SANTA CLARA COUNTY FLOOD CONTROL
AND WATER DISTRICT

# RECONNAISSANCE REPORT
# ON
# FLOODS
# OF
# JANUARY 21-24, 1967



January 1967

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## Introduction

This reconnaissance report on the floods of January 21 through 24 is issued to summarize the principal findings of rainfall and runoff measurements, together with limited damage evaluations. In the interest of producing a timely summary, much of the data has been obtained without removing charts from recorders and is presented herein without the usual careful checking and analysis. Therefore, information in this report should be regarded as preliminary and subject to future revision.

## Precipitation

After 42 days of negligible rainfall, a typical winter storm moved inland carrying rain to the Bay Area and Santa Clara County early Friday evening, January 20. By Saturday evening the total rainfall for the 24 hour period varied from 2½ to 4 inches in San Jose to 10 inches on Mt. Loma Prieta. On the valley floor, maximum rainfall intensities occurred on January 21 and were generally of a 10-year recurrence interval intensity for the 24 hour duration. Typical rainfall timing and amounts are illustrated by Table 1 and Figures 1, 2 and 3 in the Appendix hereto for a number of stations in Santa Clara County. The isohyetal map of Figure 1 shows the average rainfall distribution for the storm.

The total rainfall for the four day period from January 21 to 24, 1967 on the Santa Clara Valley floor and in the foothills averaged from 4.5 to 5 inches. It is interesting to note that the average rainfall during the six day storm period that resulted in the 1955 flood was about 8 inches. The maximum total value recorded during the four day period of the current storm was 12 inches at Mt. Loma Prieta. This is considerably less than that received in the 1955 storm. For example, the Los Gatos Creek watershed above Lexington Dam received 24 inches of rainfall in a six day period, with 12 inches occurring in one day.

One additional and very important difference between the 1955 flood and the one experienced this year is that in 1955 the heavy precipitation period was preceded by a two week period of almost continuous moderate rainfall. Antecedent precipitation in 1955 during the two week period prior to the flooding averaged from 3 to 6 inches. Undoubtedly the 42-day period of no rainfall preceding this recent event helped reduce the runoff into the larger streams and resulted in lower peak discharges.

## Stream Flow

By 8:00 P.M. on Saturday, January 21, most streams in the County had risen significantly and some unimproved streams began to overflow. The water level in the Uvas and Pacheco Reservoirs

had risen about 15 feet since the storm's inception. During the storm period on Saturday and continuing through Sunday, January 22, several crews from the District made measurements of stream flows. These data, presented in Table 2 in the Appendix, will be used to calibrate the District's stream gaging stations as well as augment hydrology studies.

Peak flood flows were measured by District personnel on a number of streams; other values were obtained from preliminary determinations made from recorded data by the United States Geological Survey and the Santa Clara Valley Water Conservation District. These values are summarized in Table 3 of the Appendix and indicate that the peak values experienced on the weekend of January 21 - 22, 1967 were substantially less than the previous maximum values registered in 1955. The January, 1967 peak discharges for the San Francisquito, Matadero, Saratoga, Wildcat, Penitencia and Uvas Creeks are plotted on the respective flood-frequency curves shown on Figures 4 through 9 of the Appendix. From these relationships, the peak flood flows recorded during the period from January 21 to 24, 1967 was on the order of a 9 to 15 year recurrence interval flood. That is, flows of this magnitude can be expected to be equaled or exceeded on the average of once in 9 to 15 years.

Typical discharge hydrographs for five streams during the flood period are shown on Figures 10 through 12 of the Appendix.

## Flooding

During the period of maximum runoff on January 21 and 22, District crews were, in addition to measuring flows, noting locations of flood damage and overflow. These data, together with observations made early in the week of January 23 are summarized in the following paragraphs by Flood Control Zones. Photographs of flooded areas and flood damages are presented in the Appendix following Figure 12.

### Northwest Zone

The peak flow of 4,000 cfs in San Francisquito Creek resulted in considerable erosion damage along the Creek, but fortunately did not overflow the banks. The flow caused a surcharge (water surface above the soffit or bottom of the bridge deck) on the Pope - Chaucer Street bridge, but was contained within the Creek banks. Downstream of this point, the flow came near topping the bank (less than one foot of freeboard along Woodland Avenue near Bayshore Road) as a result of constrictions in the channel cross-section caused by trees and by rubble bank protection dumped in the Creek by private property owners without benefit of engineered design. A house

just upstream of the University Avenue bridge at the end of Palm Street was threatened by the high water and the lower floor was under about three feet of water. The house is in the stream channel and creates a potential hazard; it could collapse into the flooded stream, block the flow at downstream bridges, and cause overbank flooding.

Just downstream of the Willow Road - Sand Hill Road bridge, serious bank erosion on San Francisquito Creek threatened a large apartment house complex. This erosion damage was repaired by the Flood Control District. Privately constructed bank protection works along Woodland Avenue in Menlo Park failed and unauthorized dumped rubble bank protection caused serious erosion of the opposite bank in two areas.

The cooperative tree clearing program of the Santa Clara County Flood Control and Water District and the San Mateo County Flood Control District in this Creek apparently paid dividends as no large debris that might cause log jams at overtaxed bridges was noted by the maintenance forces stationed by the City of Palo Alto at critical locations.

Flood flows in Matadero Creek caused surcharge of the Greer Road crossing about one-quarter mile upstream of Bayshore Freeway;

however, there was about one foot of freeboard in the lined channel. This high stage probably resulted from high tides and inadequate storage capacity in the Palo Alto Flood Basin. The lower reaches of Adobe and Barron Creeks handled the peak flood flows without difficulty, but the flows contributed significantly to the filling of the area reserved for the Palo Alto Flood Basin.

The high flows in the main channels of Adobe, Barron, and Matadero Creeks resulted in backing up of street drainage in Palo Alto causing flooding of streets and front yards in many areas.

Recent improvements on Stanford Channel, Permanente Creek, Heney Creek, and Hale Creek functioned well. Upstream of these improved sections minor road inundation, erosion and sheet flooding was noted on tributaries of Permanente and Heney Creeks.

North Central Zone

In the lower reaches of this zone, all natural channels are improved, and these improved channels functioned well. Areas discharging to the uncompleted reaches of Sunnyvale East Outfall Channel experienced some local ponding.

Flood flows at stream gages on Wildcat Creek (340 cfs), Upper San Tomas Aquino Creek (220 cfs), and Lower San Tomas

Aquino Creek (300 cfs) were measured by District personnel. Peak flows had passed at time of measurement, but peaks can be computed from the information gathered. Erosion damage was experienced at the Railroad Bridge over the unimproved section of San Tomas Aquino Creek and in the recently constructed portion of Calabazas Creek between Wolfe Road and Pomeroy Avenue. Only minor flooding due to clogged culverts and inlets was encountered in transporting the flood flows in most channels of this zone to the downstream improved channels. However, Calabazas Creek was near overbank stages at many points and several areas adjacent to the unimproved portion of Smith Creek were subject to shallow flooding.

Central Zone

The Santa Clara Valley Water Conservation District reservoirs in this zone were partially empty at the beginning of the storm and this fact contributed materially to the reduced peak flows in a number of the major streams. By the end of the storm, however, Almaden Reservoir had filled and was discharging over its spillway.

Flows were measured on several minor tributaries of the Guadalupe River including Golf Creek (320 cfs) and Greystone Creek (300 cfs). The discharges given were those at time of

measurement, and peaks will be computed from the data obtained. The peak discharge on the Guadalupe River at Santa Clara Street was 5,100 cfs. This flow did not include any significant discharge from Los Gatos Creek since Lexington Dam did not discharge over the spillway. However, the discharge from the 6.5 square mile area downstream from Lexington Dam was sufficiently great to inundate an inadequate culvert section in Vasona Park with resultant damage to the roadway and adjacent improved park area.

Recent improvements of Golf and Greystone Creeks operated without difficulty, but suffered some erosion damage at several points where the newly cut channel had not yet stabilized.

East Zone

In recent years, several new stream gages have been installed on East Zone streams in anticipation of the increasing need for hydrologic data. During this past storm, peak flow measurements were obtained on Silver Creek @ Payshore Hwy. (950 cfs) and Berryessa Creek (500 cfs), and Fisher Creek (530 cfs). The peak at the Berryessa gage near Calaveras Road was considerably reduced by over-bank flooding upstream.

As shown on the rainfall isohyetal map, Figure 1, the east zone experienced 2 to 4 inches more precipitation than the Valley floor. As a result, local drainage was severely taxed and local

ponding and sheet flooding occurred. Typical of such problems was the flooding and deposition of silt in the Berryessa area of San Jose where inlets to Sierra Creek, an unimproved channel, became clogged with silt and debris resulting in sheet flooding, ponding and resultant silting of several intersections including all of Mauna Kea Lane from Zion Lane to Mattos Avenue. Also Crosley Creek caused Cliff and Ott Drives to suffer similar sheet flooding due to clogged storm drain inlets. This overflow continued down Piedmont Road to Mattos Avenue and Ruskin Drive adding to the damage on Mauna Kea Lane.

With the District's improvement of Sierra Creek scheduled for construction this year, these problems should be eliminated except for the constant maintenance which will have to be directed toward the silt and debris problem.

Similar minor flooding and overtopping of road culverts occured at the Jacklin and Oakland Roads crossing of Calera Creek and at Los Coches Creek near Piedmont Road. At the latter location, a clogged culvert resulted in flood damage to several homes adjacent to and on the both sides of Piedmont Road. Water sheet flooded across Piedmont Road approximately one foot in depth during the height of the storm.

Penitencia Creek registered a peak flow of 1,600 cfs at 10:00 P.M. on January 21st. This flow, coursing downstream,

topped the existing unimproved channel in approximately eight locations between the gaging point (where it is contained in a rather deep channel) and its confluence with Coyote Creek. The Noble Avenue bridge became partially blocked and was topped by at least six inches of flow. Downstream near Penitencia and Piedmont Roads a private bridge was topped and adjacent banks were subject to sheet flow with resultant flooding of at least one adjacent home.

At Capitol Avenue, the flow in Penitencia Creek topped the existing bridge to a depth of about one foot. Just downstream of where Penitencia Creek doubles back under Mabury Road a series of breaks occurred on both the left and right banks. The water from the break in the right bank (looking downstream) continued northwesterly and parallel to the creek channel and damaged row crops in the area between Berryessa Road and Mabury Road along King Road. This overflow crossed King Road, together with water from an additional break-out at the Penitencia Creek culvert under King Road, and resulted in severe inundation of a chrysanthemum farm and residences located at the southerly corner of Berryessa and King Roads. Water in the latter reach was about 1.5 to 2 feet deep as it coursed through this area and crossed Berryessa Road. Some additional silting and minor

flooding also occurred on the commerical property situated southerly of Berryessa Road between Coyote Creek and the Western Pacific Railroad tracks. Water that sheet flooded across the railroad tracks was that which topped King Road south of the Penitencia Creek culvert, together with additional topping of the left bank downstream of King Road.

Berryessa Creek topped its banks at several locations. Most of the overtopping occurred in the reach from Morrill and Cropley Avenue downstream to Landess Avenue. At Morrill Avenue, a strawberry farm was inundated by a breakout in the left bank which flooded across Morrill Avenue leaving, in alternate locations, eroded and silt filled sections on both sides of Morrill Avenue.

The Cropley Avenue culvert was inundated and the overflow seriously undermined one of the headwalls causing the downstream end to settle. The Berryessa Creek overflow crossed Cropley Road and entered Junewood Avenue, coursing down the street flooding adjacent streets, and leaving considerable debris and silt. The overflow continued on to Capewood Lane flooding front yards and crossing over Berryessa Creek on a temporary access fill to flood Sierrawood Drive and Trimble Road. Further downstream, the Landess Avenue culvert was partially obstructed with debris and sheet flow from Berryessa Creek topped Landess Avenue to a depth of

about six inches over a 200-foot width.

South Zone

The storm caused no flooding of consequence in Morgan Hill from the Little Llagas Creek. However, downstream at the Watsonville Road, flood waters ponded on the northerly side of the road until they topped the road. During the peak flow, the Little Llagas Creek flood water reached two feet in depth in sheet flow across Watsonville Road. The mushroom farm on the south side of Watsonville Road was inundated to a depth of one foot.

