Field Reconnaissance

Trilby Wash Detention Basin
and
Luke Air Force Base Area

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
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SPLED-HE

12 April 1978

MEMORANDUM FOR: THE HYDROLOGIC ENGINEERING SECTION FILES

SUBJECT: The field reconnaissance of the Trilby Wash Detention Basin and the Luke Air Force Base area following the flood of February-March 1978.

1. The Los Angeles District is proposing a Special Study of Luke Air Force Base to determine potential flood problems in the area and recommend solutions. From a preliminary analysis of the area and from review of aerial photographs and topographic maps it was judged that it would be very difficult to determine overland flow paths in the upstream drainage leading to the base. The flat topography, historic subsidence, irrigation facilities, railroad embankments, roads with inverted crowns, and land leveling of numerous farms all add to the problem of defining the overland paths.

2. The storm of February-March 1978 afforded an opportunity to observe the paths of the flows across the fields and judge the effect of the obstructions on the flows. A representative from the L. A. District was invited to participate along with Mr. John Ashley of the Civil Engineering Office, Luke AFB: Major Burton Campbell, Chief of Information, Luke AFB; and Lieut. Henry Kelley, Disaster Preparedness Office, Luke AFB in an aerial survey of the Trilby Wash Detention Basin and the overland flow upstream of the Luke complex on 15 March 1978.

3. This memorandum presents the results of that survey and limited field observations. The flight proceeded from Luke AFB across the flooded area from east to west to the Trilby Wash Basin. The flight continued along the axis of the dam's embankment to the location of the 700 ft. outlet notch, which was circled for photographs to be taken, then continued northward to the outlet works and the 110 ft. outlet notch, which was also photographed. For the return leg to the base, it was decided to attempt to follow the path of the flow from the 700 ft. outlet notch to the base.

A series of photographs were taken along the return path to later help in determining the flow limits. Closeup photographs of both outlet notches were taken on a field trip to the embankment later the same day. An attempt was made to observe high water marks in the outlets but yielded unsuccessful results. The amount of discharge through the outlets will be determined at a later date from gaging station records obtained from the dam recorders by the Maricopa County Flood Control District.

4. The inclosed photographs are a selected sample of those taken along the flight path and are chosen to best illustrate the effects of the flow through the emergency outlets. At a few locations, black and white photographs taken by Major Campbell during the period of high water were included along with the "post flood" photographs. The location and direction of each photograph is plotted on the accompaning topographic map. The overflow area is tentatively delinated by using the aerial photographs and limited field observations. A final overflow map will be completed following the results of a damage survey by LAD personnel currently in the field.

5. The storms which affected the Phoenix area during the period of 28 February thru 11 March formed off the coast of southern California and moved slowly northeast into Arizona. Associated with the front was a relatively strong southwesterly flow of warm, moist air aloft. Precipitation occurred as the moisture laden air piled up against the Mogollon Rim. The major amounts of rainfall occurred in the areas north and east of metropolitan Phoenix. Rain, which began in the northwestern portion of the state on 27 February, fell intermitently in the following days with the largest amounts during the period 1-2 March. A secondary storm system passed through the area on 4-5 March, but the amounts were much less than the earlier storm period. Another storm system was expected to pass through the Phoenix area during the period March 9 thru 11, but when it arrived it produced only light showers.

6. The storm period of 1-2 March was critical in the region northwest of Phoenix. During this period, heavy rains were falling in the drainages contributing to the Trilby

Wash Basin. The reservoir level was being monitored by the Maricopa County Flood Control District and at Ø13Ø hours, 2 March, approximately one foot of water was passing over the emergency outlet. (According to the report from MCFCD, it was not specified as to which emergency outlet, there are two, was flowing.) Aerial photographs taken during the daylight by personnel of Luke AFB show water flowing through both outlet notches and closeup photographs of the staff gages at the same time show the flow still at approximately one foot deep.

7. Flood waters passing through the northernmost outlet (110 ft. notch) caused considerable damage to the levees and lining of the Beardsley Irrigation Canal. From the aerial photographs it appears that the outlet notch flows overtopped the canal, with some of the flow being carried away by the canal and the remaining flows going into the dam outlet works channel where it was successfully contained. The flows that were caught in the Beardsley Canal were conveyed through the siphon carrying the canal flows under the dam outlet channel. Downstream of the siphon, the flow in the canal exceeded the carrying capacity of the canal and broke out to the southeast, flowing overland a short distance into the surrounding fields.

