICS	*** *** ***	* *** *** NAGE AREA	*** *** *:	** *** ***			*** *** *	** *** *** **	** *** ***
	*** *** *** *** *** ************ * D * * * *	* *** *** * SOUTH CEN DATA ACTERISTICS	*** *** ***	* *** *** NAGE AREA	*** *** *1	** *** ***			*** *** *	** *** *** **	** *** ***
	*** *** *** *** *** * * * * * * SUBBASIN RUNOFF SUBBASIN CHAR	* *** *** * SOUTH CEN DATA ACTERISTICS .04	*** *** ***	* *** *** NAGE AREA	*** *** *1	** *** ***			*** *** *	** *** *** **	** *** ***
	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA	*** *** ***	* *** *** NAGE AREA AREA	*** *** **	** *** ***			*** *** *	** *** *** **	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50	TRAL DRAIN SUBBASIN BASIN TO	* *** *** NAGE AREA AREA TAL PRECIS	*** *** **	** *** ***			*** *** *1	** *** *** **	** *** ***
91 BA	*** *** *** *** *** * ****************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT	TRAL DRAIN SUBBASIN BASIN TO	* *** *** NAGE AREA AREA TAL PRECIS	WEST OF M	** *** ***) SOUTH OF	STEWART			** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00	TRAL DRAIN SUBBASIN BASIN TO TION PATTEL .00	* *** *** NAGE AREA AREA TAL PRECIS	*** *** ** WEST OF MI PITATION .00	.00	.00	STEWART	.00	.00	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00 .00	TRAL DRAIN SUBBASIN BASIN TO TION PATTEL .00 .00	* *** *** NAGE AREA AREA TAL PRECIS RN .00 .00	*** *** ** WEST OF MI PITATION .00 .00	.00 .00	.00 .01	.00 .01	.00 .01	.00 .01	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00 .00 .02	TRAL DRAIN SUBBASIN BASIN TO TON PATTEL .00 .00 .30	* *** *** NAGE AREA AREA TAL PRECIS RN .00 .00 .30	*** *** ** WEST OF M PITATION .00 .00 .03	.00 .02	0 SOUTH OF .00 .01 .01	.00 .01 .01	.00 .01 .01	.00 .01 .01	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00 .00 .02 .01	TRAL DRAIN SUBBASIN BASIN TO TON PATTEL .00 .00 .30 .00	* *** *** NAGE AREA AREA TAL PRECIS RN .00 .00 .30 .00	*** *** ** WEST OF MI PITATION .00 .03 .00	.00 .02 .00	0 SOUTH OF .00 .01 .01 .01	.00 .01 .00	.00 .01 .01 .00	.00 .01 .01 .00	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00 .00 .02 .01 .00	*** *** *** TRAL DRAIN SUBBASIN BASIN TO TION PATTEL .00 .00 .30 .00 .00	* *** *** NAGE AREA AREA TAL PRECIS RN .00 .00 .30	*** *** ** WEST OF M PITATION .00 .00 .03	.00 .02	0 SOUTH OF .00 .01 .01	.00 .01 .00 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00 .00 .02 .01	TRAL DRAIN SUBBASIN BASIN TO TON PATTEL .00 .00 .30 .00	* *** *** NAGE AREA AREA TAL PRECIS RN .00 .00 .30 .00	*** *** ** WEST OF MI PITATION .00 .03 .00	.00 .02 .00	0 SOUTH OF .00 .01 .01 .01	.00 .01 .00	.00 .01 .01 .00	.00 .01 .01 .00 .00 .00	** *** ***
91 ВА 	*** *** *** *** *** ******************	* *** *** * SOUTH CEN DATA ACTERISTICS .04 DATA 4.50 PRECIPITAT .00 .00 .02 .01 .00	*** *** *** TRAL DRAIN SUBBASIN BASIN TO TION PATTEL .00 .00 .30 .00 .00	* *** *** NAGE AREA AREA TAL PRECIS RN .00 .00 .30 .00 .00	*** *** ** WEST OF MI PITATION .00 .03 .00 .00 .00	.00 .00 .02 .00 .00	.00 .01 .01 .01 .00	.00 .01 .00 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	** *** ***

	00	00	00	00	00	00	00	00	00	00	
	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00	.00 .00	.00 .00	
	.00	.00	.00	.00	.00	.00	.00	.00			
			• - •	• • •							
92 LS	SCS LOSS RATE										
	STRTL			ABSTRACTIC	DN .						
	CRVNBR		CURVE N								
1	RTIMP	.00	PERCENT	IMPERVIOUS	AREA						
	SCS DIMENSION	LESS UNITGR	RAPH								
	TLAG		LAG								

				UN	IIT HYDROGI	APH					
1					OF-PERIOD						
-	85. 24.	5.	1.	0.							
1											
*** *** **	* *** *** *** ***	* *** *** *	*** *** *	** *** ***	*** *** **	** *** *** *	*** *** *:	* *** ***	*** *** **	****	** *** ***
li i											

	* *						~~				
94 KK	* BD *	COMBINE	BASINS B	AND D, FLOW	VIN MIICH	ELL COLLECT	UR				

1											
95 HC	HYDROGRAPH CO	MBINATION									
	I COMP	2	NUMBER	OF HYDROGRA	APHS TO CO	MBINE					
1	ICOMP	2	NUMBER	OF HYDROGRA		MBINE					
1	I COMP	2	NUMBER	OF HYDROGR	APHS TO CO	MBINE					
]	I COMP	2	NUMBER	OF HYDROGRA		MBINE					
]	I COMP	2	NUMBER	OF HYDROGRA		MBINE					
)	I COMP	* *** *** ;			***		*** *** *	** *** ***	*** *** **	** *** *** *	** *** ***
]]* *** **		2			***		*** *** *	** *** ***	*** *** *1	** *** *** *	** ***
]]• ••• ••		2			***		*** *** *	** *** ***	*** *** *1	** *** *** *	** *** ***
1	** *** *** *** *** ** ************* * *	2			***		*** *** *	** *** ***	*** *** **	** *** *** *	** *** ***
] }* *** **] 96 кк	* *** *** *** ***	* *** *** 1	*** *** *	** *** ***	***				*** *** *1	** *** *** *	** ***
1	** *** *** *** *** ************ * E * * E *	* *** *** 1	*** *** *	** *** ***	***	** *** ***			*** *** *1	** *** *** *	** ***
1	** *** *** *** *** ** ************* * *	* *** *** 1	*** *** *	** *** ***	***	** *** ***			*** *** **	** *** *** *	** *** ***
1	** *** *** *** *** ************ * E * * E * * *	* *** *** ; South dra	*** *** *	** *** ***	***	** *** ***			*** *** *1	** *** *** *	** *** ***
1	** *** *** *** *** ************ * E * * E *	* *** *** ; South dra	*** *** *	** *** ***	***	** *** ***			*** *** *1	** *** ***	** ***
1	** *** *** *** *** ************ * E * * E * * *	* *** *** South Dr.	*** *** * AINAGE AR	** *** ***	***	** *** ***			*** *** *1	** *** *** *	** ***
96 кк	** *** *** *** *** *** ************** * E * * E * * * SUBBASIN RUNOFF	* *** *** SOUTH DRA DATA	*** *** * AINAGE AR	** *** *** EA WEST OF	***	** *** ***			*** *** *'	** *** *** *	** ***
96 кк	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA ACTERISTIC: .02	*** *** * AINAGE AR S	** *** *** EA WEST OF	***	** *** ***			*** *** *	** *** *** *	** *** ***
96 кк	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA ACTERISTIC: .02	*** *** * AINAGE AR S	** *** *** EA WEST OF	***	** *** ***			*** *** **	** *** ***	** *** ***
96 кк	** *** *** *** *** *** * *** * E * * * E SUBBASIN RUNOFF SUBBASIN CHAR TAREA PRECIPITATION	* *** *** SOUTH DRA DATA ACTERISTIC: .02	*** *** * AINAGE AR S SUBBASI	** *** *** EA WEST OF N AREA	*** *** *** *	** *** ***			*** *** **	** *** *** *	** ***
96 KK 97 BA	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA ACTERISTIC .02	*** *** * AINAGE AR S SUBBASI	** *** *** EA WEST OF	*** *** *** *	** *** ***			*** *** *'	** *** *** *	** ***
96 KK 97 BA	** *** *** *** *** *** * *** * E * * * E SUBBASIN RUNOFF SUBBASIN CHAR TAREA PRECIPITATION	* *** *** SOUTH DRA DATA ACTERISTIC: .02 I DATA 4.50	*** *** * AINAGE AR S SUBBASI BASIN T	** *** *** EA WEST OF N AREA OTAL PRECIN	*** *** *** *	** *** ***			*** *** **	** *** *** *	** ***
96 КК 97 ВА	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA ACTERISTIC: .02 I DATA 4.50 . PRECIPITA .00	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00	** *** *** EA WEST OF N AREA OTAL PRECI ERN .00	*** *** *** * MITCHELL PITATION .00	** *** *** AND NORTH O	F HAMILTO	N .00	.00	.00	** *** ***
96 КК 97 ВА	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA ACTERISTIC: .02 I DATA 4.50 . PRECIPITA .00 .00	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00	** *** *** EA WEST OF N AREA OTAL PRECI ERN .00 .00	*** *** *** * MITCHELL PITATION .00 .00	** *** *** AND NORTH O .00 .00	F HAMILTO .00 .01	N .00 .01	.00 .01	.00 .01	** *** ***
96 КК 97 ВА	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA ACTERISTIC .02 DATA 4.50 . PRECIPITA .00 .00 .02	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .30	** *** *** EA WEST OF N AREA OTAL PRECI ERN .00 .00 .30	*** *** *** * MITCHELL PITATION .00 .00 .03	** *** *** AND NORTH O .00 .00 .02	F HAMILTO .00 .01 .01	N .00 .01 .01	.00 .01 .01	.00 .01 .01	** *** ***
96 КК 97 ВА	** *** *** *** *** *** ***************	* *** *** SOUTH DRA DATA CACTERISTIC: .02 DATA 4.50 . PRECIPITA .00 .00 .02 .01	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .30 .00	** *** *** EA WEST OF N AREA OTAL PRECIN ERN .00 .00 .30 .00	*** *** *** * MITCHELL PITATION .00 .03 .00	** *** *** AND NORTH O .00 .00 .02 .00	F HAMILTO .00 .01 .01 .01	N .00 .01 .01 .00	.00 .01 .01 .00	.00 .01 .01 .00	** ***
96 КК 97 ВА 11 РВ	** *** *** *** *** *** ***************	* *** *** * SOUTH DRA DATA CACTERISTIC: .02 DATA 4.50 . PRECIPITA .00 .00 .02 .01 .00	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .30 .00 .00	** *** *** EA WEST OF N AREA OTAL PRECII ERN .00 .00 .30 .00 .00	*** **** *** * MITCHELL PITATION .00 .00 .03 .00 .00	** *** *** AND NORTH O .00 .00 .02 .00 .00	F HAMILTO .00 .01 .01 .01 .00	N .00 .01 .01 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00	** ***
96 КК 97 ВА 11 РВ	** *** *** *** *** *** ***************	* *** *** * SOUTH DRA DATA CACTERISTIC: .02 DATA 4.50 . PRECIPITA .00 .00 .02 .01 .00 .00 .00 .00	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .30 .00 .00 .00	** *** *** EA WEST OF N AREA OTAL PRECIN ERN .00 .00 .00 .00 .00 .00	*** **** **** * MITCHELL PITATION .00 .03 .00 .00 .00 .00	** *** *** AND NORTH O .00 .00 .02 .00 .00 .00 .00	F HAMILTO .00 .01 .01 .01 .00 .00	N .00 .01 .01 .00 .00 .00	.00 .01 .01 .00 .00	.00 .01 .01 .00 .00 .00	** ***
96 КК 97 ВА 11 РВ	** *** *** *** *** *** ***************	* *** *** * SOUTH DR/ DATA CACTERISTIC: .02 DATA 4.50 . PRECIPITA .00 .00 .00 .00 .00 .00 .00 .0	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .30 .00 .00 .00 .00 .00	** *** *** EA WEST OF N AREA OTAL PRECIN ERN .00 .00 .00 .00 .00 .00 .00	*** **** **** * MITCHELL PITATION .00 .00 .00 .00 .00 .00 .00 .00 .00	** *** *** AND NORTH O .00 .00 .00 .00 .00 .00 .00 .00	F HAMILTO .00 .01 .01 .01 .00 .00 .00	N .00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	** ***
96 КК 97 ВА 11 РВ	** *** *** *** *** *** ***************	* *** *** * SOUTH DR/ DATA CACTERISTIC: .02 DATA 4.50 . PRECIPITA .00 .00 .00 .00 .00 .00 .00 .0	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .00 .00 .00 .00 .00 .00 .00	** *** *** EA WEST OF N AREA OTAL PRECIN ERN .00 .00 .00 .00 .00 .00 .00 .00	*** **** **** * MITCHELL PITATION .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	** *** *** AND NORTH O .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	F HAMILTO .00 .01 .01 .00 .00 .00 .00 .00	N .00 .01 .01 .00 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00 .00	** *** ***
96 КК 97 ВА 11 РВ	** *** *** *** *** *** ***************	* *** *** * SOUTH DR/ DATA CACTERISTIC: .02 DATA 4.50 . PRECIPITA .00 .00 .00 .00 .00 .00 .00 .0	*** *** * AINAGE AR S SUBBASI BASIN T TION PATT .00 .00 .30 .00 .00 .00 .00 .00	** *** *** EA WEST OF N AREA OTAL PRECIN ERN .00 .00 .00 .00 .00 .00 .00	*** **** **** * MITCHELL PITATION .00 .00 .00 .00 .00 .00 .00 .00 .00	** *** *** AND NORTH O .00 .00 .00 .00 .00 .00 .00 .00	F HAMILTO .00 .01 .01 .01 .00 .00 .00	N .00 .01 .01 .00 .00 .00 .00	.00 .01 .01 .00 .00 .00	.00 .01 .01 .00 .00 .00 .00	** *** ***