The Llagas Creek, with Chesbro Reservoir only partially full, contained the flood runoff with ample freeboard. The West Branch of the Llagas (which is actually a tributary of Miller Slough) topped Fitzgerald Avenue south of San Martin to a depth of about one foot over several thousand feet and was never completely contained in the channel from this crossing on the north to Day Road on the south. There was considerable sheet flooding in the area bounded by Day Road, Kern Avenue and a westerly extension of Ronan Avenue. This flooding topped Kern Avenue and resulted in the evacuation of several homes in this area on at least two occasions during this storm.

Although there was some minor intersection flooding in Gilroy, the main channel of Miller Slough performed satisfactorily.

At the Gavilan College Site, some distress was experienced at one of the existing check dams. The shear failure of the compacted fill will have to be removed and replaced. The Miller Avenue Ford of the Uvas Creek was entirely washed out for a width of 100 feet. In the Soap lake area, the Carnadero Creek broke through its banks and added to the inundation in this area.

Minor roadway culvert flooding occurred on the east side of the southern part of the valley as several tributaries carried sufficient debris out of the foothills to clog inadequate culverts. Typical of such flooding was the topping of Foothill Road between Tennant and Maple Avenues.

## Flood Damage Summary

Damages to public facilities and private property by flood waters, siltation, and erosion during the January 21-24, 1967 storm occurred at scattered locations throughout Santa Clara County, with the greatest problems in the Berryessa-Milpitas area.

Various public agencies throughout the County dispatched crews for emergency work; much of it on overtime because the two peak flows of the storm occurred during the early hours of January 22, 23 and 24. It became necessary to patrol a number of bridges and culverts to remove debris that might otherwise cause blockage and

overtopping. There were emergency evacuations of several houses in the eastern part of the North Santa Clara Valley and in the Gilroy area of the South Santa Clara Valley, however, all evacuations were because of convenience, as depth of flood flows in no case was great enough to endanger life.

Reports from various public agencies indicate that varying amounts of emergency work were required; probably the greatest being in the City of San Jose where there was widespread clogging of storm drains, street flooding and cleanup of silt deposition after the water subsided. The County Department of Public Works dispatched numerous crews to repair road damage and to set up warning signs and barricades during the period of inundation of several roads, and also perform the usual tasks of clearing floating debris from bridges and culverts that are under County jurisdiction. The Cities of Cupertino, Palo Alto, Mountain View, Sunnyvale, Santa Clara, Los Gatos, Saratoga, Morgan Hill, Gilroy, and Los Altos reported various amounts of emergency work required to keep culverts operating, unplug storm drains and clean up other areas after subsidence of flow. The City of Palo Alto probably had the most problems with bridges in that it was necessary to patrol some of the bridges on San Francisquito and Matadero Creeks for almost 24 hours to be certain that flow would continue to pass through them. In addition, the streets in the low lying areas which drain into Matadero Creek near Bayshore Highway were inundated

because storm drains became inoperable due to high water in the main channels. Additional flooding was experienced again on January 30 when the early morning light rains filled the storm drains, and the high water in the Palo Alto Flood Basin caused a backwater which would not allow the storm drains to operate.

The City of Milpitas, in addition to the usual storm drain and culvert problems, reported slide conditions on Calaveras Road which reoccurred several times and required return cleanup projects by the maintenance crews.

The Flood Control District utilized County Department of Public Works Personnel from the County Corporation Yards to perform emergency services along creeks where access could be obtained. Many problems of erosion and blockage by fallen trees still remain and rectification cannot be performed until the flow in the streams is sufficiently reduced to allow passage of equipment along the stream bottom. A list of the problem areas noted by the Flood Control District Maintenance Section is contained in the District's Office Report on this storm.

At this writing, considerable damage repair remains to be completed upon which cost estimates have not yet been made and costs of emergency work during the storm have not yet been accurately compiled. However, the accompanying tabulation of

damages represents a conservative estimate of damage and additional work suffered by public entities in Santa Clara County. The total estimated damages for the storm of January, 1967 will be in excess of $175,000.

Damages to private property ocurred throughout the County with flooded houses and crop land or crops themselves damaged. At the request of the District, a report of this latter damage is being prepared by the Santa Clara County Agricultural Commissioner. A preliminary estimate of this damage in the North County area alone is in excess of $20,000.

## Summary and Conclusions

The 90 hours of storm, with rainfall ranging from 3½ to 12 inches occurring during the period of January 20-24, 1967 resulted in minor to moderate flooding on major creeks of the County. The magnitude of the flood was appreciably lightened because of two important and somewhat interrelated factors. First, the absence of rainfall during the preceding 42 days resulted in relatively dry ground conditions thereby allowing greater absorption of rainfall. Second, the conservation reservoirs were low, providing considerable storage for accumulation of runoff. Flood damage and flood mitigation work is estimated to have cost more than $175,000 for the ten day period from January 20 through January 30.

COSTS OF EMERGENCY FLOOD WORK AND
REPAIRS IN SANTA CLARA COUNTY
January, 1967 Storm

| Agency | Nature of Work | Estimated and/or actual cost |
|---|---|---|
| San Jose | Bridge patrol, storm drain blockage, silt and debris clean-up | $ 50,000 |
| Palo Alto | Bridge patrol, debris removal and clean-up culvert patrol, storm drain blockage, slide clean-up on street | 7,000 |
| Cupertino | Storm drain blockage, silt clean-up in streets | 500 |
| Sunnyvale | Silt and debris clean-up from ponding near storm drain outlets | 500 |
| Morgan Hill | Culvert patrol, silt clean-up | 500 |
| Los Gatos | Culvert patrol, storm drain failure silt and debris removal | 1,000 |
| Los Altos | Emergency crews with no estimate of road degradation | 1,000 |
| Milpitas | Culvert patrol, storm drain blockage and slide clean-up | 1,500 |
| Saratoga | Erosion of gutters, ditches, slide clearance | 2,300 |
| SCVWCD | Debris blockage in percolation water canals | 200 |
| Santa Clara County (various depts.) | Road erosion, emergency crews, barricades and culvert maintenance | 25,000 |
| SCCFC&WD | Culvert and bridge cleanout, stream bank erosion control, levee repair | 80,000 |
| | TOTAL | $169,500 |

Notes:

1. Preliminary estimate as of January 30, 1967.
2. Cost of damage prevention and repair work undertaken by private companies and individuals is not included in the above sum.

Local ponding and flooding of street intersections was commonplace as the intensity of rainfall taxed many local storm drains. In addition, valley floor storm drain inlets were frequently plugged by floating debris, and drains around the perimeter of the valley were plugged by silt and detritus eroded from the nearby hills.

City, County and local flood relief crews responded quickly to the need for emergency repairs. However, it was apparent that what was needed was (a) additional warning time and (b) better definition of the locale where a threat does exist. It is necessary that the status of rainfall and runoff together with frequent information of water levels in existing holding basins and reservoirs are a necessity if proper flood control mitigation work is to be timely and effective. With growing urbanization and the probability of floods of larger magnitude, greater damages can be expected until the major streams and most of the minor ones are improved. In order to keep this damage at a minimum, it is recommended that implementation of a County-wide flood warning network system begin as soon as possible and that channel improvement work be continued at a rapid pace.

# APPENDIX

C O N T E N T S

Tables 1 through 3

Figures 1 through 12

Photographs

TABLE 1
TOTAL RAINFALL
JANUARY 20-24, 1967

| Station | Operator | Precipitation-Inches |
|---|---|---|
| Pick Lab | S.C.C.F.C.&W.D. | 11.3 |
| Dahl Ranch | S.C.C.F.C.&W.D. | 9.5 |
| San Jose | City of San Jose | 3.13 |
| Morgan Hill | Estimated | 7.7 |
| Santa Clara | Estimated | 3.8 |
| Los Gatos | Estimated | 7.1 |
| Guadalupe Reservoir | S.C.V.W.C.D. | 10.35 |
| Almaden Reservoir | S.C.V.W.C.D. | 12.10 |
| Lexington Reservoir | S.C.V.W.C.D. | 10.22 |
| Coyote Reservoir | S.C.V.W.C.D. | 6.54 |
| Stevens Creek Reservoir | S.C.V.W.C.D. | 8.78 |
| Alamitos Reservoir | S.C.V.W.C.D. | 5.57 |
| Anderson Reservoir | S.C.V.W.C.D. | 6.79 |
| Calero Reservoir | S.C.V.W.C.D. | 7.18 |
| Vasona Reservoir | S.C.V.W.C.D. | 6.99 |
| Maryknoll | S.C.C.F.C.&W.D. | 9.52 |
| Loma Prieta | S.C.C.F.C.&W.D. | 12.6 |
| Palo Alto | City of Palo Alto | 5.27 |
| Gilroy | Estimated | 4.85 |
| Haskins Ranch | S.C.C.F.C.&W.D. | 7.1 |
| UTC | S.C.C.F.C.&W.D. | 5.03 |
| Curtner | S.C.C.F.C.&W.D. | 4.9 |

Storm Duration is from 2:00 P.M. January 20th to 8:00 A.M. January 24th (90 Hours).

TABLE 2
FLOW MEASUREMENTS
January 21-24, 1967

| Station | Date | Time | Stage Feet | Flow cfs | Remarks |
|---|---|---|---|---|---|
| Permanente | 22 | 0200 | 1.85 | 70 | Upper - #166580 |
| Fisher | 22 | 0500 | 4.60 | 410 | Monterey Road - #171050 |
| Matadero | 24 | 1130 | 1.60 | 100 | Weaverly Road - #166000 |
| San Tomas | 21 | 1530 | 2.55 | 220 | Upper - #169070 |
| San Tomas | 22 | 0030 | 1.95 | 300 | Lower - #169300 |
| Silver | 21 | 2300 | 8.50 | 630 | At Bayshore - #172080 |
| Wildcat | 21 | 1630 | 3.90 | 340 | S.P.R.R. bridge - #169200 |
| Golf | 21 | -- | 2.8 | 320 | Springs Road, Slope-Area Est. |
| Greystone | 24 | -- | 3.8 | 300 | Near Confl. with Alamitos, Slope-Area Est. |
| Matadero | 21 | -- | 4.2 | 720 | Middlefield Road, Slope - Area Est. |

Note: All measurements were computed from current meter measurements except as otherwise noted. The flows obtained by the current meter are not the peak flows of the flood.