8. Flows through the southern emergency outlet (700 ft. notch) caused damage to the Beardsley Canal and to agricultural areas downslope from the outlet. In the fields below the dam, there are no natural watercourses to confine and control the outflow. Local farmers have cultivated nearly all the available land and have made only minor provisions for the channeling of flood waters. The floodwaters spread out in sheetflow. The flow from the notch was ponded behind the Beardsley Canal levee until a sufficient volume was attained to cause the floodwater to break over into the canal, exceed its capacity, and pour over into the adjoining fields, and become sheetflow. The flow was modified slightly by the roads and irrigation ditches. The flow continued southeastward only to pond behind a road embankment or irrigation lateral until sufficient volume is again obtained to overtop or breach the obstruction. Outflow from the 700 ft. notch could be easily discerned for approximately three miles downslope of the dam embankment, and possibly extended for six or seven miles.

9. Almost in a direct line downslope from the 700 ft. notch is the Luke complex. Flood protection for the base consists of lined and unlined trapezoidal channels on the north and west perimeters. The west channel begins as a low swale running north-south just west of the northern limit of the base and then continues southwesterly parallel to the runways. The north channel begins at the northwest edge of the base perimeter as an unlined trap. ditch and continues eastward to near the AT&SF RR tracks where it becomes concrete lined. Any sheetflow approaching the Luke area from the northwest would be intercepted by one or the other channel and conveyed around the base. Flows exceeding the channel capacity would continue southeast an inundate the base.

10. During the storm, the northern concrete channel was reported to be carrying less than its design capacity. It was in its upper unlined reaches where a serious flood threat was evident. Low areas in the embankment were sandbagged by personnel from the base. The water entering the channel appeared to be coming from the fields immediately north of the base and probably consisted of both runoff from rainfall in the surrounding area and flow from the Trilby Wash emergency outlet.

11. Whether the flow in the north channel would have been larger or smaller depending on the modification of the dam embankment can not be determined at this time. But, by examining the overland flow in the area leading to the base, a few conclusions can be drawn about the drainage area.

a) The floodflows tend to follow the general slope of the land even though no definite drainage pattern is visible from the topography.

b) The effect of the roads and the small irrigation laterals is minimal when water depths are greater than one-half foot deep. The one-half foot depth of flow was reported during a field conversation with a local farmer. The obstructions served only to detain or pond the flows for a short period and then spread the flow out on a wider front.

c) The detention storage of the fields must be considered in the routing of floodflows through them.

SPLED-HE 12 April 1978

SUBJECT: The field reconnaissance of the Trilby Wash Detention Basin and the Luke Air Force Base area following the flood of February-March 1978.

William P. Searcy
Hydrologist
Hydro. Engr. Section

STORM PERIOD OF FEBRUARY 28-MARCH 5

A six-day period of rain and snow left Arizona a soggy mess and caused an estimated eight million dollars of damage in Maricopa County. Rain, which began in the northwestern part of the state on February 27th, fell intermittently in the days that followed with the largest amounts occurring on February 28th and March 1st and 2nd. Precipitation values on March 5th did not approach those of the earlier storm period. Unofficial estimates of storm totals ran to over ten inches. Carefree reported 6.17"; Flagstaff-4.92"; Payson-7.00". The large amount of damage may be attributed to the fact that the greatest amounts of precipitation were dropped on the watersheds to the north and east of the metropolitan Phoenix area. Places in southern Arizona were generally spared great amounts of damage from this storm. One other reason for the large runoff values lies in the fact that most of the precipitation fell in the form of rain. These were very warm air masses and the snow level was generally above 6000 feet during most of the storm.

The storm of February 28th-March 3rd formed off the coast of southern California and moved slowly northeastward with a relatively strong southwesterly flow of unusually warm, moist air aloft. This flow, which was more or less perpendicular to the Mogollon Rim in central Arizona, resulted in the piling up and lifting of the air as it crossed Arizona. The major amount of lifting and, hence, of precipitation, occurred in the areas that lie north and slightly east of the metropolitan Phoenix area. Maximum amounts of precipitation in western Arizona occurred on February 28th and March 1st; maximum amounts in the eastern portion of the state fell on March 1st and 2nd. A secondary storm system passed quickly through the state on March 4th and 5th, dropping some snow at higher elevations and small amounts of rain elsewhere. Precipitation from this storm system fell mostly in northern Arizona. The upper-level low associated with the storm period drifted slowly northeastward and disappeared from the map on March 6th when clear skies again returned to the state.