98 LS SCS LOSS RATE STRTL .20 INITIAL ABSTRACTION CRVNBR 91.00 CURVE NUMBER .00 PERCENT IMPERVIOUS AREA RTIMP 99 UD SCS DIMENSIONLESS UNITGRAPH .08 LAG TLAG *** UNIT HYDROGRAPH 5 END-OF-PERIOD ORDINATES 43. 12. 2. 0. 0. *** *** *** *** ***** 00 KK BDE * COMBINE BASINS B,D AND E, FLOW IN MITCHELL COLLECTOR AT HAMILTON ٠ ***** HYDROGRAPH COMBINATION 01 HC 2 NUMBER OF HYDROGRAPHS TO COMBINE I COMP ***** 02 KK GFBDE * COMBINE BASINS G, F, B, D AND E, TOTAL FLOW AT HAMILTON AND MITCHELL ***** 103 HC HYDROGRAPH COMBINATION I COMP 2 NUMBER OF HYDROGRAPHS TO COMBINE ***** A * 104 KK SOUTHEAST DRAINAGE AREA EAST OF MITCHELL AND NORTH OF HAMILTON ***** 105 KO OUTPUT CONTROL VARIABLES IPRNT **4 PRINT CONTROL** IPLOT 1 PLOT CONTROL 0. HYDROGRAPH PLOT SCALE QSCAL IPNCH 0 PUNCH COMPUTED HYDROGRAPH IOUT 21 SAVE HYDROGRAPH ON THIS UNIT ISAV1 1 FIRST ORDINATE PUNCHED OR SAVED ISAV2 60 LAST ORDINATE PUNCHED OR SAVED TIMINT .250 TIME INTERVAL IN HOURS

SUBBASIN RUNOFF DATA

106 BA	SUBBASIN CHARACTER	ISTICS	
	TAREA	.07	SUBBASIN AREA

PRECIPITATION DATA

		on n									
11 РВ	STORM	4.50	BASIN TOT	AL PRECIPIT	TATION						
12 PI	INCREMENTAL	DRECIDITAT		M							
16 F1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
_	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
107 LS	SCS LOSS RATE										
1	STRTL	1.08	INITIAL A	BSTRACTION							
	CRVNBR	65.00	CURVE NUM	IBER							
1	RTIMP			MPERVIOUS	AREA						
08 UD	SCS DIMENSION	LESS UNITO									
	TLAG		LAG								

1											
3					T HYDROGR						
	1000 (1000)	370	-20			ORDINATES					
1	72. 79.	26.	9.	3.	1.	0.					
,											
·····	* *** *** *** *** ***	* *** *** *	*** *** ***	* *** *** *	** *** **	* *** ***	*** *** *	** *** ***	*** *** *:	** *** *** **	****
1											

1	* *										
09 KK	* GFBDEA *	COMBINE E	BASINS G,F,	B,D,E AND	A, TOTAL	FLOW IN HA	MILTON CO	LECTOR			
	* *				•						
1	*****										
10 110											
_10 HC	HYDROGRAPH CO ICOMP		NUMBER OF	HYDROGRAP							
	1 CONP	2	NUMBER OF	TUROGRAP		IDINE					

1											
* *** **	* *** *** *** *** **	* *** *** *	*** *** ***	* *** *** *	** *** **	* *** ***	*** *** *	** *** ***	*** *** *	** *** *** **	** *** ***
1	*******										
	* *										
111 кк	* 0 *	SOUTHEAS	DRAIANGE	AREA GOLF	COURSE NO	ORTH OF DET	ENTION PO	ND #11			
	* *										

- - -											
112 KO	OUTPUT CONTRO	L VARIABLES	S								
1	IPRNT	4	PRINT CON	ITROL							

l

8	IPLOT	1	PLOT CONT	ROL							
-	QSCAL	0.	HYDROGRAP	H PLOT SC	ALE						
	IPNCH		PUNCH COM								
1	IOUT				THIS UNIT						
	ISAV1				ICHED OR SA						
7	ISAV2 TIMINT		TIME INTE		HED OR SAV	ED					
	TIMIRT	.230	TIME INTE	KANP IN L	IUUKS						
ſ	SUBBASIN RUNOFF	DATA									
113 BA	SUBBASIN CHAR										
	TAREA	.18	SUBBASIN	AREA							
	PRECIPITATION	DATA									
11 PB	STORM	4.50	BASIN TOT	AL PRECIP	PITATION						
12 PI	INCREMENTAL	PRECIPITAT	ION PATTER	RN							
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
7	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01	
	.02	.02	.30	.30	.03	.02	.01	.01	.01	.01	
	.01	.01	.00	.00	.00	.00	.01	.00	.00	.00	
	.00 .00	.00 .00	.00	.00 .00	.00 .00	.00	.00 .00	.00 .00	.00 .00	.00 .00	
	.00	.00	.00	.00	.00	.00 .00	.00	.00	.00	.00	
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	.00	.00	.00	.00	.00	.00					
114 LS	SCS LOSS RATE										
114 LS	SUS LOSS RATE		INITIAL #	RSTRACTI	าม						
<u> </u>	CRVNBR		CURVE NUM								
	RTIMP		PERCENT		S AREA						
115 UD	SCS DIMENSION										
15 00	TLAG		LAG								
J					***						
1											
5					NIT HYDROGF -OF-PERIOD						
	103. 189.	104.	43.		7.		1.	0.			
*** *** ***	*** *** *** ***	* *** *** *	*** *** ***	* *** ***	*** *** **	** *** ***	*** *** **	* *** ***	*** *** **	** *** *** **	* *** ***

L.	* *										
16 KK	* TOTAL *	TOTAL FLO	OW FROM STI	JDY AREA	TO DETENTIO	ON POND #11					
	* *										
1											
17 HC	HYDROGRAPH CC					151115					
	ICOMP	5	NUMBER O	F HYDROGR	APHS TO CON	MBINE					
1					***						
* *** ***	*** *** *** ***	* *** *** *	*** *** **	* *** ***	*** *** **	** *** ***	*** *** **	* *** ***	*** *** *	** *** *** **	* *** ***
1											