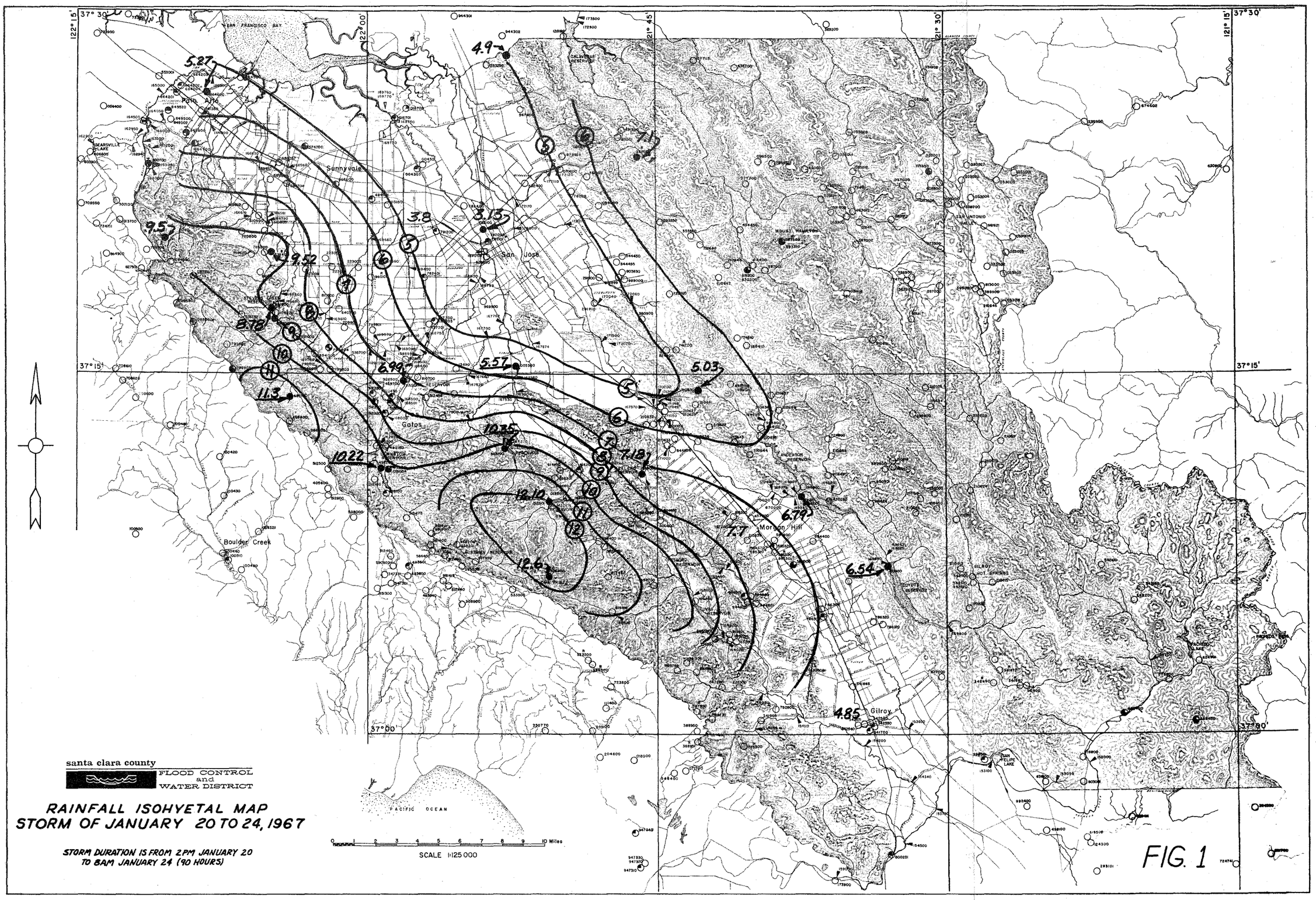
TABLE 3

SUMMARY OF FLOOD FLOWS
JANUARY 20-24, 1967

| Stream | Drain. Area | Record | Previous Max. Date | Ht. | cfs | CSM | Max. - Jan. '67 Date | Ht. | cfs | CSM | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| San Francisquito Creek Below Ladera Dam Site | 28.5 | 1961 | Jan. 1963 | 16.0 | 2,880 | 101 | 21 | 14.8 | 2,800 | 98 | |
| San Francisquito Creek At Stanford Universtiy | 37.5 | 1930-41 1950 | Dec. 1955 | 13.6 | 5,560 | 147 | 2P-22 | 9.2 | 4,250 | 114 | |
| Matadero Creek at Palo Alto | 7.2 | 1952 | Dec. 1955 | 9.6 | 850 | 120 | 4:30A 24 | 4.68 | 810 | 110 | |
| Hale Creek At Los Altos | 3.0 | 1966 | -- | -- | -- | -- | 8P-21 | 3.25 | 500 | 170 | |
| Upper Permanente Creek At Los Altos | 7.5 | -- | -- | -- | -- | -- | 8P-21 | 2.15 | 110 | 15 | |
| Saratoga Creek At Saratoga | 9.2 | 1933 | Dec. 1955 | 6.4 | 2,730 | 300 | - 21 | 4.32 | 500 | 54 | |
| Wildcat Creek at SPRR | 4.2 | -- | -- | -- | -- | -- | 1P-21 | 5.7 | 900 | 240 | Estimated |
| Lower San Tomas at Campbell | 19.0 | 1964 | -- | -- | -- | -- | 3P-21 | 4.7 | 1,600 | 53 | Estimated |
| Almaden Reservoir Spillway At New Almaden | 12.0 | 1936 | Jan. 1963 | 3.4 | 2,640 | 220 | -- | 1.6 | 870 | 73 | Depth From Highwater mark |
| Alamitos Creek Below Alamitos | 12.0 | -- | -- | -- | -- | -- | 1A-22 | 5.5 | -- | -- | |
| Guadalupe Creek Below Reservoir | 8.0 | -- | -- | -- | -- | -- | 8:40P-21 | 3.6 | 940 | 120 | |
| Guadalupe River Near Alamitos Perculation Pool | 53.0 | -- | -- | -- | -- | -- | 6A-24 | 4.1 | 3,080 | 58 | |
| Ross Creek, San Jose | 5.7 | 1961 | Nov. 10, 1964 | 6.34 | 542 | 95 | 8:45P-24 | 6.6 | 700 | 120 | |
| Lower Ross Creek, San Jose | 10.0 | -- | -- | -- | -- | -- | 3A-24 | 8.25 | -- | -- | |
| Guadalupe River, San Jose | 146.0 | 1929 | Apr. 2, 1958 | 16.55 | 9,150 | 60 | PM - 21 | 8.6 | 5,100 | 35 | |

TABLE 3 (CON'T.)
SUMMARY OF FLOOD FLOWS
JANUARY 20-24, 1967

| Stream | Drain. Area | Record | Previous Max. | | | | Max. - Jan. '67 | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Date | Ht. | cfs | CSM | Date | Ht. | cfs | CSM | |
| Coyote Creek Near Gilroy | 109.0 | 1960 | Jan. 31, 1963 | 12.6 | 10,100 | 101 | PM - 21 | 13.0 | 6,000 | 55 | |
| Silver Creek Near Bayshore Hwy. | 47.8 | 1963 | -- | -- | -- | -- | -- | 9.6 | 950 | 19 | |
| Upper Penitencia Creek | 21.5 | 1961 | Dec. 23, 1964 | 6.5 | 800 | 37 | 10:30 P-21 | 8.0 | 1,600 | 74 | Estimated |
| Berryessa Creek Near Calaveras Road | 15.2 | 1964 | -- | -- | -- | -- | 8P-21 | 5.8 | 500 | 34 | Estimated |
| Fisher Creek, Near Metcalf Road | 10.8 | -- | -- | -- | -- | -- | 4A-22 | 4.8 | 530 | 49 | |
| Uvas Creek At Uvas Reservoir | 21.0 | 1966 | -- | -- | -- | -- | 8:40P-21 | 479.7 | 7,600 | 362 | Peak Inflow to Reservoir |
| Pacheco Creek at Pacheco Reservoir | 68.0 | 1966 | -- | -- | -- | -- | 12M-22 | 473.0 | 3,000 | 43 | Peak Inflow to Reservoir |
| Heney Creek At Junipero Serra Freeway | .6 | -- | -- | -- | -- | -- | -- 21 | 1.9 | 80 | 130 | Highwater Mark |




santa clara county

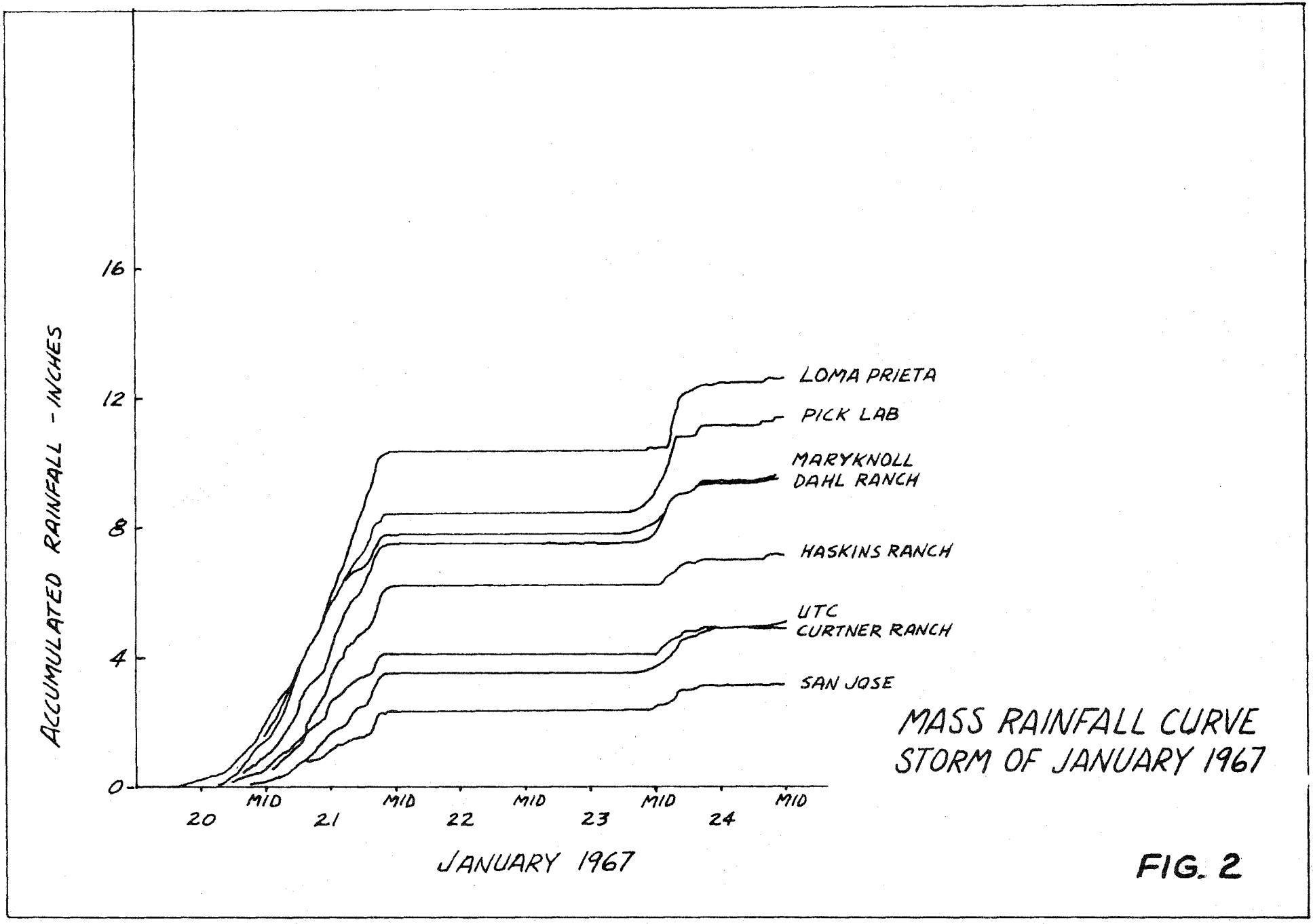
FLOOD CONTROL and WATER DISTRICT

# RAINFALL ISOHYETAL MAP
# STORM OF JANUARY 20 TO 24, 1967

STORM DURATION IS FROM 2PM JANUARY 20 TO 8AM JANUARY 24 (90 HOURS)