R. W. Durrenberger
State Climatologist for Arizona
March 16, 1978

SYNOPSIS OF FLOODING CONDITIONS
DURING THE STORM OF MARCH 1-6, 1978

March 1, 1978

The Salt River Project's radio controlled river gauge located just north of the Horseshoe Reservoir indicated at 0200 on March 1 that the Verde River was rising rapidly. The gauge indicated at 1300 hours the inflow into Horseshoe Reservoir was in excess of 76000 cfs. The Salt River Project called a meeting at 1700 hours March 1 to analyze and discuss the potential flooding situations. It was evident that such a high inflow into Horshoe Reservoir would soon fill both Horseshoe and Bartlett to capacity. The inflow into Horseshoe Reservoir continued to increase until 2300 hours March 1 and reached a peak of 82400 cfs.

A decision was reached at 1230 hours March 1 to release 10,000 cfs from Bartlett Reservoir. This release was increased to 30,000 cfs at 1330 hours and to 40,000 at 2300 hours. Also, at this time the structures on the Salt River below Roosevelt Dam were rapidly filling to capacity, and at 1630 hours 1800 cfs was released from Stewart Mountain Dam. The release was increased to 3600 cfs at 1700 hours and to 9500 cfs at 2145 hours. The above releases from Bartlett and Stewart Mountain Dams caused 6800 cfs to be released at Granite Reef at 1600 hours.

The Maricopa County Civil Defense Department was contacted and advised of the impending flood threat about midnight on March 1. Civil Defense personnel and Flood Control District personnel were called to duty.

Heavy rains in the Cave Creek Watershed caused Cave Creek Reservoir to fill rapidly. At 1800 hours March 1, the gauge read 29.2. The gauge reading increased to 34.2 feet at 2400 hours.

March 2, 1978

The inflow into Horseshoe Reservoir remained at approximately 75,000 cfs until 0800 hours March 2. At this time 60,000 cfs was being released from Bartlett Dam. Also, the release from Stewart Mountain Dam had been increased to 20,000 cfs.

The releases from Bartlet Dam had been increased to 98,380 cfs and Stewart Mountain to 26,372. At this time, 80,000 cfs were passing over Granite Reef. The U. S. Geological Survey estimated the Salt River flow at Tempe Bridge to be 115,000 cfs at 1730 hours.

The inflow into Horseshoe decreased slightly but continued at a high rate. Also, the discharge from Stewart Mountain was decreased slightly but remained quite high. At 2400 hours, 100,000 cfs was passing Granite Reef.

At 0315 hours the gauge reading at Cave Creek Dam had reached 36.9 feet. At this time the west discharge gate was opened which increased the discharge from the Reservoir from about 500 to about 1000 cfs. The Reservoir

continued to rise rapidly and at 0400 hours the east discharge gate was opened which increased the discharge to about 1500 cfs. The gauge reading at this time had reached 37.2 (top of Dam - 40.0 feet). This release of water from Cave Creek Dam exceeded the capacity of the Arizona Canal.
And flood waters passed over the Arizona Canal spillway at Cave Creek which caused flooding in a large area of the Phoenix area in the vicinity of ChrisTown. Cave Creek Reservoir continued to fill and at 1230 hours it reached a peak of 39.5 feet (one half foot below top of Dam.) Also, waters were passing through the spillway at the Cave Creek Dam which further increased the flooding problem in Phoenix.

The Reservoir level at McMicken Dam was being monitored, and at 0130 hours, March 2, approximately one foot of water was passing over the emergency outlet. Due to high water and impassable roads, the emergency spillway could not be reached; however, a considerable amount of water passed through the emergency spillway and caused considerable damage to the Beardsley Irrigation Canal and to agricultural areas below the Dam. No flood waters reached Luke Air Force Base. The discharge from McMicken continued to drop, and, when no discharge was going through the emergency outlet, surveillance of the structure was temporarily stopped.

Rittenhouse Dam Reservoir in Pinal County had been rising rather slowly. It reached a maximum height of only 7.5 feet at 1200 hours March 2. The Reservoir continued to drop.

March 3, 1978

Discharges coming from Bartlet Dam were increased to 85,000 cfs at 0500 hours March 3. The discharge from Stewart Mountain Dam at this time was 15,000 cfs. At 0600 hours it was estimated that 110,000 cfs was passing Granite Reef. The Salt River at Tempe Bridge appeared to peak at 0530 hours March 3 at an estimated flow of about 120,000 cfs. The U. S. Geological Survey estimated the discharge for the Salt River at Tempe Bridge at 1400 hours, March 3, to be 102,000 cfs.