_118 кк	* * D1 * * * *	DETENTION	VOLUME	REQUIRED				
-19 ко	OUTPUT CONTROL	L VARIABLES						
	IPRNT	4	PRINT C	ONTROL				
	IPLOT	1	PLOT CO	NTROL				
	QSCAL	0.	HYDROGR	APH PLOT SC	ALE			
	IPNCH	0	PUNCH C	OMPUTED HYD	ROGRAPH			
	IOUT	21	SAVE HY	DROGRAPH ON	THIS UNIT			
	I SAV1	1	FIRST O	RDINATE PUN	CHED OR SAV	'ED		
	I SAV2	60	LAST OR	DINATE PUNC	HED OR SAVE	D		
7	TIMINT	.250	TIME IN	TERVAL IN H	OURS			
I	D	ETETIION BA	SIN #1					
7	HYDROGRAPH ROUT	ING DATA						
121 RS	STORAGE ROUTI	NG						
-	NSTPS	1	NUMBER	OF SUBREACH	ES			
	ITYP	ELEV	TYPE OF	INITIAL CO	NDITION			
1	RSVRIC	6110.50	INITIAL	CONDITION				
	х	.00	WORKING	R AND D COE	FFICIENT			
1								
22 SA	AREA	.1	4.1	5.8	6.5	7.8	9.2	10.6
123 SE	ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00
24 SQ	DISCHARGE	1.	4.	20.	30.	34.	36.	40.
125 SE	ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00

1				COMPUTED ST	ORAGE-ELEVA	TION DATA		
	STORAGE .00	00	10 9	9 23.17	59 00	101 70	150 4/	
	ELEVATION 6110.40			0 6115.00			6130.00	
	LEEVATION 0110.40	0111.00	0113+0	0 0113.00	0120.00	0123.00	0130.00	
1			0040					

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.98	10.89	23.17	58.89	101.38	150.64
OUTFLOW	1.00	4.00	20.00	30.00	34.00	36.00	40.00
ELEVATION	6110.40	6111.00	6113.00	6115.00	6120.00	6125.00	6130.00

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES TIME TO PEAK IN HOURS

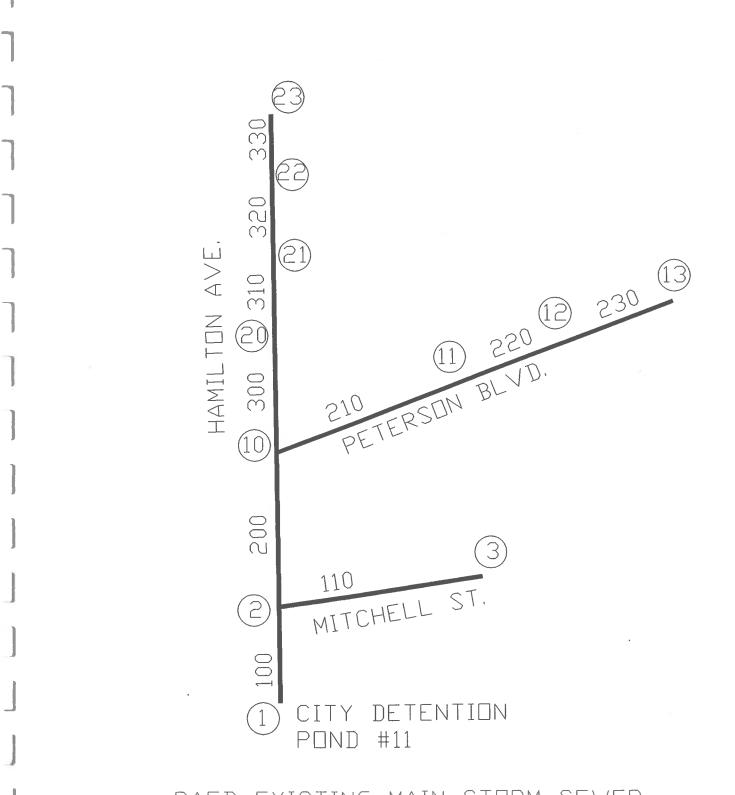
					RATI	OS APPLIED	TO PRECIPITATION
OPERATION	STATION	AREA	PLAN		RATIO 1 F	ATIO 2	
7					.67	1.00	
HTOROGRAPH AT	Ľ	.08	1	FLOW	74.	151.	
-				TIME	6.00	6.00	
DROGRAPH AT	к	.05	1	FLOW	83.	138.	
PROGRAFII AI	b	.05		TIME	6.00	6.00	
-				51 0 1		705	
DROGRAPH AT	J	.16	1	FLOW TIME	161. 6.00	325. 6.00	
"YPROGRAPH AT	I	.08	1	FLOW	136.	227.	
				TIME	6.00	6.00	
HYDROGRAPH AT	Р	.03	1	FLOW	2.	14.	
				TIME	6.00	6.00	
HTDROGRAPH AT	Q	.16	1	FLOW	216.	372.	
~				TIME	6.00	6.00	
COMBINED AT	PQ	.18	1	FLOW	218.	387.	
COMBINED AT	PW	. 10	0	TIME	6.00	6.00	
1							
DROGRAPH AT	м	.10	1	FLOW TIME	160. 6.00	270. 6.00	
,				TIME	0.00	0.00	
COMBINED AT	PQM	.28	1	FLOW	378.	657.	
				TIME	6.00	6.00	
HYDROGRAPH AT	н	.07	1	FLOW	124	207.	
				TIME	6.00	6.00	
HTDROGRAPH AT	с	.23	1	FLOW	145.	316.	
	0	.25		TIME	6.00	6.00	
1	10440		2411				
COMBINED AT	HC	.31	1	FLOW TIME	269. 6.00	523. 6.00	
					0100	0.00	
COMBINED AT	HCPQM	.59	1	FLOW	647.	1180.	
				TIME	6.00	6.00	
"YDROGRAPH AT	N	.14	1	FLOW	21.	74.	
				TIME	6.25	6.25	
2 COMBINED AT	HCPQMN	.73	1	FLOW	658.	1225.	
			.•.	TIME	6.00	6.00	
					04		
HYDROGRAPH AT	G	.05	1	FLOW TIME	91. 6.00	151. 6.00	
1							
DROGRAPH AT	F	.19	1	FLOW	63.	184.	
				TIME	6.00	6.00	
COMBINED AT	GF	.24	1	FLOW	154.	335.	
				TIME	6.00	6.00	
DROGRAPH AT	В	.06	1	FLOW	12.	38.	
			1020				

				TIME	6.25	6.25
PROGRAPH AT	D	.04	1	FLOW TIME	75. 6.00	126. 6.00
COMBINED AT	BD	.11	1	FLOW TIME	86. 6.00	161. 6.00
HYDROGRAPH AT	E	.02	1	FLOW TIME	38. 6.00	63. 6.00
COMBINED AT	BDE	.13	1	FLOW TIME	124. 6.00	225. 6.00
COMBINED AT	GFBDE	.37	1	FLOW TIME	278. 6.00	560. 6.00
DROGRAPH AT	A	.07	1	FLOW TIME	15. 6.25	45. 6.25
COMBINED AT	GFBDEA	.44	1	FLOW TIME	290. 6.00	602. 6.00
HYDROGRAPH AT	0	.18	1	FLOW TIME	34. 6.25	108. 6.25
COMBINED AT	TOTAL	1.36	1	FLOW TIME	965. 6.00	1894. 6.00
UTED TO	D1	1.36	1	FLOW TIME	33. 8.75	37. 14.25
			** 1	PEAK STA STAGE TIME	GES IN FEET 6119.01 8.75	** 6126.36 14.25

*** NORMAL END OF HEC-1 *** "TRMAL END OF HEC-1

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PIPE CAPACITY CALCULATIONS



PAFB EXISTING MAIN STORM SEWER UDSEWER COMPUTER MODEL

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PETERSON AFB BASEWIDE DRAINAGE STUDY
HISTING STORM SEWER CAPACITY CALCULATIONS
 2, 18, 30, 1, 2, 1, .8, 500, 300, .2, N
 2, 10
 4.9 , 3.8 , 2.7 , 2.2 , 1.8 , 1.4 , .89
 ), 6145, 0, 1, 100, 0, 0, 0
 310,0,50,.7,0,0,0,0,0
 2 , 6166 , 100 , 2 , 110 , 200 , 0 , 0
 10,0,50,.7,0,0,0,0,0
 8,6197,110,0,0,0,0,0
 60,0,50,.7,0,0,0,0,0
 10 , 6172 , 200 , 2 , 210 , 300 , 0 , 0
 250,0,50,.7,0,0,0,0,0
 1, 6190, 210, 1, 220, 0, 0, 0
 130, 0, 50, .7, 0, 0, 0, 0, 0
 12,6208,220,1,230,0,0,0
 100,0,50,.7,0,0,0,0,0
 13,6210,230,0,0,0,0,0
 100,0,50,.7,0,0,0,0,0
 20,6177,300,1,310,0,0,0
 80,0,50,.7,0,0,0,0,0
 21 , 6178 , 310 , 1 , 320 , 0 , 0 , 0
 45,0,50,.7,0,0,0,0,0
 22 , 6179 , 320 , 1 , 330 , 0 , 0 , 0
 50,0,50,.7,0,0,0,0,0
 23,6184,330,0,0,0,0,0
 20,0,50,.7,0,0,0,0,0
 10
 hoo , 2600 , .81 , 6159 , .015 , 0 , 0 , 1 , 72 , 0
 110 , 2470 , 1.417 , 6194 , .015 , 0 , 0 , 1 , 36 , 0
 200 , 1700 , .453 , 6166 , .015 , 0 , 0 , 1 , 72 , 0
 210 , 1200 , 1.75 , 6186 , .015 , 0 , 0 , 1 , 48 , 0
220 , 1200 , 1.175 , 6201.7 , .015 , 0 , 0 , 1 , 42 , 0
 230 \ , \ 450 \ , \ 1.18 \ , \ 6207 \ , \ .015 \ , \ 0 \ , \ 0 \ , \ 1 \ , \ 42 \ , \ 0
 300 , 850 , .447 , 6169 , .015 , 0 , 0 , 1 , 42 , 0
 610 , 450 , .489 , 6171 , .015 , 0 , 0 , 1 , 36 , 0
 320 , 200 , 1.35 , 6174 , .015 , 0 , 0 , 1 , 30 , 0
 330 , 430 , 1.395 , 6180 , .015 , 0 , 0 , 1 , 24 , 0
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REPORT OF STORM SEWER SYSTEM DESIGN USING UDSEWER-MODEL VERSION 2 DEVELOPED BY JAMES C.Y. GUO , PHD, PE DEPARTMENT OF CIVIL ENGINEERING, UNIVERSITY OF COLORADO AT DENVER IN COOPERATION WITH URBAN DRAINAGE AND FLOOD CONTROL DISTRICT DENVER, COLORADO ___________________________________ EXECUTED BY HOLLAND WEST COMPANY- DENVER COLORADO ON DATA 04-03-1992 AT TIME 06:48:03 * PROJECT TITLE : PETERSON AFB BASEWIDE DRAINAGE STUDY RETURN PERIOD OF FLOOD IS 10 YEARS RAINFALL INTENSITY TABLE IS GIVEN SUMMARY OF SUBBASIN RUNOFF PREDICTIONS _____ TIME OF CONCENTRATION MANHOLE BASIN OVERLAND GUTTER BASIN RAIN I PEAK FLOW ID NUMBER AREA * C TO (MIN) TF (MIN) TC (MIN) INCH/HR CFS -----35.00 0.00 0.00 0.00 4.90 171.50 1.00 35.00 0.00 0.00 0.00 4.90 171.50 2.00 0.00 0.00 44.29 1.71 35.00
 0.00
 0.00
 0.00
 0.00