FIG. 1

1/27/67 DAS




MASS RAINFALL CURVE
STORM OF JANUARY 1967

FIG. 2

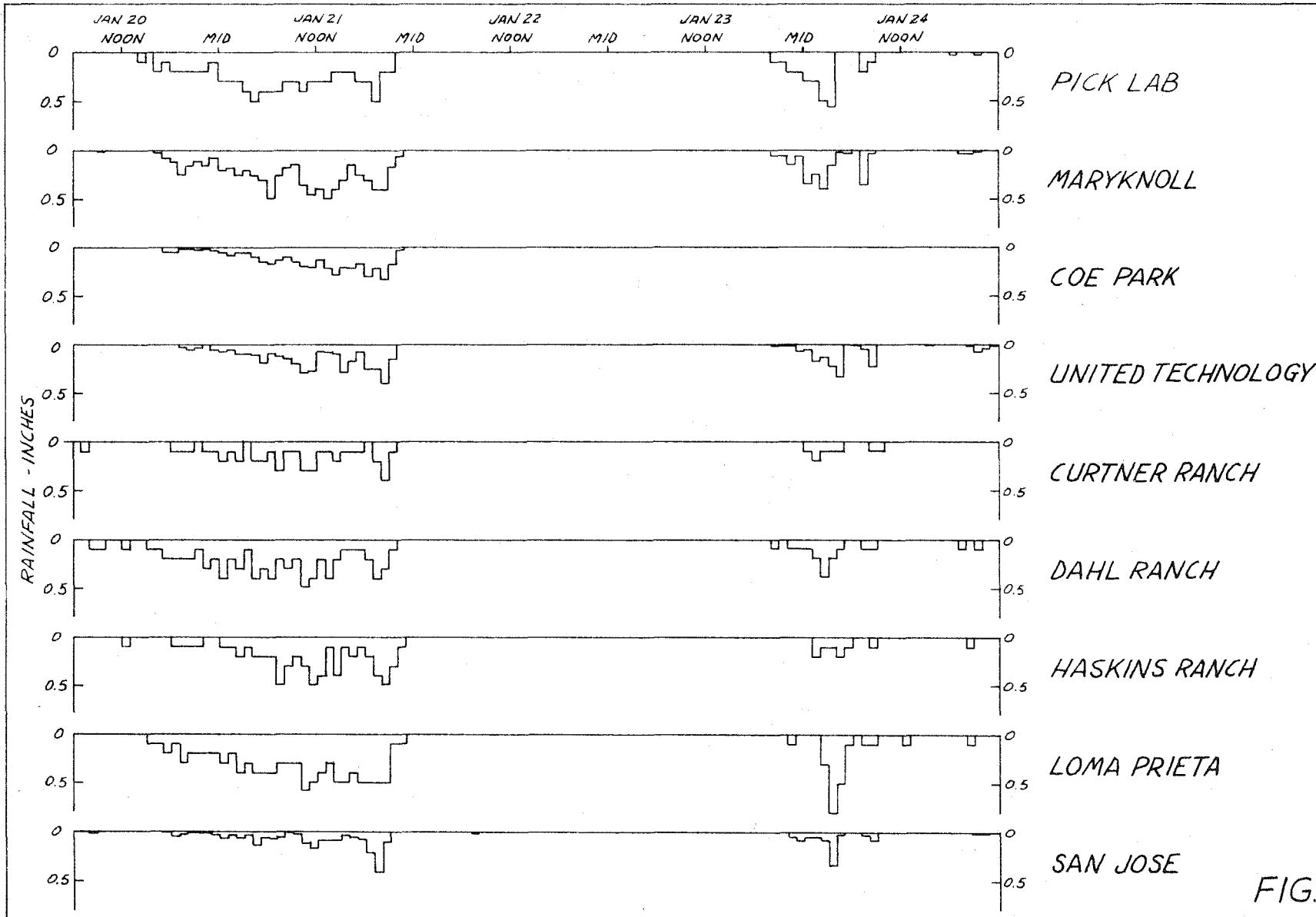



FIG. 3

HOURLY RAINFALL DISTRIBUTION GRAPH - STORM OF JANUARY 20 TO 24, 1967

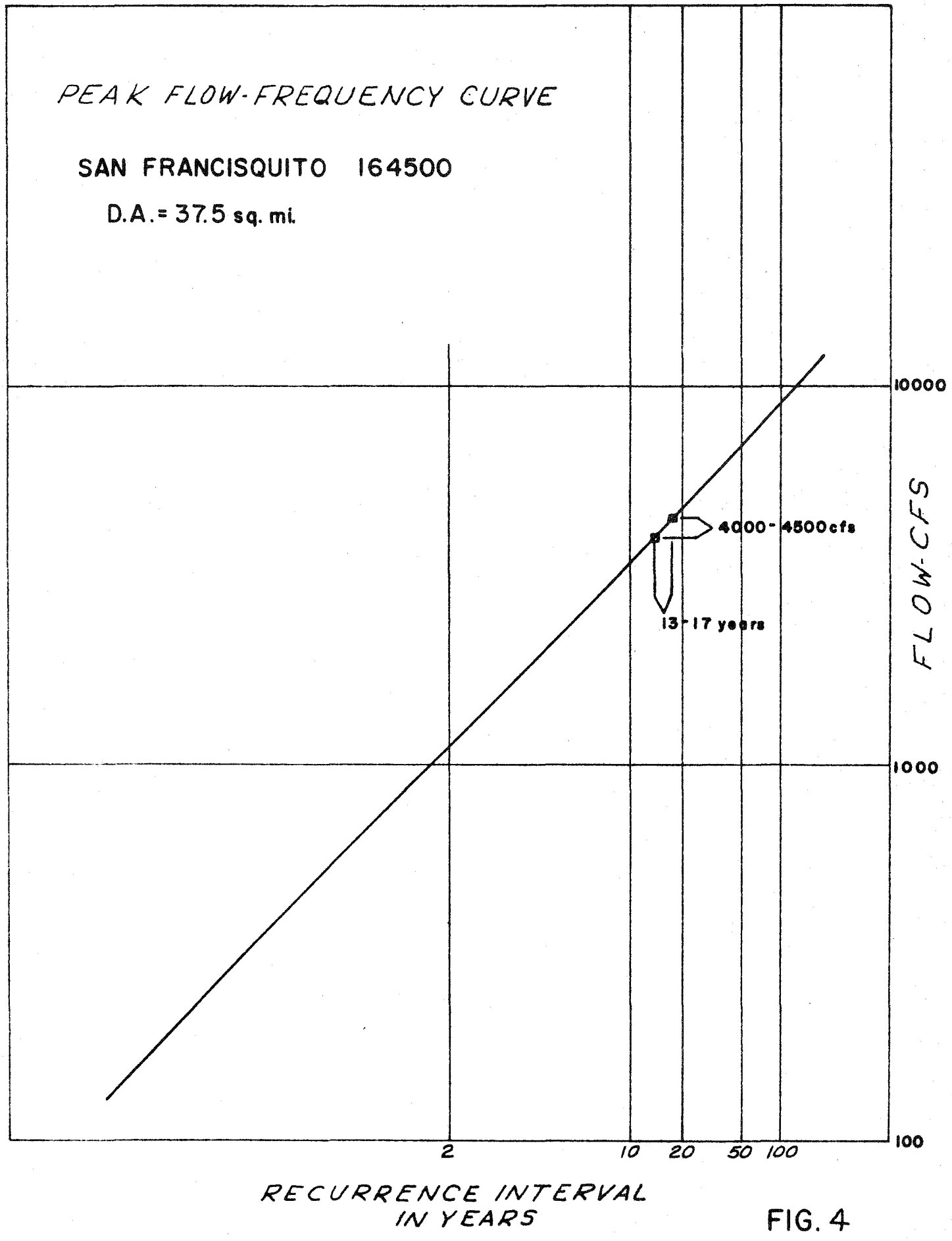

PEAK FLOW-FREQUENCY CURVE
SAN FRANCISQUITO 164500
D.A.= 37.5 sq. mi.
4000-4500 cfs
13-17 years
10000
1000
100
FLOW-CFS
2
10
20
50
100
RECURRENCE INTERVAL
IN YEARS

FIG. 4

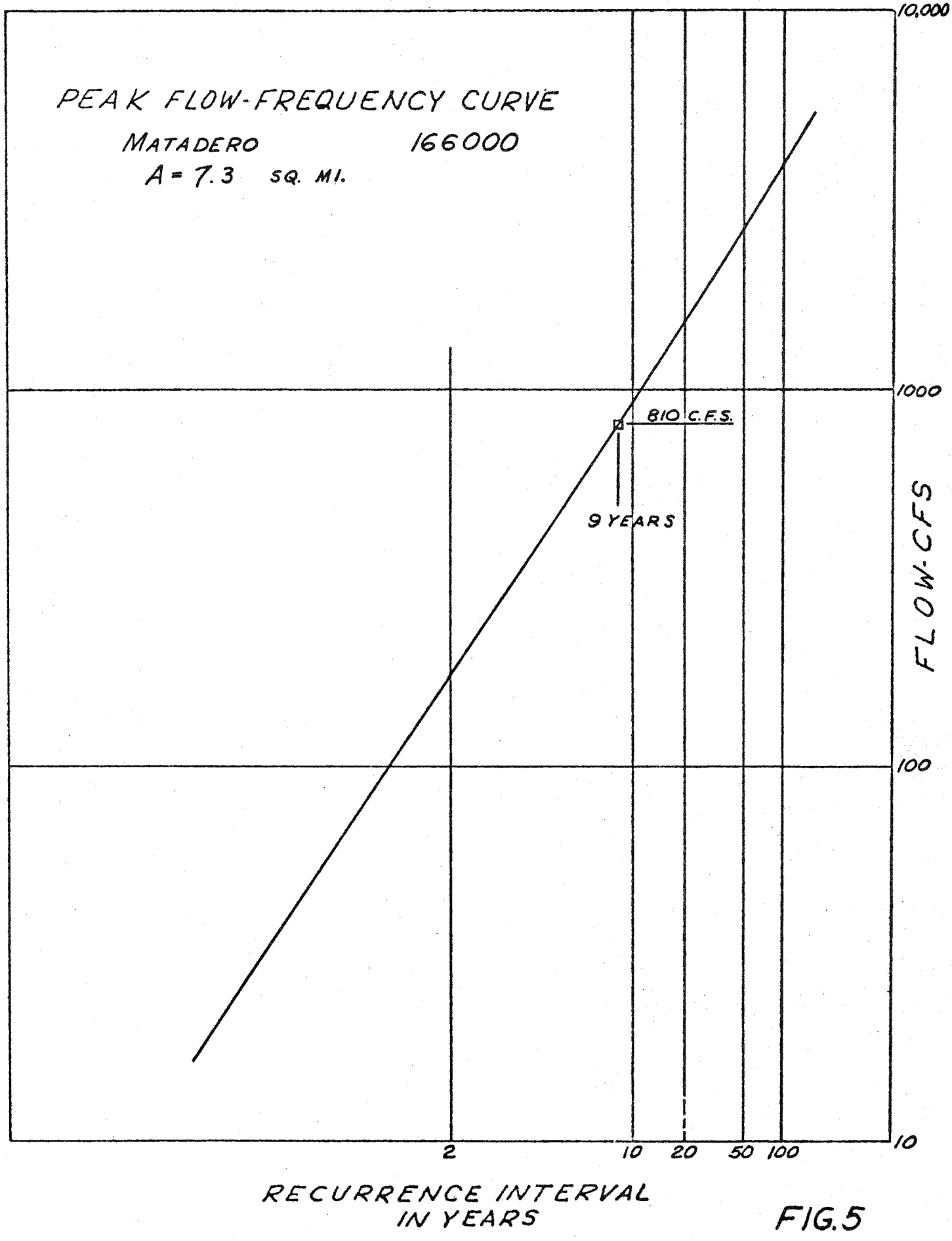

PEAK FLOW-FREQUENCY CURVE
MATADERO 166000
A = 7.3 SQ. MI.
10,000
1000
100
10
810 C.F.S.
9 YEARS
FLOW-CFS
2
10
20
50
100
RECURRENCE INTERVAL
IN YEARS

FIG. 5

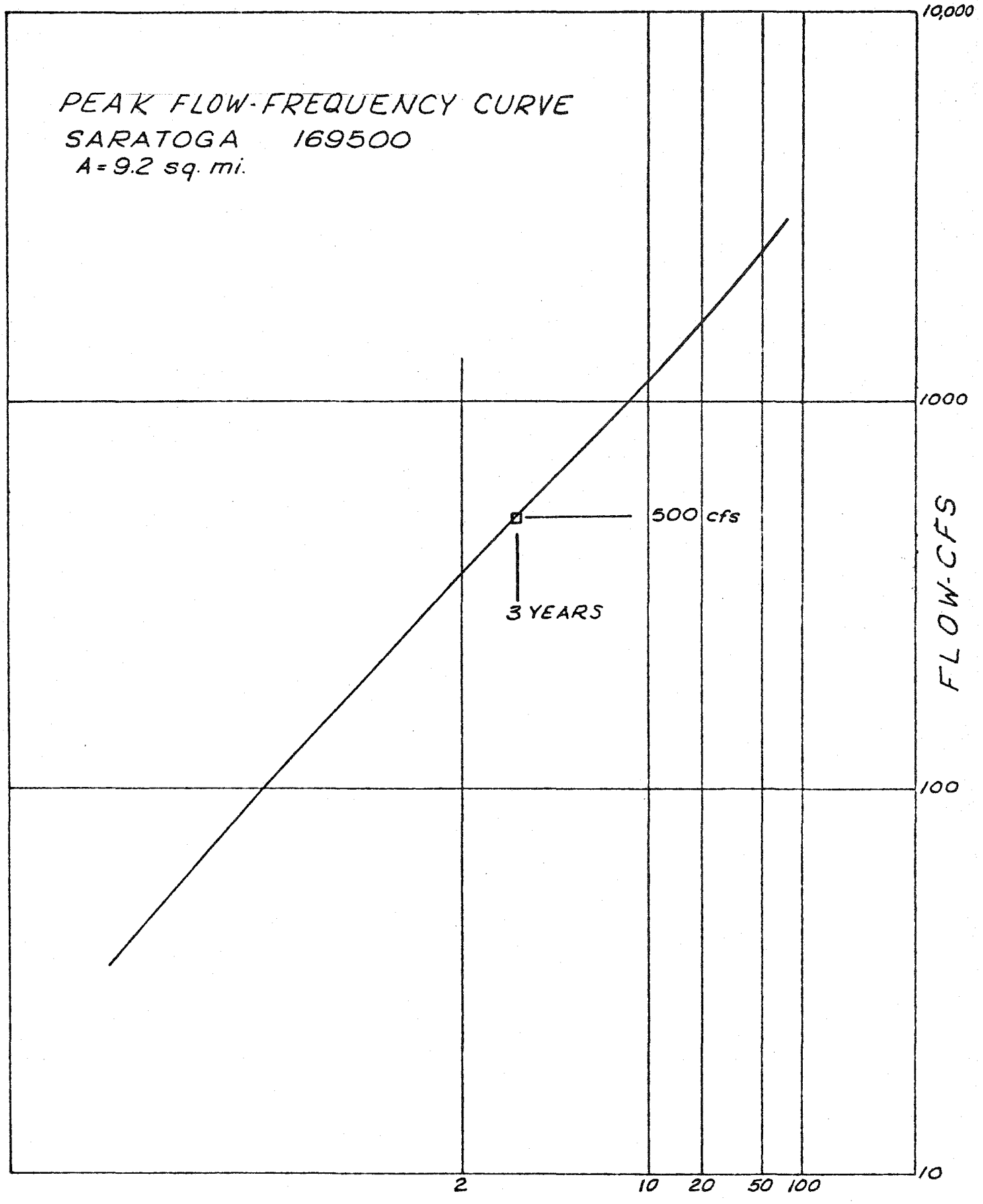

PEAK FLOW-FREQUENCY CURVE
SARATOGA 169500
A = 9.2 sq. mi.
10,000
1000
100
10
500 cfs
3 YEARS
FLOW-CFS
2
10
20
50
100
RECURRENCE INTERVAL
IN YEARS