The Reservoir level at Cave Creek Dam continued to drop slowly, and, at 1900 hours, March 3, the west discharge gate was partially closed which decreased the discharge from approximately 1500 to 1250 cfs. This decrease in discharge permitted the Arizona Canal to carry all Cave Creek flows which caused the Arizona Canal spillway discharge into Phoenix to cease.

Due to the continued high Reservoir level of Cave Creek Dam and the prediction of additional rain in the watershed area, the Corps of Engineers recommended that an emergency spillway around the west end of Cave Creek Dam be partially constructed. It was determined that this spillway would be excavated to elevation 39.5. The main purpose of the temporary spillway is to permit rapid excavation in the event it becomes necessary to increase the discharge from the Reservoir to prevent the Dam from overtopping.

Discharges from Rittenhouse and McMicken Dams remained insignificant during this period.

The Agua Fria River had been discharging at a high rate into Lake Pleasant during the storm. At 1345 hours the Reservoir was almost full and the Maricopa County Water District #1 began releasing water at a rate of 6800 cfs. This release had very little impact on water levels in the Agua Fria River.

March 4, 1978

Inflows into Horseshoe Reservoir continued to decrease. At 2400 hours on March 4, only 10300 cfs was entering the Reservoir. Also, discharges from Stewart Mountain Reservoir decreased from 5000 cfs at 0100 hours to 1800 cfs at 0300 hours and to 0 cfs at 2100 hours. The flood waters passing over Granite Reef decreased from 70,000 at 0100 hours to 20,000 cfs at 2400 hours. The U. S. Geological Survey estimated the flow on the Salt River at the Tempe Bridge to be 27,300 cfs at 1345 hours.

The Reservoir level at Cave Creek Dam continued to decrease from 37.6 feet at 0030 hours to 33.5 feet at 2400 hours. The discharge gates in the Dam remained unchanged.

No change in the Reservoir levels were recorded at Rittenhouse and McMicken Dams.

March 5, 1978

The inflow into Horseshoe Reservoir continued to decrease and the discharge from Bartlett Dam was decreased from 30,000 cfs at 0100 hours to 10,000 cfs at 0900 hours. At this time, 15,000 cfs was passing over Granite Reef.

The Reservoir level at Cave Creek Dam continued to drop. At 1630 hours, the gauge had a reading of 31.0 feet. Intermittent rains into Cave Creek watershed caused inflows into Cave Creek Reservoir to increase slightly.

SUBJECT		DATE	PAGE OF PAGES
SOURCE OF DATA			
COMPUTED BY	CHECKED BY	SECTION	

1.	COLOR	VIEW NORTHWEST FROM ABOVE Ⓠ AVENUE. 700' OUTLET ON HORIZON AT CENTER RIGHT OF PHOTO
2.	COLOR	VIEW WESTWARD DOWN UPON Ⓠ AVENUE, WEST OF SARIVAL AVENUE.
3.	COLOR	LOWER PORTION, TRILBY WASH BASIN
4.	COLOR	SOUTHERN END, TRILBY WASH BASIN
5.	COLOR	VIEW EAST OVER TRILBY WASH BASIN, SOUTH OF GREENWAY ROAD
6.	COLOR	VIEW NORTH TOWARD BELL AVENUE
7.	COLOR	VIEW EAST AT BELL AVENUE
8.	COLOR	VIEW NORTHEAST TO 700' OUTLET
9.	COLOR	APPROACHING 700' OUTLET
10.	COLOR	700' OUTLET AND FLOW TO BEARDSLEY CANAL. OVERLAND FLOW VISIBLE IN BACKGROUND DURING FLOOD
11.	B & W	WATER FLOWING THROUGH 700' OUTLET. CLOSEUP PHOTO INDICATED FLOW APPROXIMATELY 1 FOOT DEEP.
12.	COLOR	BEARDSLEY CANAL WASHOUT DOWNSTREAM OF 700 OUTLET. (LEVEES REPAIRED)
13.	B & W	BEARDSLEY CANAL DURING FLOOD (SAME LOCATION AS #12)
14.	COLOR	VIEW DOWNSTREAM FROM BEARDSLEY CANAL WASHOUT TOWARD CITRUS ROAD AND BELL ROAD.
15.	COLOR	VIEW NORTH OVER 700' OUTLET. BEARDSLEY CANAL CIRCLING TO THE RIGHT
16.	COLOR	VIEW EAST OVER BEARDSLEY CANAL TO CITRUS ROAD.
17.	B & W	SIPHON AND BEARDSLEY CANAL OVERFLOW DURING FLOOD. LOCATED AT END OF UNION HILLS DRIVE
18.	COLOR	TRILBY WASH AND BEARDSLEY CANAL. AREA OF STANDING WATER NORTH OF UNION HILLS DRIVE.
19.	COLOR	VIEW SOUTHEAST OVER AREA OF STANDING WATER NORTH OF UNION HILLS DRIVE
20.	COLOR	VIEW EAST TO 110' OUTLET, OUTLET WORKS, OUTLET CHANNEL AND BEARDSLEY CANAL.
21.	COLOR	VIEW SOUTH OVER 110' OUTLET TOWARD BEARDSLEY ROAD
22.	B & W	OUTFLOW FROM 110' OUTLET INTO BEARDSLEY CANAL DURING FLOOD.
23.	B & W	FLOW INTO BEARDSLEY CANAL AND OUTLET CHANNEL DURING FLOOD
24A	COLOR	110' OUTLET AND EROSION AT LIP.
B	B & W	CLOSEUP OF 110' OUTLET
25.	B & W	CLOSEUP OF 110' OUTLET DURING FLOW
26.	COLOR	VIEW SOUTHWEST OVER OUTLET WORKS AND BEARDSLEY CANAL SIPHON
27.	COLOR	VIEW NORTHWARD TO SPILLWAY AND HIGHWAY 60, 89 AND 93
J.	COLOR	VIEW SOUTHEAST, NORTH OF BELL ROAD AND EAST OF COTTON LANE
29.	COLOR	VIEW SOUTHEAST. INTERSECTION OF GREENWAY ROAD AND COTTON LANE