 0.00
 0.00
 0.00
 0.00

 0.00
 0.00
 0.00
 0.00
 3.00 60.00 4.90 171.50 35.00 10.00 4.90 11.00 35.00 171.50 35.00 4.90 12.00 171.50 35.00 0.00 0.00 2.86 100.00 13.00 18.57 0.00 0.00 0.00 4.90 20.00 35.00 171.50 0.00 4.90 171.50 0.00 21.00 35.00 0.00 0.00 0.00 4.90 35.00 0.00 171.50 22.00 20.00 0.00 0.00 157.48 0.57 23.00 35.00

THE SHORTEST DESIGN RAINFALL DURATION IS FIVE MINUTES

ENVER REGIONAL DRAINAGE CRITERIA WAS NOT USED TO CHECK THE COMPUTATION OF TIME OF CONCENTRATION

***** SUMMARY OF HYDRAULICS AT MANHOLES**

...... MANHOLE CNTRBTING RAINFALL RAINFALL DESIGN WATER COMMENTS GROUND .b NUMBER AREA * C DURATION INTENSITY PEAK FLOW ELEVATION ELEVATION MINUTES INCH/HR CFS FEET FEET _____ 1.00 0.00 0.00 0.00 310.00 6145.00 6135.00 OK 2.00 350.00 120.50 0.89 310.00 6166.00 6157.80 OK 35.00 44.29 1.71 60.00 6197.00 6193.49 3.00 OK 280.00 119.66 0.89 250.00 6172.00 6167.18 10.00 OK 105.00 79.05 1.24 130.00 6190.00 6185.39 OK 11.00 58.57 1.43 100.00 6208.00 6202.70 70.00 OK 12.00 35.00 18.57 2.86 100.00 6210.00 6208.58 OK 13.00 140.00 157.48 0.57 80.00 6177.00 6174.44 OK 20.00 105.00 174.29 0.43 45.00 6178.00 6177.59 21.00 OK 174.29 70.00 0.43 30.00 6179.00 6178.32 OK 22.00 35.00 157.48 0.57 20.00 6184.00 6181.95 23.00 OK MEANS WATER ELEVATION IS LOWER THAN GROUND ELEVATION THE TIME OF CONCENTRATION AT MANHOLE ID = 21 DECREASES DOWNSTREAM E TIME OF CONCENTRATION AT MANHOLE ID = 20 DECREASES DOWNSTREAM E TIME OF CONCENTRATION AT MANHOLE ID = 10 DECREASES DOWNSTREAM THE TIME OF CONCENTRATION AT MANHOLE ID = 2 DECREASES DOWNSTREAM CHECK THE GIVEN DESIGN FLOWS SUMMARY OF SEWER HYDRAULICS NOTE: THE GIVEN FLOW DEPTH-TO-SEWER SIZE RATIO= .8 MAMHOLE NUMBER SEWER REQUIRED SUGGESTED EXISTING SEWER ID NUMBER UPSTREAM DNSTREAM SHAPE DIA(HIGH) DIA(HIGH) DIA(HIGH) WIDTH ID NO. ID NO. (IN) (FT) (IN) (FT) (IN) (FT) (FT) _____ 1.00 2.00 2.00 ROUND 70.32 72.00 72.00 0.00 100.00 3.00 ROUND 34.20 36.00 36.00 0.00 110.00 2.00 200.00 10.00 ROUND 72.33 78.00 0.00 72.00 0.00 210.00 11.00 10.00 ROUND 43.93 48.00 48.00 0.00 220.00 12.00 11.00 ROUND 42.90 48.00 42.00 230.00 13.00 12.00 ROUND 42.87 48.00 42.00 0.00 300.00 20.00 10.00 ROUND 47.30 48.00 42.00 0.00 310.00 21.00 20.00 ROUND 37.48 42.00 36.00 0.00 26.61 27.00 320.00 22.00 21.00 ROUND 30.00 0.00 22.72 24.00 24.00 0.00 330.00 23.00 22.00 ROUND DIMENSION UNITS FOR ROUND AND ARCH SEWER ARE IN INCHES MENSION UNITS FOR BOX SEWER ARE IN FEET QUIRED DIAMETER = COMPUTED; SUGGESTED DIAMETER = COMMERCIAL FOR A NEW SEWER. FLOW IS ANALYZED BY THE SUGGESTED SEWER SIZE: OTHERWISE. EXISITNG SIZE IS USED SEWER DESIGN Q P-FULL Q DEPTH CRTC DEPTH VELOCITY FROUDE COMMENTS D NUMBER IN CFS IN CFS YN FEET YC FEET IN FPS NUMBER 310.00 331.23 4.60 4.80 13.31 1.09 V-OK 100.00 1.36 V-OK 69.00 2.16 2.49 11.00 60.00 110.00 247.70 6.00 4.25 0.00 V-OK 200.00 250.00 8.84 165.13 2.67 3.39 1.67 V-OK 210.00 130.00 14.56 94.77 3.04 220.00 100.00 3.50 10.39 0.00 V-OK 94.97 3.50 3.04 10.39 0.00 V-OK 230.00 100.00

310.00	45.00	40.53	3.00	2.12	6.37	0.00	V-OK
320.00	30.00	41.41	1.58	1.87	9.20	1.39	V-OK
330.00	20.00	23.22	1.43	1.60	8.31	1.27	V-OK
							300.0080.0058.453.502.798.320.00310.0045.0040.533.002.126.370.00320.0030.0041.411.581.879.201.39330.0020.0023.221.431.608.311.27

TOUDE NUMBER=0 INDICATES THAT A PRESSURED FLOW OCCURS

٦	SEWER NUMBER	SLOPE	INVERT E	LEVATION DNSTREAM	BUR I ED	DEPTH DNSTREAM	COMMENTS
ಕ್		%	(FT)	(FT)	(FT)	(FT)	
	100.00	0.81	6153.00	6131.94	7.00	7.06	OK
	110.00	1.42	6191.00	6156.00	3.00	7.00	OK
	200.00	0.45	6160.00	6152.30	6.00	7.70	OK
-	210.00	1.75	6182.00	6161.00	4.00	7.00	OK
- E	220.00	1.17	6198.20	6184.10	6.30	2.40	OK
	230.00	1.18	6203.50	6198.19	3.00	6.31	OK
	300.00	0.45	6165.50	6161.70	8.00	6.80	OK
	310.00	0.49	6168.00	6165.80	7.00	8.20	OK
	320.00	1.35	6171.50	6168.80	5.00	6.70	OK
	330.00	1.39	6178.00	6172.00	4.00	5.00	OK

MEANS BURIED DEPTH IS GREATER THAN REQUIRED SOIL COVER OF 2 FEET

* SUMMARY OF HYDRAULIC GRADIENT LINE ALONG SEWERS

1

SEWER	SEWER	SURCHARGED	CROWN E	LEVATION	WATER EL	EVATION	FLOW
ID NUMBER	LENGTH	LENGTH	UPSTREAM	DNSTREAM	UPSTREAM	DNSTREAM C	ONDITION
1	FEET	FEET	FEET	FEET	FEET	FEET	
100.00	2600.00	0.00	6159.00	6137.94	6157.80	6135.00	JUMP
110.00	2470.00	0.00	6194.00	6159.00	6193.49	6157.80	JUMP
200.00	1700.00	1700.00	6166.00	6158.30	6167.18	6157.80	PRSS'ED
210.00	1200.00	5.89	6186.00	6165.00	6185.39	6167.18	JUMP
220.00	1200.00	1200.00	6201.70	6187.60	6202.70	6185.39	PRSSIED
230.00	450.00	450.00	6207.00	6201.69	6208.58	6202.70	PRSSIED
300.00	850.00	850.00	6169.00	6165.20	6174.44	6167.18	PRSS'ED
310.00	450.00	450.00	6171.00	6168.80	6177.59	6174.44	PRSS'ED
320.00	200.00	200.00	6174.00	6171.30	6178.32	6177.59	PRSS'ED
330.00	430.00	326.99	6180.00	6174.00	6181.95	6178.32	JUMP

PRSS'ED=PRESSURED FLOW; JUMP=POSSIBLE HYDRAULIC JUMP; SUBCR=SUBCRITICAL FLOW

*** SUMMARY OF ENERGY GRADIENT LINE ALONG SEWERS

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-										
1	SEWER	UPSTRE	EAM MANHO	DLE	FRICTIO	N E	OWNSTR	REAM MA	NHOLE	
	ID NO.	MANHOLE	ENERGY	WATER	LOSS	MANHOLE	BEND	MAIN	JCT	ENERGY
-		ID NO.	ELEV FT	ELEV FT	FT	ID	κ	К	LOSS	FŤ
-										
	100.00	2.00	6160.55	6157.80	25.55	1.00	0.00	0.00	0.00 6	5135.00
	110.00	3.00	6195.37	6193.49	34.82	2.00	0.00	0.00	0.00 6	5160.55
	200.00	10.00	6168.39	6167.18	7.84	2.00	0.00	0.00	0.00 6	6160.55
	210.00	11.00	6188.68	6185.39	20.29	10.00	0.00	0.00	0.00 6	5168.39
	220.00	12.00	6204.37	6202.70	15.69	11.00	0.00	0.00	0.00 6	5188.68