FIG.6

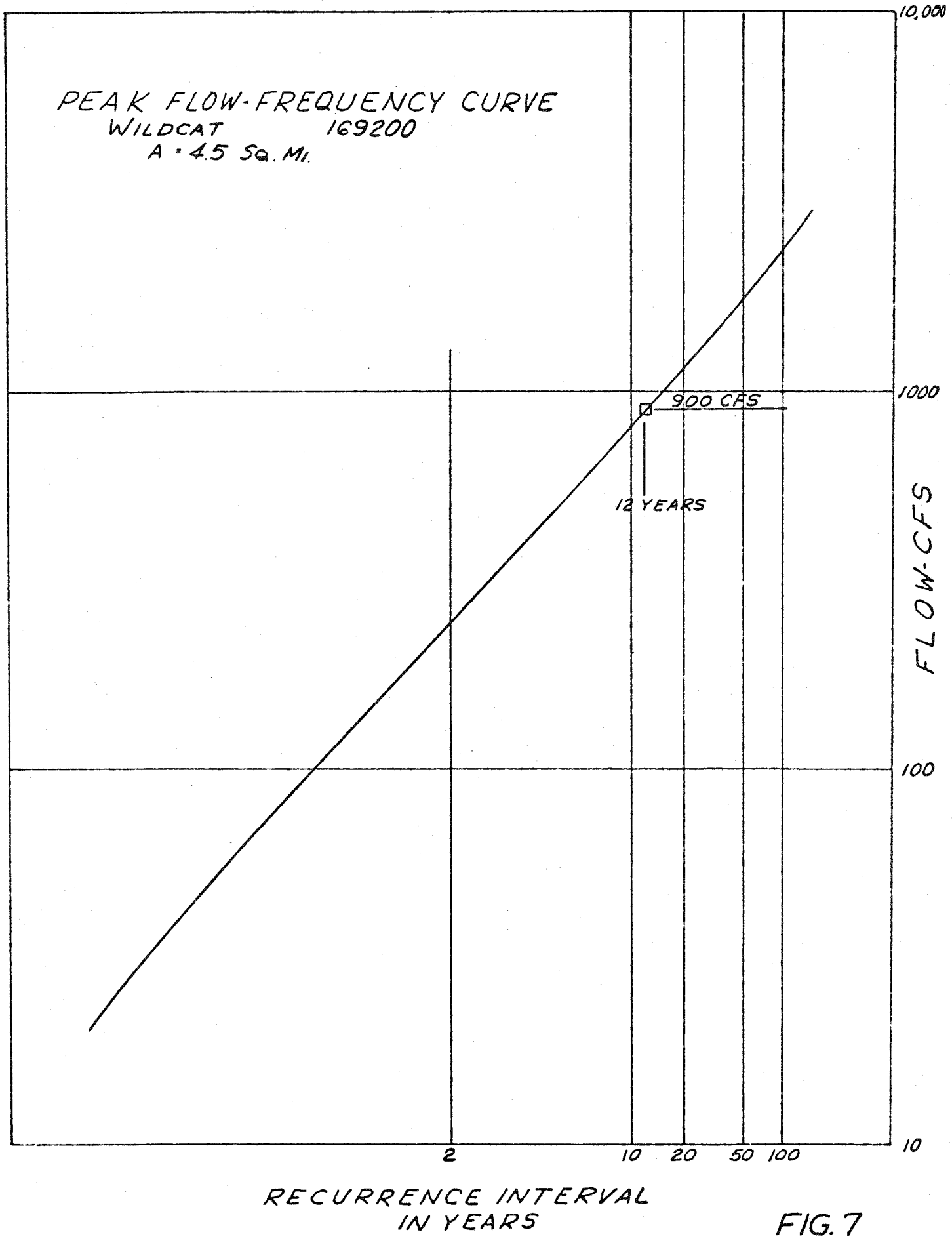

PEAK FLOW-FREQUENCY CURVE
WILDCAT 169200
A = 4.5 SQ. MI.
10,000
1000
100
10
900 CFS
12 YEARS
FLOW-CFS
2
10
20
50
100
RECURRENCE INTERVAL
IN YEARS

FIG. 7

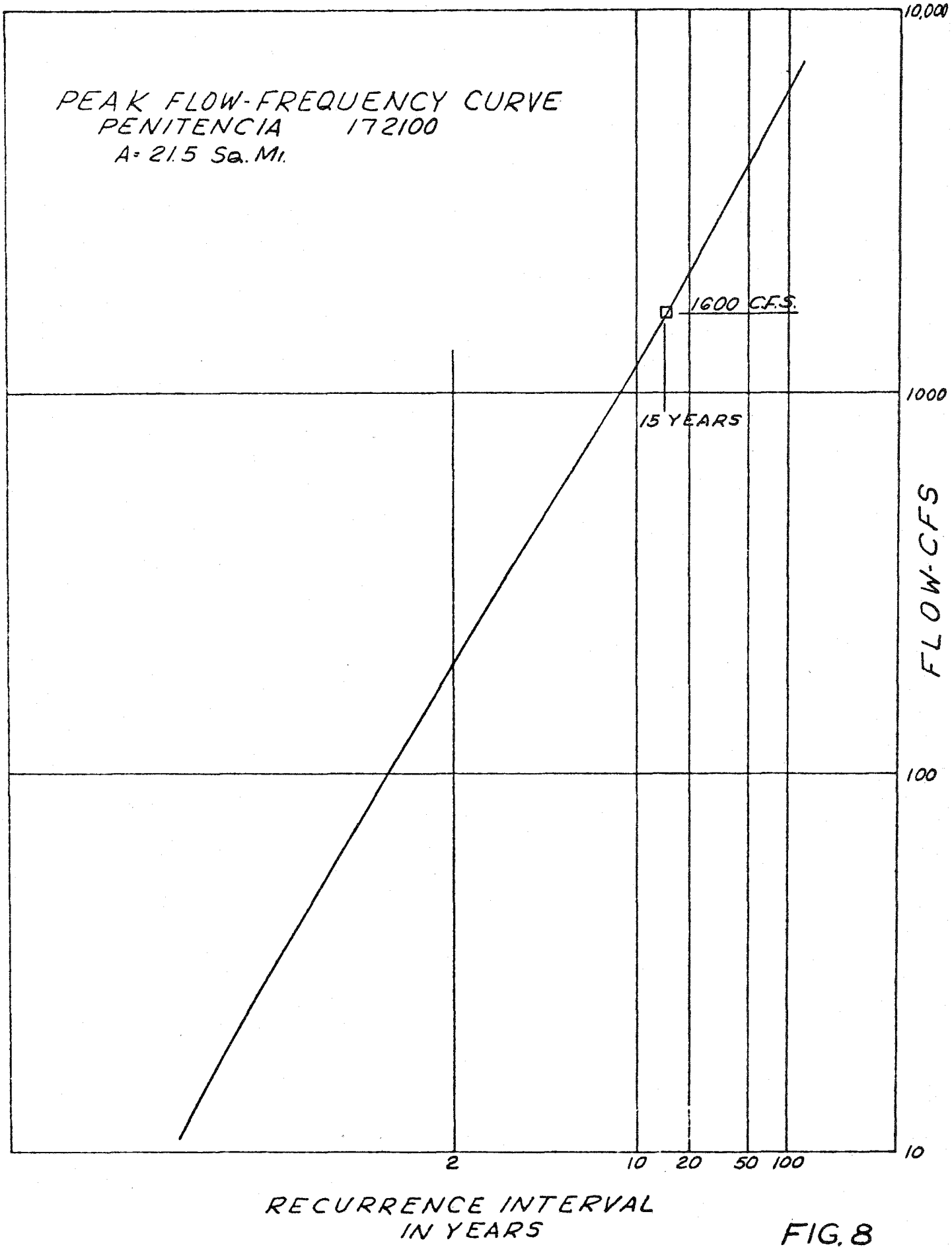

PEAK FLOW-FREQUENCY CURVE
PENITENCIA 172100
A= 21.5 Sq. Mi.
1600 C.F.S.
15 YEARS
10,000
1000
100
10
FLOW-CFS
2
10
20
50
100
RECURRENCE INTERVAL
IN YEARS

FIG. 8

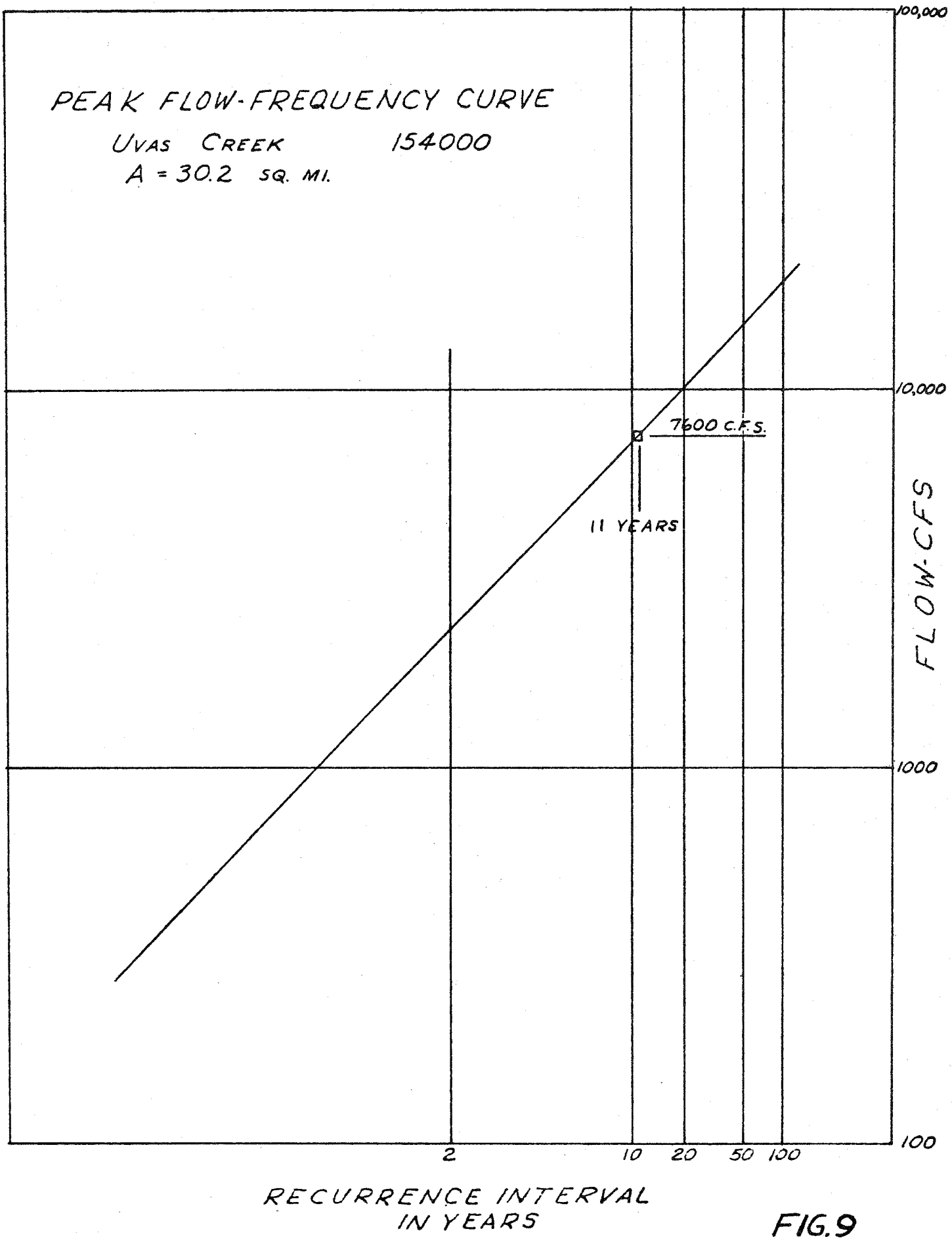

PEAK FLOW-FREQUENCY CURVE
UVAS CREEK 154000
A = 30.2 SQ. MI.
100,000
10,000
1000
100
7600 C.F.S.
11 YEARS
FLOW-CFS
2
10
20
50
100
RECURRENCE INTERVAL
IN YEARS