SUBJECT		DATE	PAGE OF PAGES
SOURCE OF DATA			
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30.	COLOR	VIEW NORTHWEST TOWARD 700' OUTLET (OUTLET JUST VISIBLE ON HORIZON, JUST ABOVE BUILDINGS). NEAR INTERSECTION OF SARIVAL AVENUE AND ⓟ AVENUE.							
31.	COLOR	VIEW SOUTHEAST TOWARD LUKE AFB. NORTH OF PEORIA AVENUE AND WEST OF REEMS ROAD.							
32.	COLOR	VIEW SOUTHEAST TOWARD LUKE AFB. APPROACHING REEMS ROAD.							
1.	COLOR	NORTH CHANNEL LUKE AFB. VIEW NORTHWEST. BUILDING 370 IN BACKGROUND.					(UPSTREAM)		
2.	COLOR	NORTH CHANNEL. VIEW SOUTHEAST (DOWNSTREAM)							
3.	COLOR	UNIMPROVED CHANNEL. NORTHERN PERIMETER LUKE AFB. VIEW UPSTREAM TO THE WEST.							
5.	COLOR (2 PHOTOS)	VIEW TO THE EAST (DOWNSTREAM). BEGINNING OF UNIMPROVED CHANNEL DIP CROSSING TO CARRY FLOWS ACROSS NORTHERN AVENUE							
4.	B & W	FLOW DURING FLOOD IN UNIMPROVED CHANNEL. LOCATION SIMILAR TO PREVIOUS PHOTOGRAPH.							
6.	COLOR	McMICKEN DAM OUTLET CHANNEL AND GAGING STATION AT HIGHWAY 60, 89, 93. VIEW DOWNSTREAM.							
7.	COLOR	SAME LOCATION AS PREVIOUS PHOTO. VIEW UPSTREAM.							
8.	COLOR	110' OUTLET NOTCH AND DOWNSTREAM TOE EROSION.							
9.	COLOR	BEARDSLEY CANAL AND DAM OUTLET CHANNEL DOWNSTREAM OF 110' OUTLET.							
10.	COLOR	BEARDSLEY CANAL AND SIPHON AT UNION HILLS DRIVE. VIEW TO THE NORTHEAST.							
11.	COLOR	SAME LOCATION AS PREVIOUS PHOTO. VIEW SOUTHWEST, IN DIRECTION OF FLOW							
12.	COLOR (2 PHOTOS)	VIEW UPSTREAM TOWARD BEARDSLEY CANAL LEVEE (REPAIRED) AND 700' OUTLET.							
13.	COLOR	BEARDSLEY CANAL LEVEE RESTORATION. DOWN STREAM OF 700' OUTLET. FLOW FROM RIGHT TO LEFT							
14.	COLOR	BEARDSLEY CANAL LEVEE. 700' OUTLET VISIBLE IN BACKGROUND.							
15.	COLOR	VIEW NORTH ACROSS 700' OUTLET. FLOW FROM LEFT TO RIGHT.							
16.	COLOR	VIEW INTO 700' OUTLET FROM DOWNSTREAM SIDE SHOWING TOE EROSION							
17.	COLOR (2 PHOTOS)	VIEW SOUTHEAST FROM ON TOP OF DAM EMBANKMENT AT 700' OUTLET SHOWING FLOW TOWARD BEARDSLEY CANAL.							
18.	COLOR	IRRIGATION DITCHES AND ROAD EROSION ALONG SARIVAL AVENUE SOUTH OF GREENWAY ROAD.							