300.00	13.00 6210 20.00 6175	.51 6174.4	4 7.	11 10.00	0.00	0.00 0.00 0.00 0.00 0.00 0.00	6168.39
	21.00 6178						
	22.00 6179					0.00 0.00	
330.00	23.00 6183	.02 6181.9	5 3.	38 22.00	0.00	0.00 0.00	01/9.04
MAINLINE JUNCTURE FRICTION	S =BEND K* LOSS= OUTF LOSS= 0 IF LOSS=0 MEA LOSS INCLU	LOW VHEAD- THE ABOVE NS IT IS N	JCT LOSS K* DIFFERENCE EGLIGIBLE O	IS LESS T	HAN ZERO		
ר	Y OF EARTH		VOLUME FOR	COST ESTI	MATE.		
	RENCH SIDE			1			
	GROUND						
D NUMBER	ELEVATION	ELEVATION	HEIGHT				
1		F1					
1 00	6145.00						
	6166.00						
	6197.00						
10.00		6160.00					
11.00	6190.00	6182.00	8.00				
12.00	6208.00	6198.19	9.81				
13.00	6210.00	6203.50	6.50				
20.00	6177.00	6165.50	11.50				
21.00	6178.00	6168.00	10.00				
22.00	6179.00	6171.50	7.50 6.00				
	UPST TREN				TRENC		
	FT	FT	FT	FT		r inches	
100.0	0 22.83	11.17	22.95	11.17			18397.3
110.0							6749.3
200.0		11.17	24.24	11.17	1700.0	7.00	11817.9
210.0	0 13.17	6.83	19.17	6.83	1200.0	5.00	4256.8
220.0	0 17.35	6.25	9.55	6.25	1200.0	D 4.50	3203.2
230.0	0 10.75	6.25	17.37	6.25			1253.5
300.0	0 20.75	6.25	18.35	6.25			
310.0					450.0		
320.0	0 13.92	5.08	17.32		200.0		562.9
330.0	0 11.50	4.50	13.50	4.50	430.0	0 3.00	796.1
	TH VOLUME F W LINE IS D				CUBIC Y	ARDS	
IF BOTT	B=TWO FEE OM WIDTH <m< td=""><td>TER OR WID T WHEN DIA T WHEN DIA INIMUM WID</td><td>TH OF SEWER METER OR WI METER OR WI TH, 2 FT,</td><td>DTH <=48 I DTH >48 IN THE MINIM</td><td>CHES UM WIDTH</td><td>WAS USED.</td><td></td></m<>	TER OR WID T WHEN DIA T WHEN DIA INIMUM WID	TH OF SEWER METER OR WI METER OR WI TH, 2 FT,	DTH <=48 I DTH >48 IN THE MINIM	CHES UM WIDTH	WAS USED.	
	L DEPTH UND					CHES	

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February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY 72", PETERSON TO MITCHELL STREET

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PROGRAM INP DESCRIPTION	UT DATA:						VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len Culvert Slo	Number (r on Cha oughness ss Coeff qth (fee	1,2 or 3 rt (Type Coeffic icient c t)) of Culv ient (n- of Culver	vert Ent -value) rt Openi	.rance)	· · · · · · · · · · · · · · · · · · ·	6.00 1 0.0150 0.20 2100.0 0.0040
======================================	ilwater Depth	Inlet	Outlet	Depth	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
$ \begin{array}{r} 100.0\\ 120.0\\ 140.0\\ 160.0\\ 180.0\\ 200.0\\ 220.0\\ 240.0\\ 260.0\\ 280.0\\ \end{array} $	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	3.84 4.29 4.73 5.17 5.60 6.03 6.47 6.91 7.55 7.92	2.38 3.17 4.09 5.16 6.38 7.73 9.23 10.87 12.65 14.58	2.75 3.06 3.36 3.66 3.97 4.29 4.66 5.13 6.00 6.00	2.692.963.213.443.663.864.064.244.424.58	2.75 3.06 3.36 3.66 6.00 6.00 6.00 6.00 6.00	7.90 8.26 8.59 8.86 6.37 7.07 7.78 8.49 9.20 9.90
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February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY 72", MITCHELL TO SWALE

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PROGRAM INP DESCRIPTION							VALUE			
FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len	Culvert Diameter (feet)6.00CHWA Chart Number (1,2 or 3)1Scale Number on Chart (Type of Culvert Entrance)1Manning's Roughness Coefficient (n-value)0.0150Culvert Loss Coefficient of Culvert Opening0.20Culvert Length (feet)3100.0Culvert Slope (feet per foot)0.0080									
PROGRAM RES Flow Ta Rate (cfs)	ilwater Depth	Inlet	Outlet	Depth	Critical Depth (ft)	Outlet	Velocity			
$\begin{array}{c} 50.0\\75.0\\100.0\\125.0\\150.0\\175.0\\200.0\\225.0\\250.0\\300.0\\325.0\\350.0\\375.0\\400.0\\425.0\\450.0\end{array}$	$\begin{array}{c} 2.00\\ 2.00\\ 2.00\\ 2.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 3.00\\ 4.00\\ 4.00\\ 4.00\end{array}$	2.59 3.25 3.84 4.40 4.95 5.49 6.03 6.58 7.25 8.50 9.28 10.12 11.02 11.99 13.01 14.10	$\begin{array}{c} -20.23\\ -19.22\\ -17.93\\ -16.35\\ -14.46\\ -12.28\\ -9.78\\ -6.98\\ -3.88\\ 3.26\\ 7.28\\ 11.62\\ 16.26\\ 21.21\\ 26.46\\ 32.02\end{array}$	1.95 2.27 2.57 2.84 3.11 3.38 3.65 3.92 4.51 4.87 5.40 6.00 6.00	2.32 2.69 3.02 3.33 3.61 3.86 4.11 4.33 4.73 4.91 5.07	3.92	9.41 10.20 10.79 11.37 11.85 12.17 12.51 12.79 13.17 13.22 13.74 14.38 15.06 15.77			

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY HAMILTON AVENUE COLLECTOR 42" SECTION BETWEEN VINCENT ST AND PETERSON BLVD

PROGRAM INP DESCRIPTION							VALUE
Culvert Diameter (feet) THWA Chart Number (1,2 or 3) Scale Number on Chart (Type of Culvert Entrance) Manning`s Roughness Coefficient (n-value) Entrance Loss Coefficient of Culvert Opening Culvert Length (feet) Culvert Slope (feet per foot)						3.50 1 0.0150 0.20 800.0 0.0050	
PROGRAM RES Flow Ta Rate (cfs)	ilwater Depth		Outlet	Depth		Outlet	Velocity
$ \begin{array}{r} 10.0\\ 15.0\\ 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0\\ 65.0\\ 70.0\\ \end{array} $	$ \begin{array}{c} 10.00\\ 1$	1.31 1.63 1.92 2.19 2.45 2.69 2.94 3.18 3.42 3.67 3.91 4.23 4.52	6.12 6.28 6.50 6.78 7.12 7.53 8.00 8.53 9.12 9.77 10.49 11.27 12.11	1.16 1.37 1.55 1.71 1.89 2.05 2.22 2.39 2.57	0.96 1.18 1.37 1.54 1.69 1.83 1.97 2.09 2.21 2.32 2.43 2.53 2.62	3.50 3.50 3.50	1.562.082.603.123.644.164.685.205.726.24

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY HAMILTON AVENUE COLLECTOR 36" SECTION BETWEEN TRUAX ST AND VINCENT ST

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PROGRAM INP DESCRIPTION							VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len Culvert Slo	Number (r on Cha oughness ss Coeff qth (fee	(1,2 or 3 art (Type Coeffic Licient of et)	3) of Culv cient (n- of Culver	vert Ent -value) rt Openi	rance)	· · · · · · · ·	3.00 1 0.0150 0.20 550.0 0.0110
PROGRAM RES Flow Ta Rate (cfs)	ilwater Depth		Outlet	Depth	Critical Depth (ft)	Outlet	Velocity
$ \begin{array}{r} 10.0\\ 15.0\\ 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0\\ 65.0\\ \end{array} $	$ \begin{array}{c} 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 10.00\\ 0.$	$ \begin{array}{r} 1.38\\ 1.74\\ 2.07\\ 2.38\\ 2.69\\ 2.99\\ 3.30\\ 3.70\\ 4.00\\ 4.42\\ 4.88\\ 5.38\end{array} $	4.15 4.40 4.75 5.21 5.76 6.41 7.17 8.02 8.97 10.03 11.18 12.44	0.82 1.02 1.19 1.34 1.49 1.64 1.78 1.92 2.08 2.24 2.43 2.75	$ \begin{array}{r} 1.00\\ 1.23\\ 1.43\\ 1.61\\ 1.77\\ 1.92\\ 2.06\\ 2.19\\ 2.30\\ 2.41\\ 2.50\\ 2.59\end{array} $	3.00 3.00 3.00 3.00 3.00 3.00 3.00 3.00	2.12 2.83 3.54

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY HAMILTON AVENUE COLLECTOR 30" SECTION AT TRUAX STREET

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PROGRAM INPUT DATA: DESCRIPTION	VALUE
Culvert Diameter (feet) FHWA Chart Number (1,2 or 3) Scale Number on Chart (Type of Culvert Entrance) Manning's Roughness Coefficient (n-value) Entrance Loss Coefficient of Culvert Opening Culvert Length (feet)	2.50 1 0.0150 0.20 50.0 0.0110
PROGRAM RESULTS: Flow Tailwater Headwater (ft) Normal Critical Depth at Rate Depth Inlet Outlet Depth Depth Outlet V (cfs) (ft) Control Control (ft) (ft) (ft)	Outlet elocity (fps)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2.04 3.06 4.07 5.09 6.11 5.09 6.11 7.13 8.15

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY HAMILTON AVENUE COLLECTOR 24" SECTION BETWEEN OTTIS ST AND TRUAX ST

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PROGRAM INPUT DATA: DESCRIPTION	VALUE
Culvert Diameter (feet) FHWA Chart Number (1,2 or 3) Scale Number on Chart (Type of Culvert Entrance) Manning`s Roughness Coefficient (n-value) Entrance Loss Coefficient of Culvert Opening Culvert Length (feet)	2.00 1 0.0150 0.20 50.0 0.0110
PROGRAM RESULTS: Flow Tailwater Headwater (ft) Normal Critical Depth at Rate Depth Inlet Outlet Depth Depth Outlet Ve (cfs) (ft) Control Control (ft) (ft) (ft)	Outlet elocity (fps)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	3.18 3.82 4.46 5.09 5.73 6.37

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY 36", MITHCELL STREET CULVERT GLASOOW AVENUE TO 72" AT HAMILTON AVENUE