FIG. 9

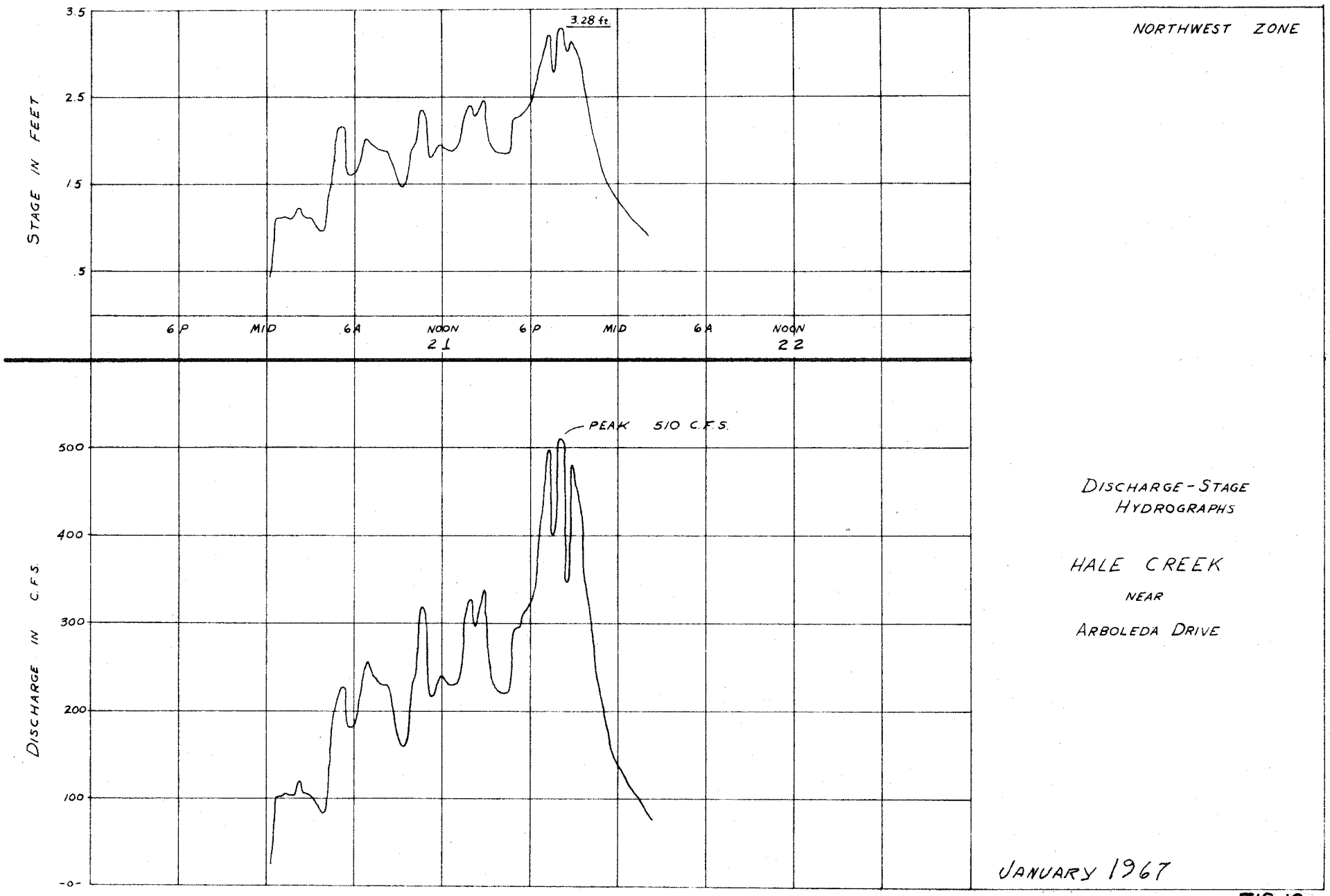

NORTHWEST ZONE
STAGE IN FEET
3.5
2.5
1.5
.5
3.28 ft.
6 P
MID
6 A
NOON
6 P
MID
6 A
NOON
21
22
DISCHARGE IN C.F.S.
500
400
300
200
100
-0-
PEAK 510 C.F.S.
DISCHARGE - STAGE HYDROGRAPHS
HALE CREEK
NEAR
ARBOLEDA DRIVE
JANUARY 1967

FIG. 10

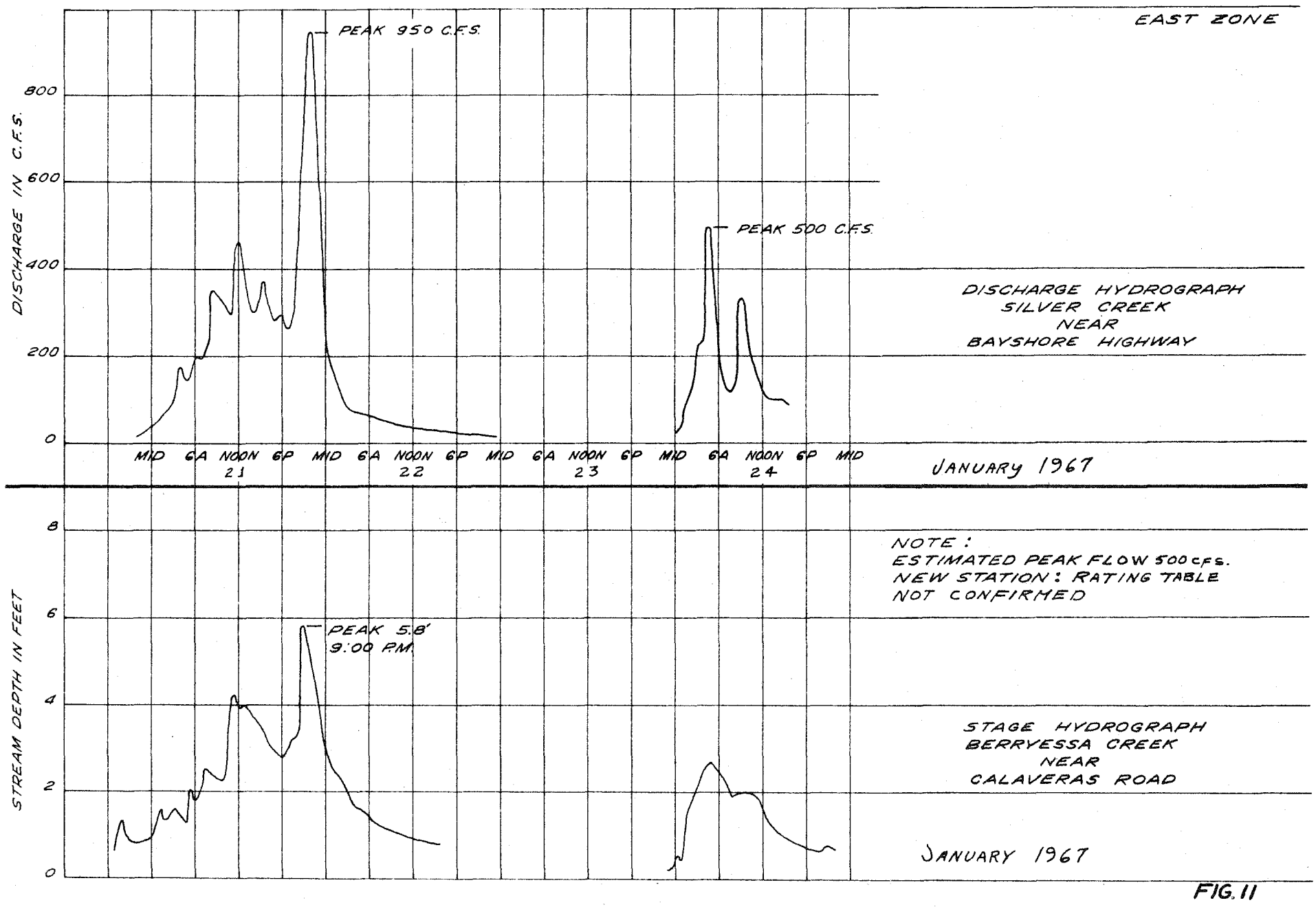

EAST ZONE
PEAK 950 C.F.S.
PEAK 500 C.F.S.
DISCHARGE IN C.F.S.
800
600
400
200
0
MID 6A NOON 6P MID 6A NOON 6P MID 6A NOON 6P MID 6A NOON 6P MID
21
22
23
24
DISCHARGE HYDROGRAPH
SILVER CREEK
NEAR
BAYSHORE HIGHWAY
JANUARY 1967
NOTE:
ESTIMATED PEAK FLOW 500 c.f.s.
NEW STATION: RATING TABLE
NOT CONFIRMED
STREAM DEPTH IN FEET
8
6
4
2
0
PEAK 5.8'
9:00 P.M.
STAGE HYDROGRAPH
BERRYESSA CREEK
NEAR
CALAVERAS ROAD
JANUARY 1967