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→ COTTON RD.

GREENWAY RD.

32

SARIVAL AVE.

Q AVENUE

33

→ CITRUS RD.

→ BELL RD.

34

55

56

37

→ PEDRIA AVENUE

18

→ PEDRIA AVENUE

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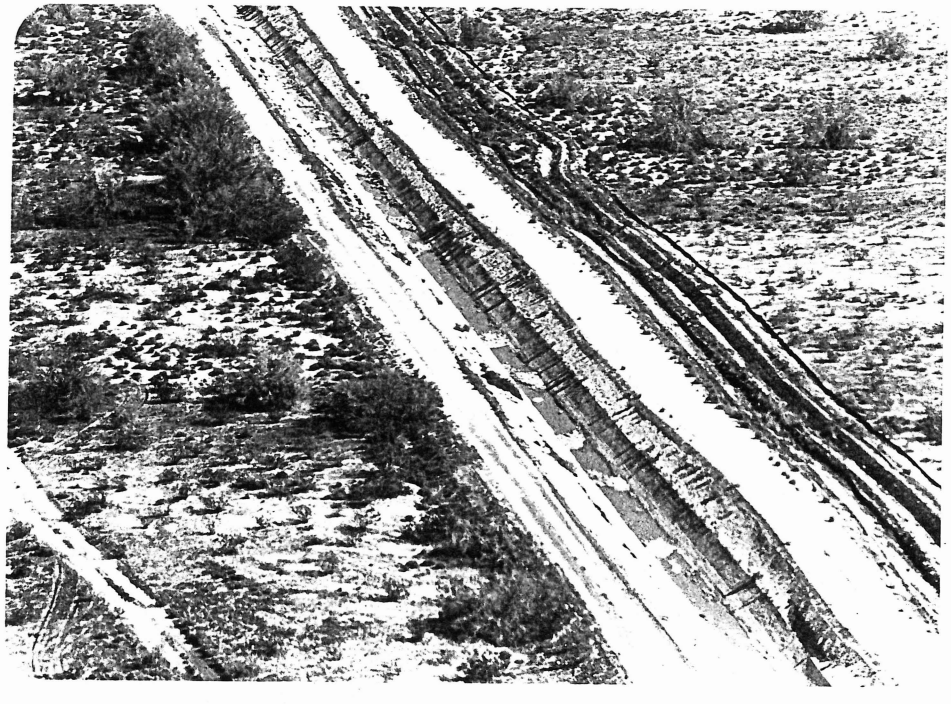