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PROGRAM INPU DESCRIPTION	T DATA:		1				VALUE
Culvert Diam FHWA Chart N Scale Number Manning`s Ro Entrance Los Culvert Leng Culvert Slop	umber (on Cha ughness s Coeff th (fee	(1,2 or 3 art (Type s Coeffic ficient c et)	3) e of Culv cient (n- of Culver	vert Ent value) rt Openi	rance)		3.00 1 0.0150 0.20 2600.0 0.0120
PROGRAM RESU Flow Tai Rate (cfs)	lwater Depth	Inlet	Outlet	Depth	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
$ \begin{array}{r} 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0\\ 65.0\\ \end{array} $	9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.00	2.07 2.38 2.69 2.99 3.30 3.70 4.00 4.42 4.88 5.38	$ \begin{array}{r} -18.96 \\ -17.13 \\ -14.90 \\ -12.26 \\ -9.22 \\ -5.78 \\ -1.92 \\ 2.33 \\ 7.00 \\ 12.07 \end{array} $	1.16 1.31 1.48 1.59 1.73 1.87 2.01 2.16 2.33 2.53	$ \begin{array}{r} 1.43\\ 1.61\\ 1.77\\ 1.92\\ 2.06\\ 2.19\\ 2.30\\ 2.41\\ 2.50\\ 2.59\end{array} $	1.16 1.31 1.48 1.59 1.73 1.87 2.01 2.16 3.00 3.00	7.95 8.42 8.66 9.18 9.48 9.74 9.92 10.10 8.49 9.20
	======				3		

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY 48" PETERSON BLVD COLLECTOR ENT AVE. TO HAMILTON AVE

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PROGRAM INP DESCRIPTION	UT DATA:						VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len Culvert Slo	Number (1 r on Char oughness ss Coeffi gth (feet pe (feet	,2 or 3 t (Type Coeffic cient c) per foc) of Culv ient (n- of Culver 	vert Ent value). t Openi	rance)		4.00 1 0.0150 0.20 1500.0 0.0140
PROGRAM RES Flow Ta Rate (cfs)	ilwater Depth I	nlet	er (ft) Outlet Control	Depth	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
$ \begin{array}{r} 10.0\\ 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0\\ 65.0\\ 70.0\\ 75.0\\ 80.0\\ 85.0\\ 90.0\\ 95.0\\ 100.0\\ 110.0\\ 120.0\\ 130.0 \end{array} $	9.00 9.00	1.25 1.82 2.06 2.29 2.51 2.72 3.12 3.32 3.52 3.52 3.72 3.92 4.12 4.32 4.52 4.52 4.52 4.52 5.73 6.31 6.94	$\begin{array}{c} -11.89\\ -11.57\\ -11.32\\ -11.03\\ -10.68\\ -10.27\\ -9.81\\ -9.30\\ -8.73\\ -8.11\\ -7.44\\ -6.71\\ -5.92\\ -5.09\\ -4.19\\ -3.25\\ -2.25\\ -1.20\\ 1.07\\ 3.56\\ 6.26\end{array}$	1.00 1.11 1.22 1.33 1.42 1.52 1.61 1.69 1.78 1.87 1.94 2.02 2.10	0.92 1.32 1.48 1.62 1.76 1.89 2.01 2.12 2.23 2.33 2.43 2.53 2.62 2.71 2.79 2.88 2.95 3.03 3.17 3.30 3.41 3.51	0.71 1.00 1.11 1.22 1.33 1.42 1.52 1.61 1.69 1.78 1.94 2.02 2.10 2.18 2.26 2.34 2.42 2.57 2.75 2.92 4.00	8.74 9.21 9.61 9.96 10.30 10.60 10.87 11.11 11.30 11.59 11.77 11.99 12.11 12.28 12.44 12.60 12.89 13.05 13.23

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY PETERSON BLVD COLLECTOR 42" SECTION BETWEEN SELFRIDGE ST AND ENT AVE

Culvert Diameter (feet)	PROGRAM INPO DESCRIPTION	JT DATA:						VALUE
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Scale Number Manning`s Ro Entrance Los	r on Cha oughness ss Coeff	rt (Type) Coeffic icient o	e of Culv cient (n- of Culver	vert Ent -value). ct Openi	irance)	· • • • • • •	1 0.0150 0.20 2050.0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Flow Ta Rate	ilwater Depth	Inlet	Outlet	Depth	Depth	Outlet	Velocity
	20.0 30.0 40.0 50.0 60.0 70.0 75.0 80.0 85.0 90.0 95.0	7.00 7.00 7.00 7.00 7.00 7.00 7.00 7.00	1.92 2.45 2.94 3.42 3.91 4.52 4.76 5.10 5.45 5.83 6.23	-14.40 -12.96 -10.94 -8.34 -5.17 -1.43 0.66 2.90 5.28 7.80 10.46	1.11 1.38 1.62 1.85 2.07 2.30 2.41 2.53 2.67 2.82 3.04	1.37 1.69 1.97 2.21 2.43 2.62 2.71 2.79 2.87 2.94 3.01	1.11 1.38 1.62 1.85 2.07 2.30 2.41 2.53 2.67 3.50 3.50	7.61 8.51 9.21 9.67 10.13 10.47 10.62 10.73 10.80 9.35 9.87

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY 48" STORM SEWER SPACE COMMAND HEADQUARTERS

PROGRAM INP DESCRIPTION							VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len Culvert Slo	Number (r on Cha oughness ss Coeff gth (fee	(1,2 or 3 art (Type coeffic cicient o et)	3) e of Culv cient (n- of Culver	vert Ent -value) ct Openi	rance)	· • • • • • • • • • • • • • • • • • • •	4.00 1 0.0130 0.20 4200.0 0.0090
Rate	ilwater	Inlet	Outlet	Depth	Critical Depth (ft)	Outlet	Velocity
(cfs)							

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY SAND CREEK 54" STORM SEWER NEAR WEST ENTRANCE TO BASE

DESCRIPTION	PUT DATA:	5					VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s F Entrance Lo Culvert Ler Culvert Slo	Number er on Cha Roughness oss Coeff ngth (fee	(1,2 or 2 art (Type s Coeffic ficient o et)	3) e of Culv cient (n- of Culven	vert Ent -value) rt Openi	ing	 • • • • • 	4.50 1 0.0130 0.20 1150.0 0.0150
PROGRAM RES Flow Ta Rate (cfs)	ilwater Depth	Inlet	Outlet	Depth	Critical Depth (ft)	Depth at Outlet (ft)	Velocity
	2.00	4.61	-9.84		2.94	2.01	14.52

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February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY SAND CREEK 30" STORM SEWER NEAR WEST ENTRANCE TO BASE

SCRIPTION	UT DATA:						VALUE
lvert Dia	meter (f	feet)		••••••	•••••	•••••	3.00
WA Chart	Number ((1.2 or 3	3)				1
ale Numbe	r on Cha	art (Type	e of Culv	vert Ent	crance)		1 0.0150
nning`s R trance Lo	ougnness	s Coerric	cient (n-	-value)		• • • • •	0.20
							1850.0
lvert Len lvert Slo	ne (feet	- ner for					0.0140
11010 010	pc (1000	por rot					
							========
OGRAM RES		** 7 4		Maxima 1	Omitical	Douth of	outlot
			Outlet		Critical	Outlet	Outlet
Rate (cfs)	Depth (ft)	Control				(ft)	(fps)
(013)	(10)						
10.0	1.00	1.38	-23.31	0.78	1.00	0.78	6.90
15.0	1.00	1.74	-22.46	0.95	1.23	0.95	7.75
20.0	1.00	2.07	-21.33	1.11	1.43	1.11	8.40
20.0 25.0	1.00	2.07	-21.33 -19.92	1.11 1.25	1.43	1.11 1.25	8.40 8.92
20.0 25.0 30.0	1.00 1.00 1.00	2.07 2.38 2.69	-21.33 -19.92 -18.22	1.11 1.25 1.39	1.43 1.61 1.77	1.11 1.25 1.39	8.40 8.92 9.35
20.0 25.0 30.0 35.0	1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99	-21.33 -19.92 -18.22 -16.24	1.11 1.25 1.39 1.52	1.43 1.61 1.77 1.92	1.11 1.25 1.39 1.52	8.40 8.92 9.35 9.72
20.0 25.0 30.0 35.0 40.0	1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30	-21.33 -19.92 -18.22 -16.24 -13.97	1.11 1.25 1.39 1.52 1.65	1.43 1.61 1.77 1.92 2.06	1.11 1.25 1.39 1.52 1.65	8.40 8.92 9.35 9.72 10.06
20.0 25.0 30.0 35.0 40.0 45.0	1.00 1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30 3.70	-21.33 -19.92 -18.22 -16.24 -13.97 -11.40	1.11 1.25 1.39 1.52 1.65 1.78	1.43 1.61 1.77 1.92 2.06 2.19	1.11 1.25 1.39 1.52 1.65 1.78	8.40 8.92 9.35 9.72 10.06 10.31
20.0 25.0 30.0 35.0 40.0 45.0 50.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30 3.70 4.00	-21.33 -19.92 -18.22 -16.24 -13.97 -11.40 -8.55	1.11 1.25 1.39 1.52 1.65 1.78 1.91	1.43 1.61 1.77 1.92 2.06 2.19 2.30	1.11 1.25 1.39 1.52 1.65 1.78 1.91	8.40 8.92 9.35 9.72 10.06 10.31 10.55
20.0 25.0 30.0 35.0 40.0 45.0 50.0 55.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30 3.70 4.00 4.42	-21.33 -19.92 -18.22 -16.24 -13.97 -11.40 -8.55 -5.41	1.11 1.25 1.39 1.52 1.65 1.78 1.91 2.04	1.43 1.61 1.77 1.92 2.06 2.19 2.30 2.41	1.11 1.25 1.39 1.52 1.65 1.78 1.91 2.04	8.40 8.92 9.35 9.72 10.06 10.31 10.55 10.76
$\begin{array}{c} 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0 \end{array}$	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30 3.70 4.00 4.42 4.88	-21.33 -19.92 -18.22 -16.24 -13.97 -11.40 -8.55	1.11 1.25 1.39 1.52 1.65 1.78 1.91	1.43 1.61 1.77 1.92 2.06 2.19 2.30 2.41 2.50	1.11 1.25 1.39 1.52 1.65 1.78 1.91	8.40 8.92 9.35
20.0 25.0 30.0 35.0 40.0 45.0 50.0 55.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30 3.70 4.00 4.42	-21.33 -19.92 -18.22 -16.24 -13.97 -11.40 -8.55 -5.41 -1.99	1.11 1.25 1.39 1.52 1.65 1.78 1.91 2.04 2.17	1.43 1.61 1.77 1.92 2.06 2.19 2.30 2.41	1.11 1.25 1.39 1.52 1.65 1.78 1.91 2.04 2.17	8.40 8.92 9.35 9.72 10.06 10.31 10.55 10.76 10.97
$\begin{array}{c} 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0\\ 65.0\end{array}$	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	2.07 2.38 2.69 2.99 3.30 3.70 4.00 4.42 4.88 5.38	-21.33 -19.92 -18.22 -16.24 -13.97 -11.40 -8.55 -5.41 -1.99 1.73	1.11 1.25 1.39 1.52 1.65 1.78 1.91 2.04 2.17 2.33	1.43 1.61 1.77 1.92 2.06 2.19 2.30 2.41 2.50 2.59	1.11 1.25 1.39 1.52 1.65 1.78 1.91 2.04 2.17 2.33	8.40 8.92 9.35 9.72 10.06 10.31 10.55 10.76 10.97 11.02