FIG. 11

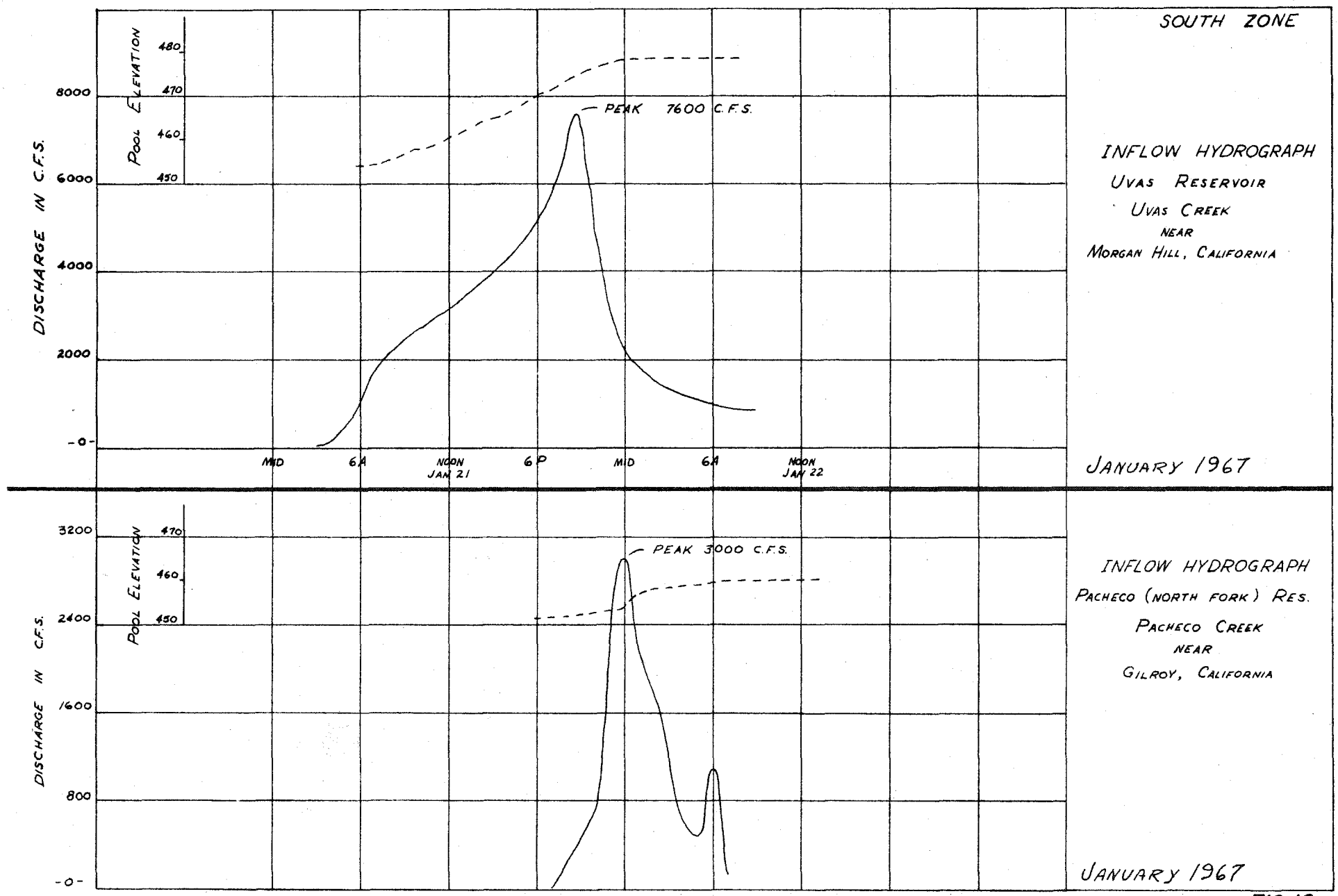
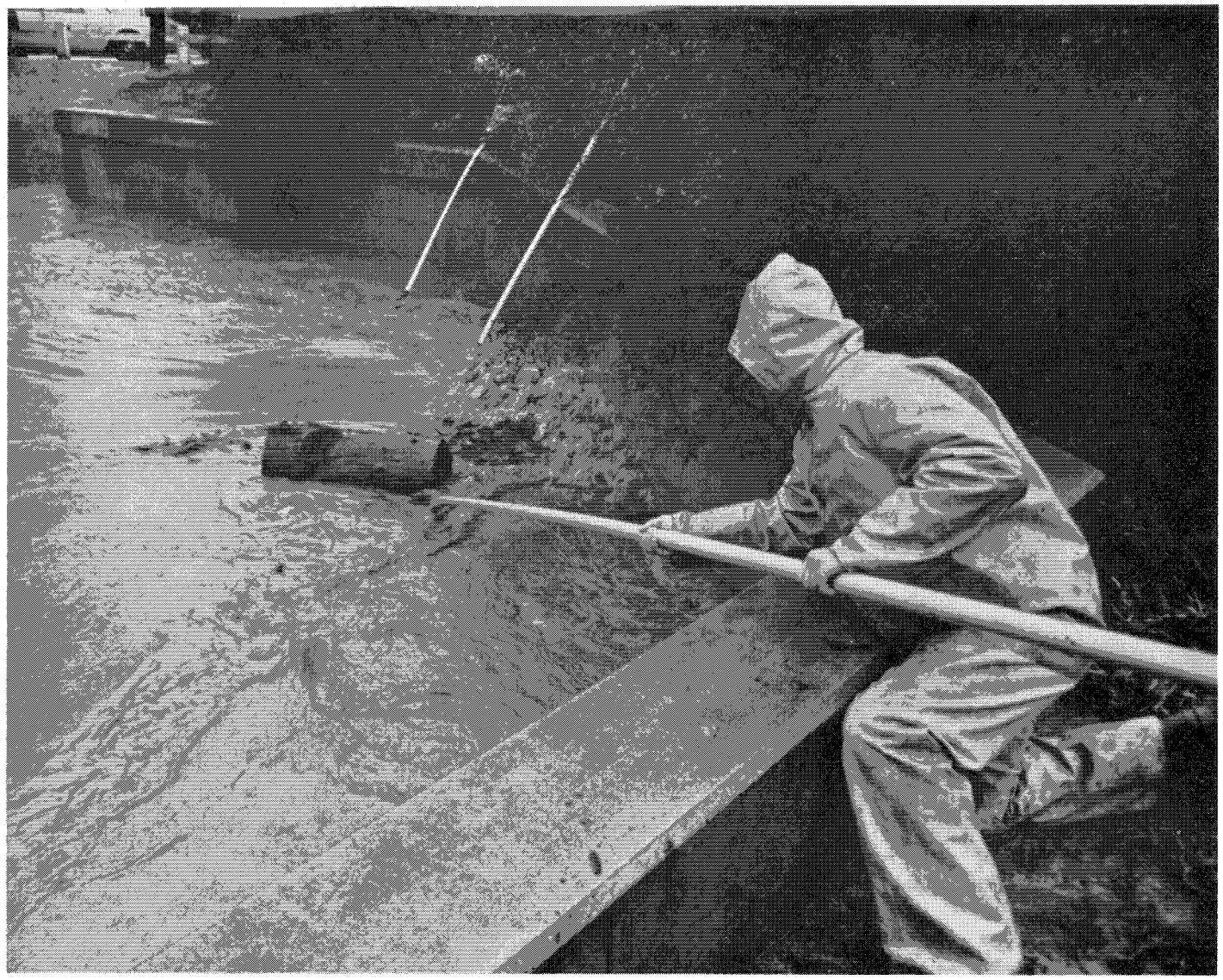
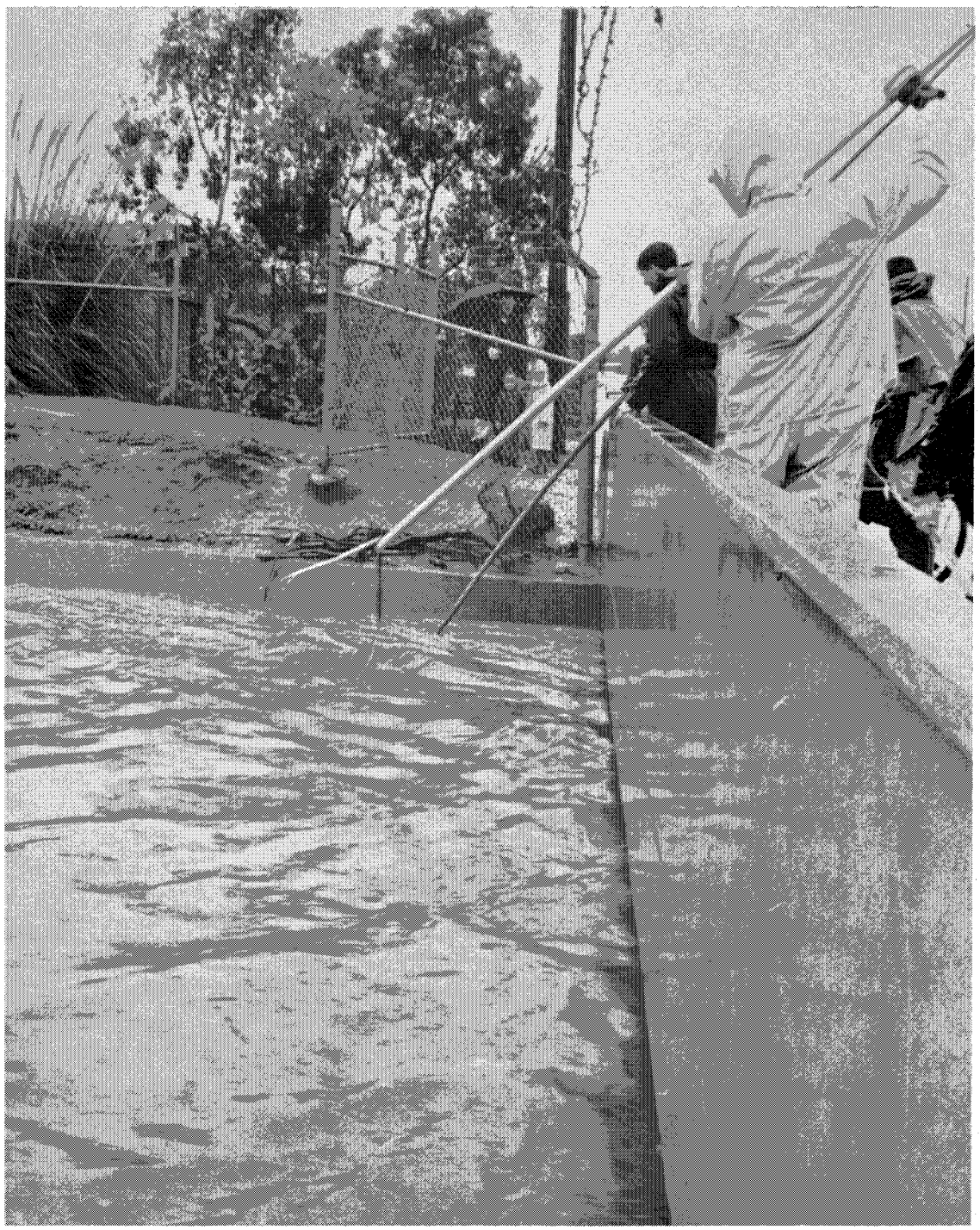

SOUTH ZONE
DISCHARGE IN C.F.S.
8000
6000
4000
2000
-0-
POOL ELEVATION
480
470
460
450
PEAK 7600 C.F.S.
MID
6A
NOON
JAN 21
6P
MID
6A
NOON
JAN 22
INFLOW HYDROGRAPH
UVAS RESERVOIR
UVAS CREEK
NEAR
MORGAN HILL, CALIFORNIA
JANUARY 1967
DISCHARGE IN C.F.S.
3200
2400
1600
800
-0-
POOL ELEVATION
470
460
450
PEAK 3000 C.F.S.
INFLOW HYDROGRAPH
PACHECO (NORTH FORK) RES.
PACHECO CREEK
NEAR
GILROY, CALIFORNIA
JANUARY 1967

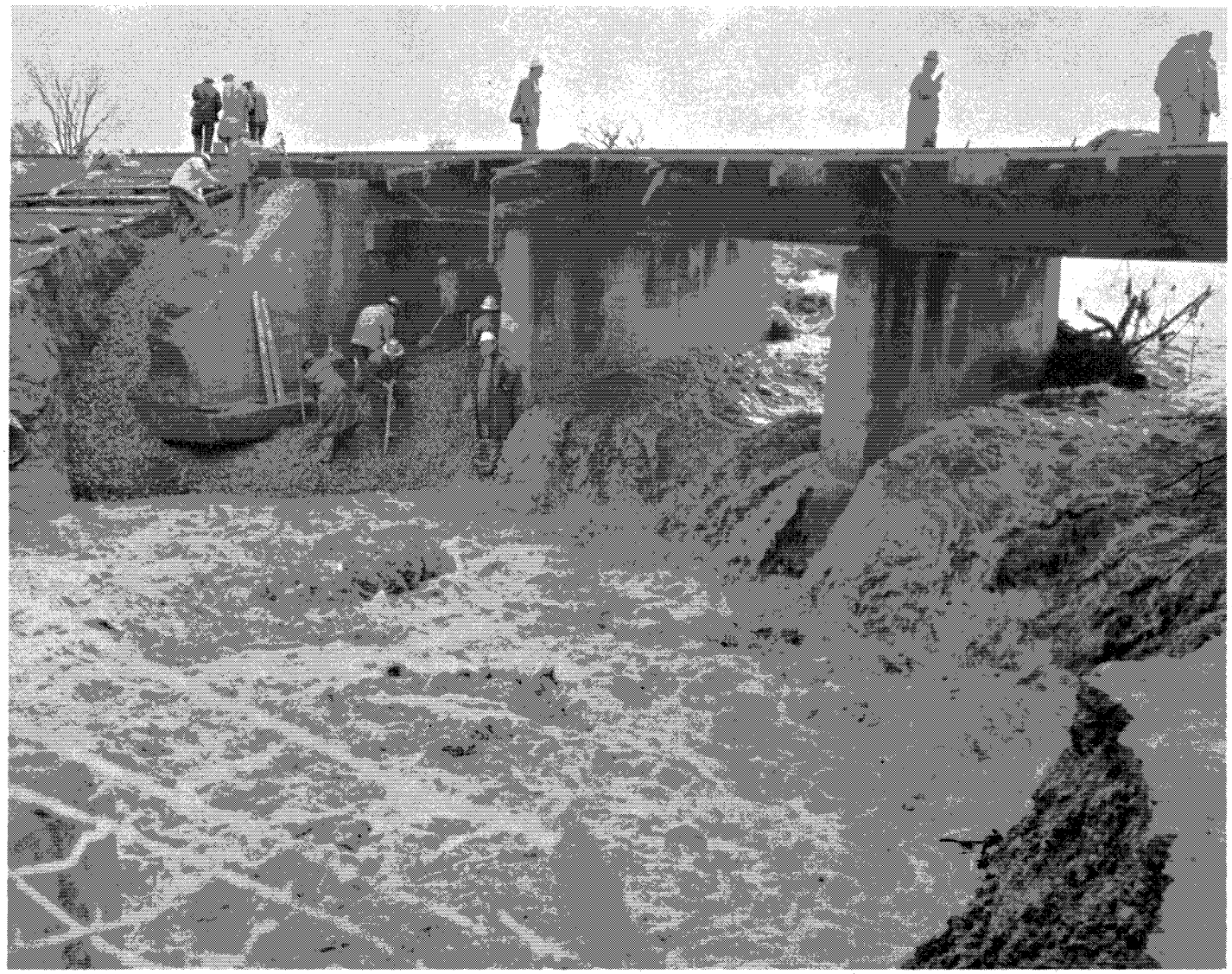
FIG. 12



Surcharged culvert on San Francisquito Creek at Chaucer Street.