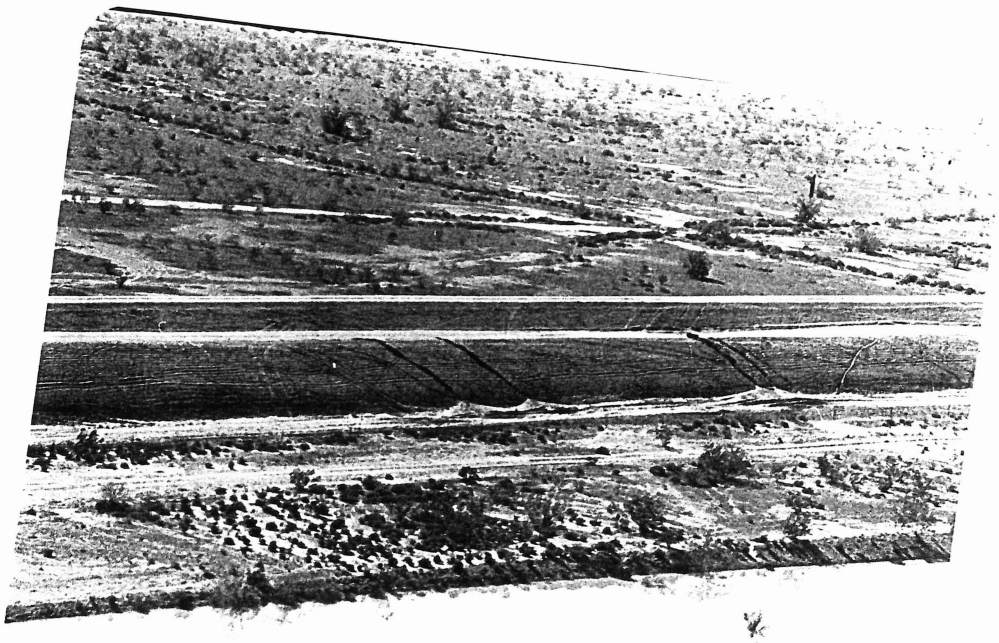

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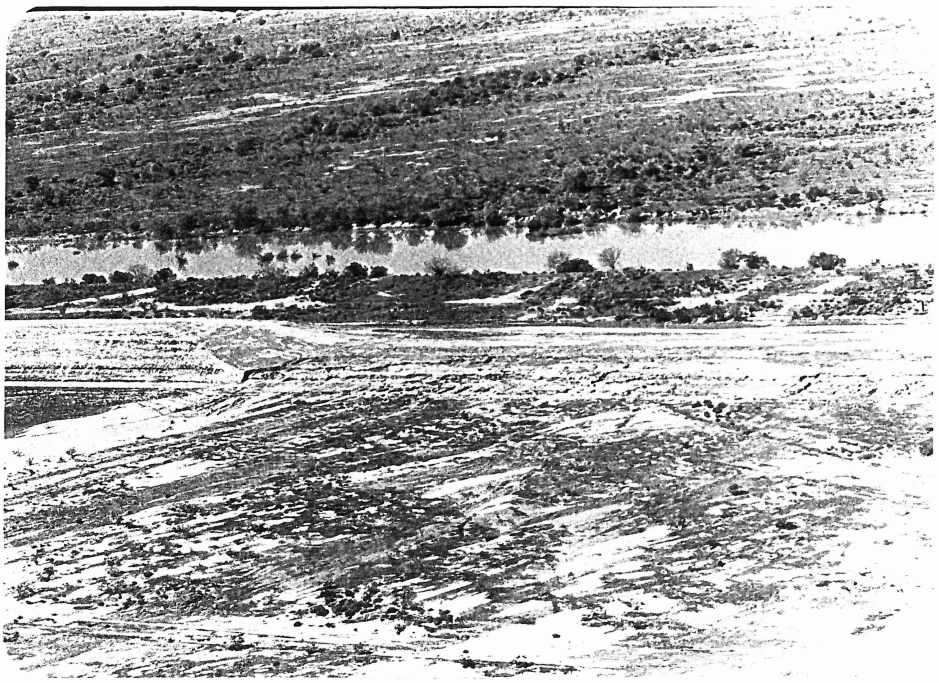

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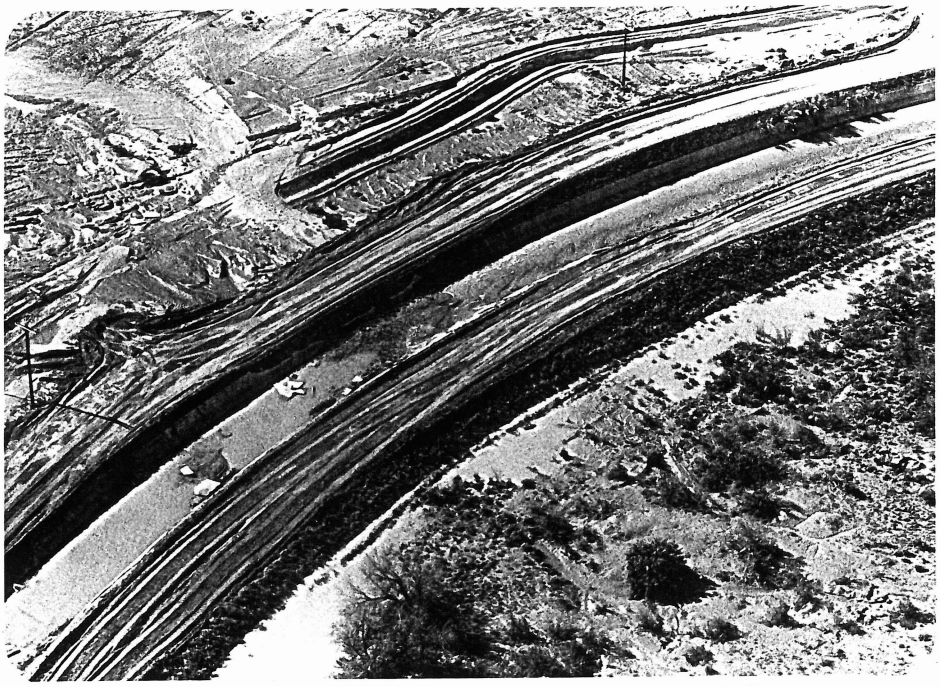