TRAPEZOIDAL CHANNEL ANALYSIS NORMAL DEPTH COMPUTATION

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY PROPOSED EAST SWALE SECTION OF SWALE EAST OF FAMILY HOUSING

PROGRAM INPUT DATA: DESCRIPTION	VALUE
Flow Rate (cubic feet per second) Channel Bottom Slope (feet per foot) Manning`s Roughness Coefficient (n-value) Channel Side Slope - Left Side (horizontal/vertical) Channel Side Slope - Right Side (horizontal/vertical) Channel Bottom Width (feet)	250.0 0.0025 0.0300 3.00 3.00 15.0
PROGRAM RESULTS: DESCRIPTION	VALUE
Normal Depth (feet) Flow Velocity (feet per second) Froude Number (Flow is Sub-Critical) Velocity Head (feet) Energy Head (feet) Cross-Sectional Area of Flow (square feet) Top Width of Flow (feet)	2.763.900.4820.242.99 $64.1131.53$

TRAPEZOIDAL CHANNEL ANALYSIS NORMAL DEPTH COMPUTATION

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY PROPOSED EAST SWALE MAXIMUM 100-YEAR FLOW IN SECTION EAST OF GOLF COURSE

	========
PROGRAM INPUT DATA: DESCRIPTION	VALUE
Flow Rate (cubic feet per second) Channel Bottom Slope (feet per foot) Manning's Roughness Coefficient (n-value) Channel Side Slope - Left Side (horizontal/vertical) Channel Side Slope - Right Side (horizontal/vertical) Channel Bottom Width (feet)	950.0 0.0025 0.0300 3.00 3.00 15.0
PROGRAM RESULTS: DESCRIPTION	VALUE
Normal Depth (feet) Flow Velocity (feet per second) Froude Number (Flow is Sub-Critical) Velocity Head (feet) Energy Head (feet) Cross-Sectional Area of Flow (square feet) Top Width of Flow (feet)	5.40 5.63 0.526 0.49 5.90 168.69 47.43

TRAPEZOIDAL CHANNEL ANALYSIS NORMAL DEPTH COMPUTATION

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY PROPOSED EAST SWALE SECTION OF SWALE EAST OF GOLF COURSE

	=====================
PROGRAM INPUT DATA: DESCRIPTION	VALUE
Flow Rate (cubic feet per second) Channel Bottom Slope (feet per foot) Manning's Roughness Coefficient (n-value) Channel Side Slope - Left Side (horizontal/vertical) Channel Side Slope - Right Side (horizontal/vertical) Channel Bottom Width (feet)	500.0 0.0025 0.0300 3.00 3.00 15.0
PROGRAM RESULTS: DESCRIPTION	VALUE
Normal Depth (feet) Flow Velocity (feet per second) Froude Number (Flow is Sub-Critical) Velocity Head (feet) Energy Head (feet) Cross-Sectional Area of Flow (square feet) Top Width of Flow (feet)	3.94 4.74 0.505 0.35 4.29 105.55 38.62

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY 60" DIVERSION STORM SEWER PROPOSED DRAINAGE AREA M

	:===
PROGRAM INPUT DATA: DESCRIPTION	LUE
Entrance Loss Coefficient of Culvert Opening)130)2
Rate Depth Inlet Outlet Depth Depth Outlet Veloc	clet city fps)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	9.59 9.98 0.36 0.58 0.69 1.78 2.47 3.22

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY 72 PROPOSED DRAINAGE AREAS H AND C

ESCRIPTION	PUT DATA: I						VALU
ulvert Dia HWA Chart	meter (f	eet)					6.00
HWA Chart	Number ((1, 2 or 3)	3)				1
cale Numbe	er on Cha	art (Type	e of Culv	vert Enu	crance)		1
anning`s_F	loughness	s Coeffic	cient (n-	-value)	• • • • • • • • • • • • • • • • • • •		0.013
ntrance Lo	SS COEII	icient o	or curves	rt Open.	Lng		0.02
ulvert Ler ulvert Slo	igtn (iee	t)	 . . .				0.007
urvert bit	ppe (reed	- per 100				ं	0.007
	*======						
ROGRAM RES	SULTS:						
Flow Ta	ilwater	Headwat	cer (ft)	Normal	Critical	Depth at	Outle
Rate	Depth		Outlet	Depth	Depth	Ōutlet	Velocit
(cfs)	(Ît)	Control	Control	(ft)	(f t)	(ft)	(fps
100.0	4.00	3.84	-6.57		2.69	2.14	
120.0	4.00	4.29	-5.96		2.96	2.36	
140.0	4.00	4.73	-5.27		3.21	2.57	
		5.17	-4.50	2.77	3.44	2.77	
160.0	4.00			~ ~ ~ ~ ~ ~			
160.0 180.0	4.00	5.60	-3.65	2.97	3.66	2.97	
160.0 180.0 200.0	4.00	5.60	-2.73	3.16	3.86	3.16	13.2
160.0 180.0 200.0 220.0	4.00 4.00 4.00	5.60 6.03 6.47	-2.73 -1.72	3.16 3.35	3.86 4.06	3.16 3.35	13.2 13.5
160.0 180.0 200.0 220.0 240.0	4.00 4.00 4.00 4.00	5.60 6.03 6.47 6.91	-2.73 -1.72 -0.63	3.16 3.35 3.53	3.86 4.06 4.24	3.16 3.35 3.53	13.2 13.5 13.8
160.0 180.0 200.0 220.0 240.0 260.0	4.00 4.00 4.00 4.00 4.00	5.60 6.03 6.47 6.91 7.55	-2.73 -1.72 -0.63 0.54	3.16 3.35 3.53 3.73	3.86 4.06 4.24 4.42	3.16 3.35 3.53 3.73	13.2 13.5 13.8 14.0
160.0 180.0 200.0 220.0 240.0 260.0 280.0	$\begin{array}{c} 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\end{array}$	5.60 6.03 6.47 6.91 7.55 7.92	-2.73 -1.72 -0.63 0.54 1.80	3.16 3.35 3.53 3.73 3.92	3.86 4.06 4.24 4.42 4.58	3.16 3.35 3.53 3.73 3.92	13.2 13.5 13.8 14.0 14.3
160.0 180.0 200.0 220.0 240.0 260.0 280.0 300.0	$\begin{array}{c} 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ \end{array}$	5.60 6.03 6.47 6.91 7.55 7.92 8.50	-2.73 -1.72 -0.63 0.54 1.80 3.13	3.16 3.35 3.53 3.73 3.92 4.31	3.86 4.06 4.24 4.42 4.58 4.73	3.16 3.35 3.53 3.73 3.92 4.31	13.2 13.5 13.8 14.0 14.3 13.7
160.0 180.0 200.0 220.0 240.0 260.0 280.0	$\begin{array}{c} 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\\ 4.00\end{array}$	5.60 6.03 6.47 6.91 7.55 7.92	-2.73 -1.72 -0.63 0.54 1.80	3.16 3.35 3.53 3.73 3.92	3.86 4.06 4.24 4.42 4.58	3.16 3.35 3.53 3.73 3.92	13.2 13.5 13.8 14.0 14.3 13.7

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY 48" STORM SEWER PROPOSED DRAINAGE AREA K

ESCRIPTION							VALU
ulvert Dia HWA Chart cale Numbe anning`s R ntrance Lo ulvert Len ulvert Slo	Number (r on Char oughness ss Coeff ath (fee	l,2 or 3 rt (Type Coeffic icient o t)) of Culv ient (n- of Culver	vert Ent value) t Openi	rance)		4.00 1 0.013 0.02 2800.0 0.005
ROGRAM RES Flow Ta Rate (cfs)	ilwater Depth	Inlet	er (ft) Outlet Control	Depth	Critical Depth (ft)	Outlet	Outle Velocit (fps
$\begin{array}{c} 20.0\\ 25.0\\ 30.0\\ 35.0\\ 40.0\\ 45.0\\ 50.0\\ 55.0\\ 60.0\\ 65.0\\ 70.0\\ 75.0\\ 80.0\\ 85.0\\ 90.0\\ 95.0\\ 100.0\\ 110.0\\ 120.0 \end{array}$	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	1.82 2.06 2.29 2.51 2.72 2.92 3.12 3.32 3.52 3.52 3.72 3.92 4.12 4.32 4.52 4.52 4.52 4.52 4.52 5.06 5.22 5.73 6.31	$\begin{array}{c} -10.76 \\ -10.36 \\ -9.88 \\ -9.34 \\ -8.74 \\ -8.06 \\ -7.32 \\ -6.50 \\ -5.61 \\ -4.66 \\ -3.63 \\ -2.54 \\ -1.37 \\ -0.13 \\ 1.18 \\ 2.56 \\ 4.01 \\ 7.13 \\ 10.52 \end{array}$	1.36 1.49 1.62 1.74 1.86 1.98 2.10 2.21 2.33	1.32 1.48 1.62 1.76 1.89 2.01 2.23 2.33 2.43 2.53 2.62 2.71 2.79 2.88 2.95 3.03 3.17 3.30	1.21 1.36 1.49 1.62 1.74 1.86 1.98 2.10 2.21 2.33 2.44 2.56 2.68 2.93 3.07 3.22 3.17 3.30	8.2 8.4 8.5 8.5 9.0 9.0 9.0 9.0