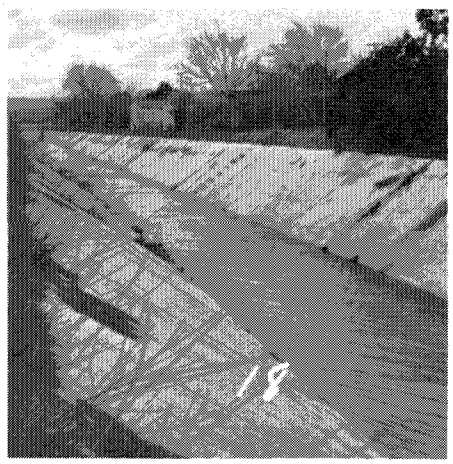
Matadero Creek at Greer Road. Note one foot of freeboard.



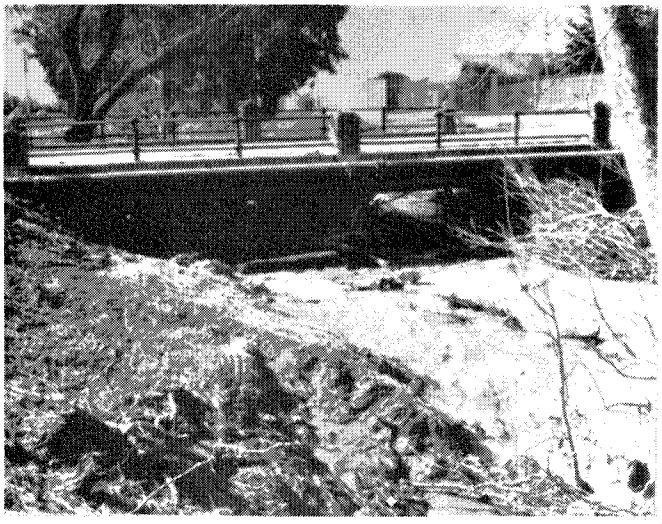
San Tomas Aquino Creek at Southern Pacific Company bridge.
Note exposed abutment footings on downstream side.

Los Coches Creek looking west - Sepulveda house on left - silt covering field down to fence.


Private road crossing of Calero Creek just below Calero Dam.




High water line on improved section of Matadero Creek below Middlefield Rd., looking upstream.



Looking downstream at the Noble Avenue Bridge over Penitencia Creek. Shadows obscure large amount of debris that is caught on bridge pier and abutments. High water topped this bridge at a depth of about 6 inches.

House on the westerly side of King Rd. and the northerly side of Penitencia Creek about 50 feet from the right bank of the Creek. Water which had passed through the culvert topped the right bank and went through this house at a depth of about 6 inches. Silt deposit in the front yard can be seen reflecting the sun's rays.

Looking northerly along Capitol Ave. at the upstream side of the Penitencia Creek Bridge showing debris deposited on the sidewalk when flow topped the bridge; water had been running over the sidewalk at a depth of 8 to 10 inches. There was no apparent blockage in the culvert but capacity has been greatly reduced by bed load deposit to a depth of several feet.

Right bank Penitencia Creek - major breakout about 500 feet east of King Rd. Chin Ah Gum property.

Crosley Ck intake after clamshell clean-out. Flow coming out of lst manhole at car in distance.



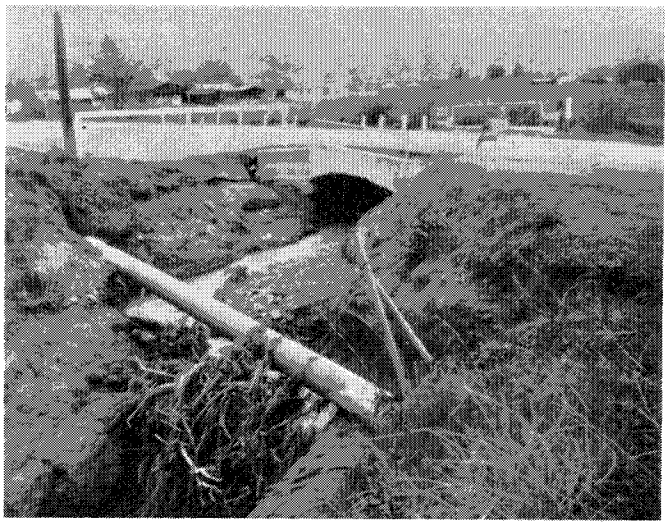
Flow from lst manhole on Crosley Ck. going over Silva Driveway (after intake had been reopened)

Berryessa Creek at Landess Avenue looking downstream. Trash on headwall was piled there by maintenance crew. Water topped both banks and spread across Landess Avenue about 6 inches deep.

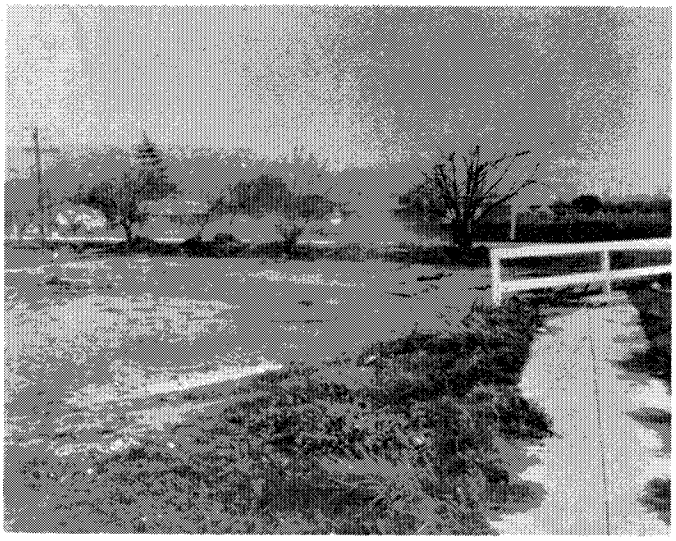
#22 Major breakout on Berryessa Creek left bank about 400 feet east of Morrill Rd.

#23 Silt and debris deposits in field at major breakout in Berryessa left bank 400 feet east of Morrill Rd.

Breakout left bank Berryessa Ck. about 100 feet upstream of that shown in #22 and 23. Irrigation flume shown installed thru levee



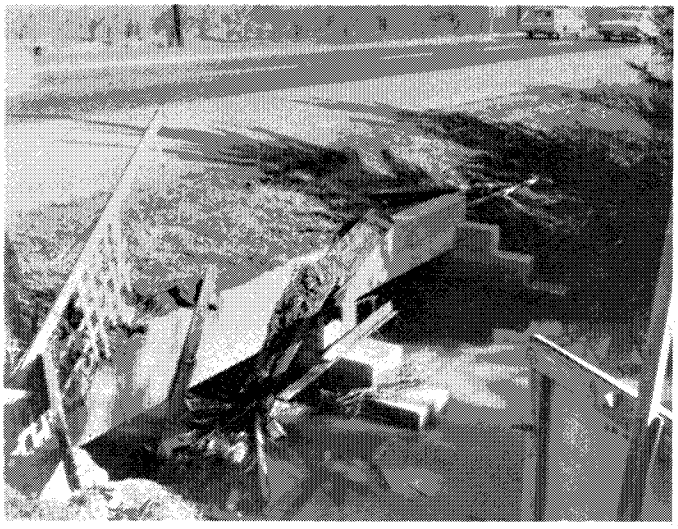
Looking upstream at the Cropley Rd. culvert over Berryessa Creek showing serious erosion under San Jose Water Works' main and collapse of the culvert extension on the northerly side of Cropley Road.



Cropley and Junewood Ave. - silt and debris from overtopping of Berryessa Creek along Cropley Rd.

West of Morrill at Cropley Ave. - Silt and debris from Berryessa Ck. overflow

Sharp bend in Little Llagas Creek 3400 feet south of Middle Avenue next to Sycamore Avenue. Debris on road and in trees.

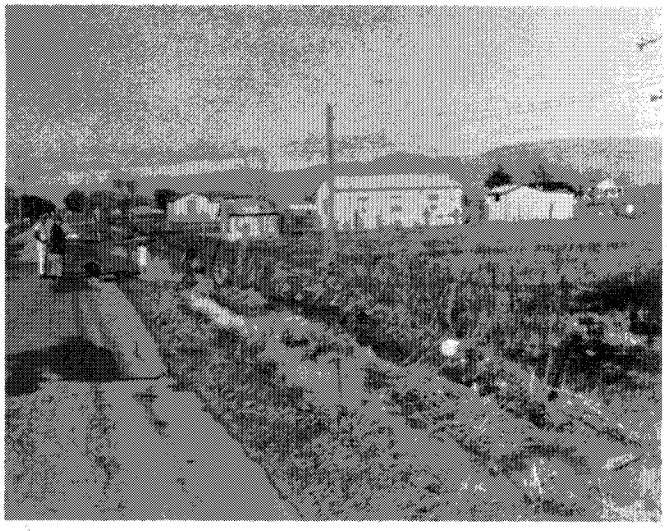


Little Llagas Creek at El Camino Real (U.S. 101) South of Morgan Hill. Note debris from overtopping.

Llagas Creek from Bloomfield Rd. Large amount of debris in Creek. Flooded field at left.

North Branch Miller Slough at Day Road crossing looking south.

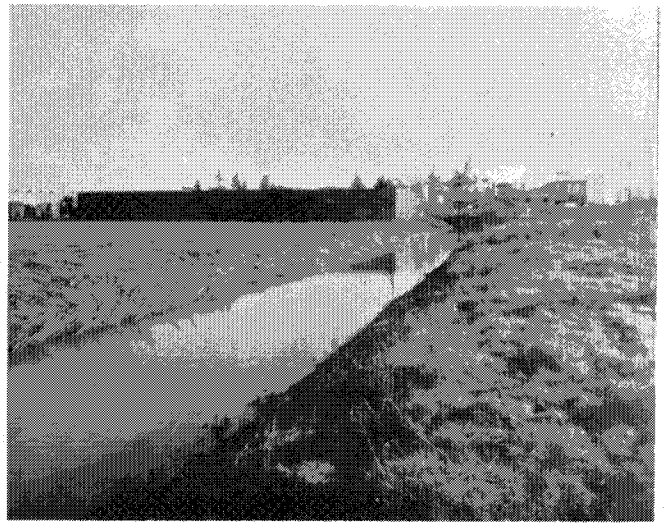
Miller Slough At Welburn Avenue looking south. High water mark can be seen at left.



Middle Branch Miller Slough at Kern Avenue crossing.

Looking southerly as sheet flow from North branch of Miller Slough in City of Gilroy crosses intersection of Ronan and Wren Avenues.

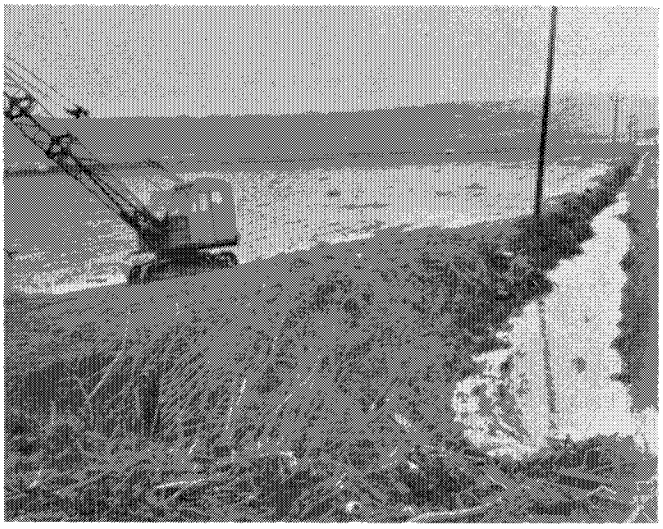
Miller Slough bridge at Church Street in City of Gilroy.



Miller Slough from 1.0.0.F Avenue looking south. High water at top of left bank.

Carnadero Creek at farm bridge near Pajaro River. Note ponding outside of left levee.

Soap Lake from Pacheco Pass Road.



Alamias (Jones) Creek at confluence with Llagas Creek. Flooded fields at left.