February 4, 1992 PAFB BASEWIDE DRAINAGE STUDY 54" STORM SEWER PROPOSED DRAINAGE AREA H

PROGRAM INP DESCRIPTION	UT DATA:						VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len Culvert Slo	Number (r on Cha oughness ss Coeff gth (fee	(1,2 or 3 art (Type s Coeffic ficient c et)	e of Culv cient (n- of Culver	vert Ent -value) rt Openi	rance)		4.50 1 0.0130 0.02 1500.0 0.0050
PROGRAM RES Flow Ta Rate (cfs)	ilwater Depth	Headwat Inlet Control	Outlet	Depth	Critical Depth (ft)	Outlet	Velocity
$ \begin{array}{r} 50.0\\ 60.0\\ 70.0\\ 80.0\\ 90.0\\ 100.0\\ 110.0\\ 120.0\\ 130.0\\ 140.0\\ 150.0\\ 160.0 \end{array} $	8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.00	2.93 3.27 3.61 3.94 4.28 4.61 4.94 5.34 5.77 6.10 6.56 7.04	$ \begin{array}{r} 1.62\\ 2.11\\ 2.70\\ 3.37\\ 4.13\\ 4.98\\ 5.92\\ 6.96\\ 8.08\\ 9.29\\ 10.59\\ 11.98\end{array} $	2.26 2.45 2.62 2.82 3.02 3.22 3.45 3.71	2.05 2.25 2.44 2.62 2.78 2.94 3.09 3.22 3.36 3.48 3.59 3.70	$ \begin{array}{r} 1.86\\ 2.07\\ 2.26\\ 2.45\\ 2.62\\ 4.50$	9.04 9.37 6.29 6.92 7.55 8.17 8.80 9.43

February 3, 1992 PAFB BASEWIDE DRAINAGE STUDY OTIS STREET COLLECTOR 21" SECTION BETWEEN ENT AVE AND HAMILTON AVE

DESCRIPTION	UT DATA:						VALUE
Culvert Dia FHWA Chart Scale Numbe Manning`s R Entrance Lo Culvert Len Culvert Slo	Number (er on Cha Roughness oss Coeff ogth (fee	(1,2 or 3 art (Type s Coeffic ficient o et)	3) e of Culv cient (n- of Culver	vert Ent -value) ct Openi	rance)	, , ,	1.75 1 0.0150 0.20 1200.0 0.0080
	ilwater Depth		Outlet	Depth	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
Rate (cfs)	(10)						

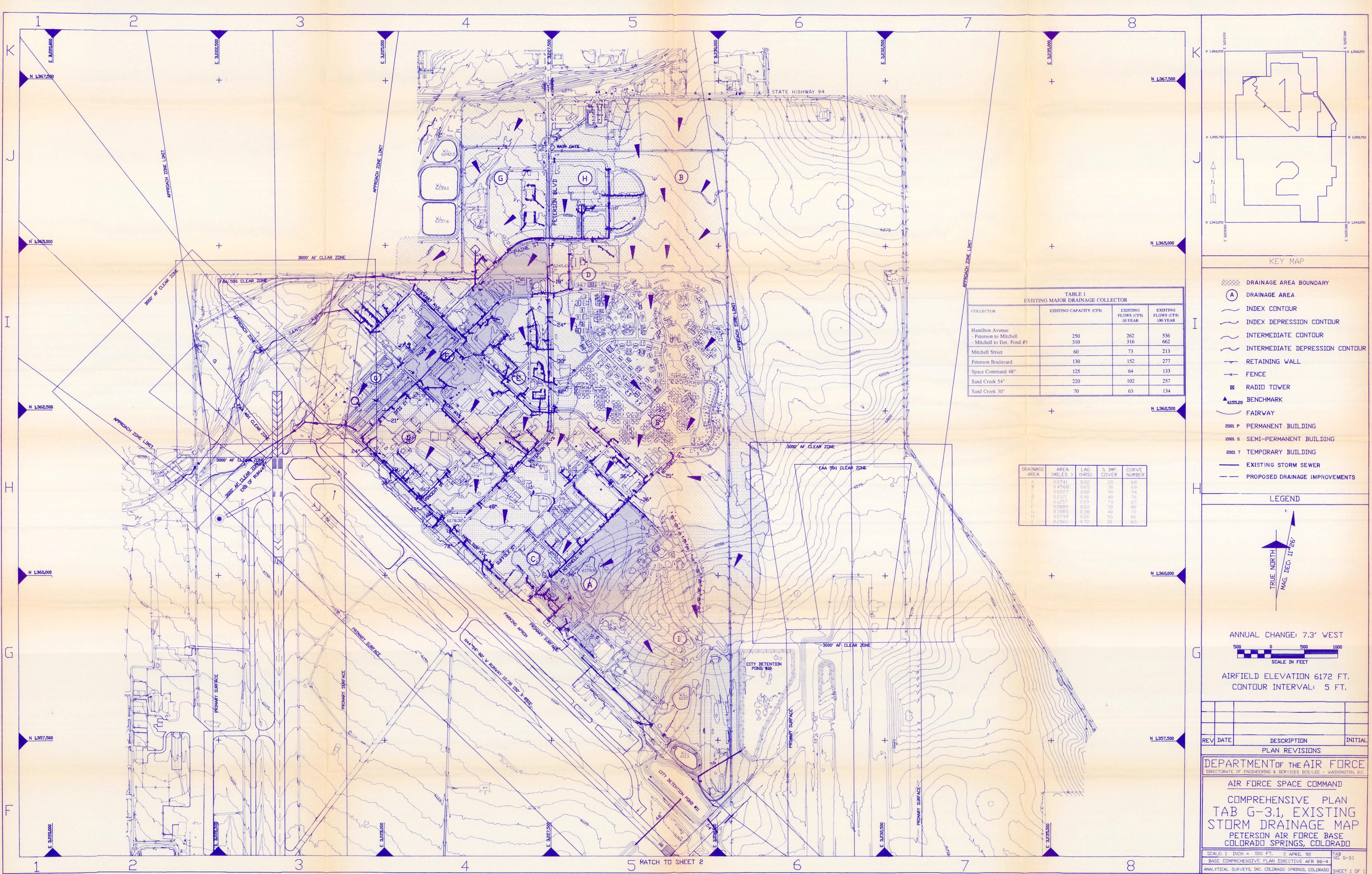
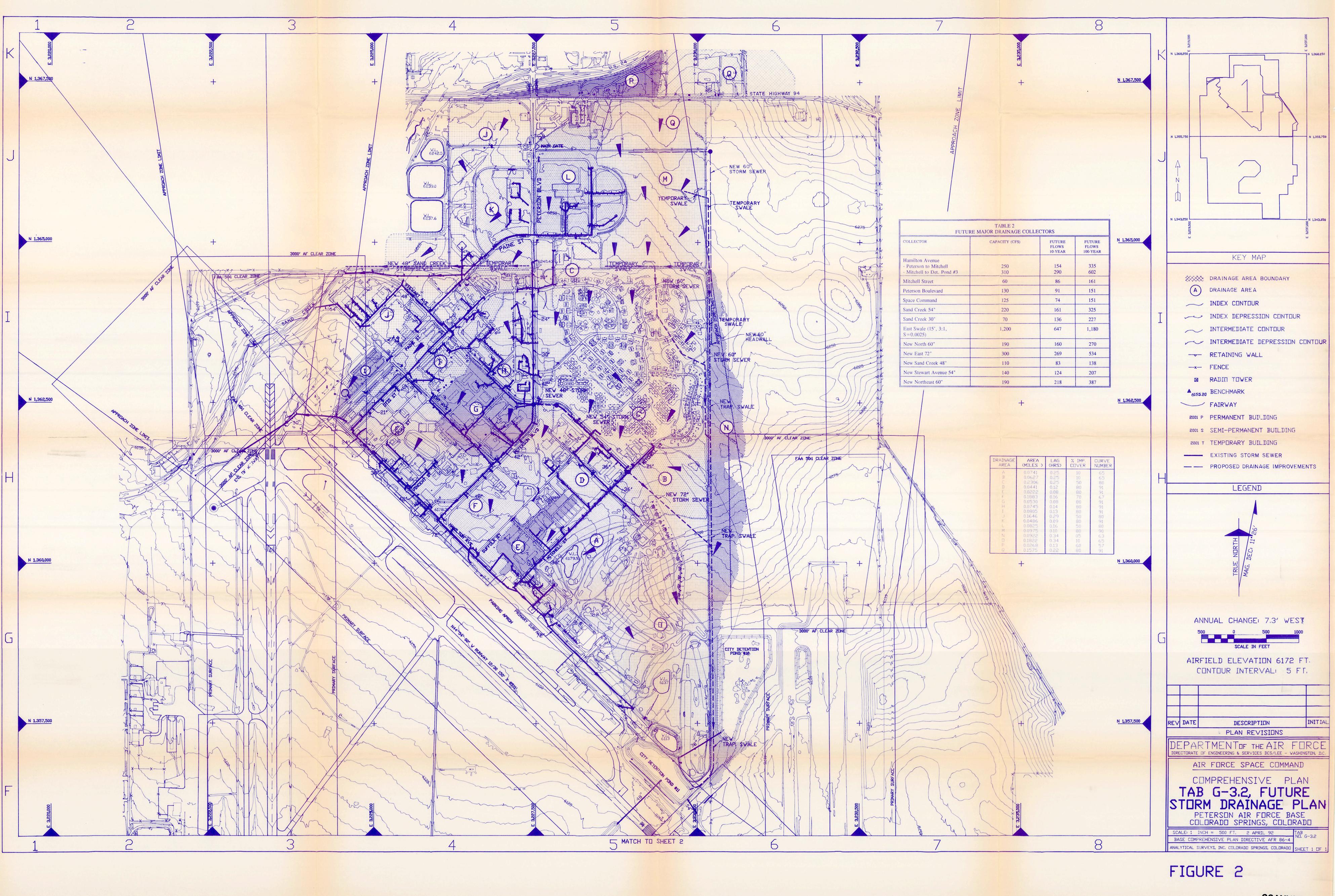


FIGURE 1

SCANNED



SCANNED