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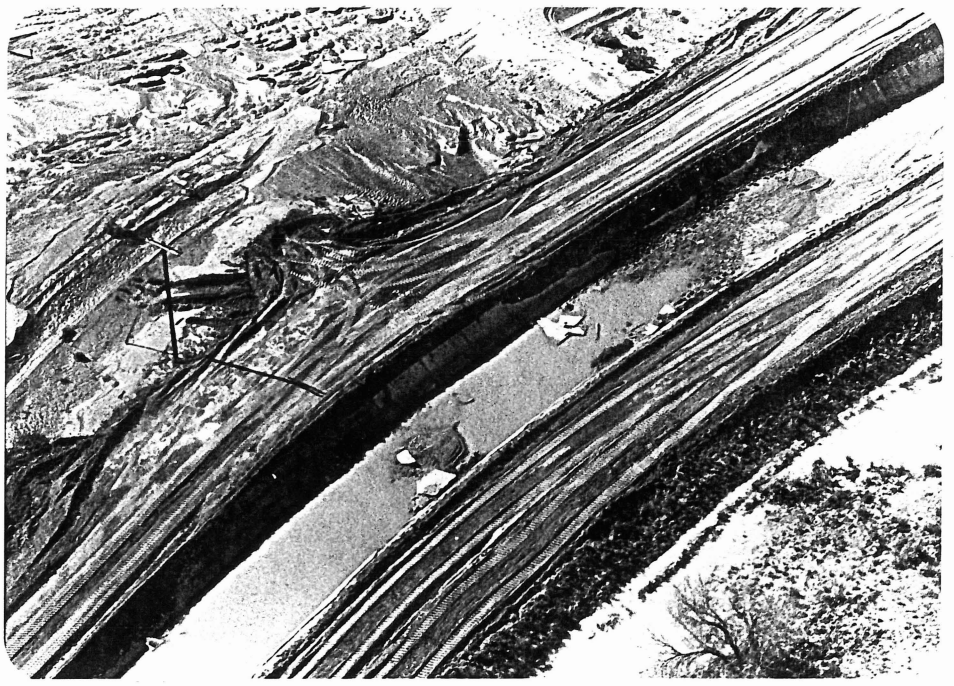

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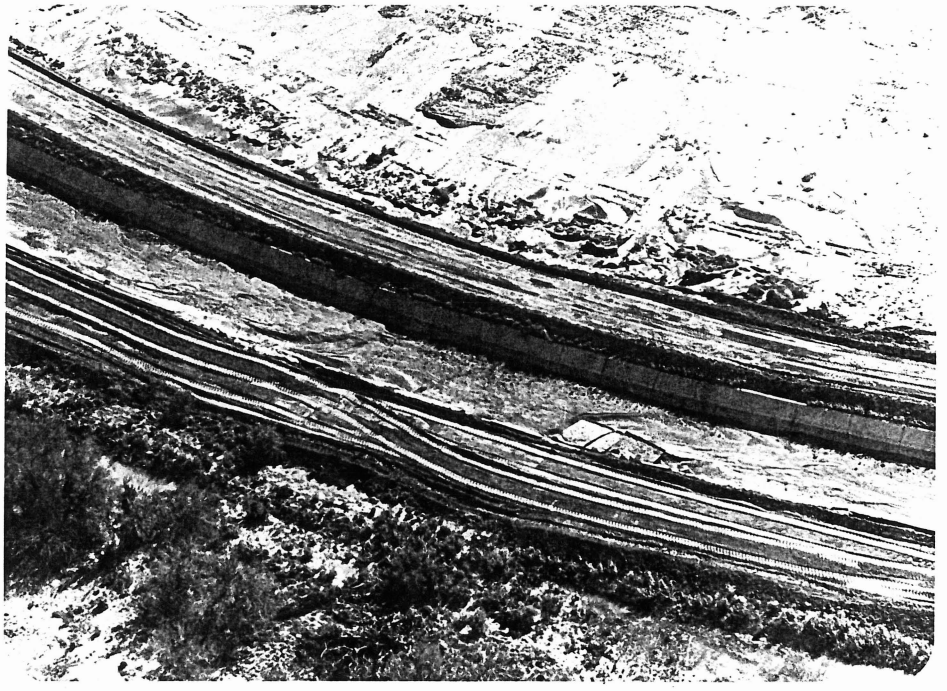

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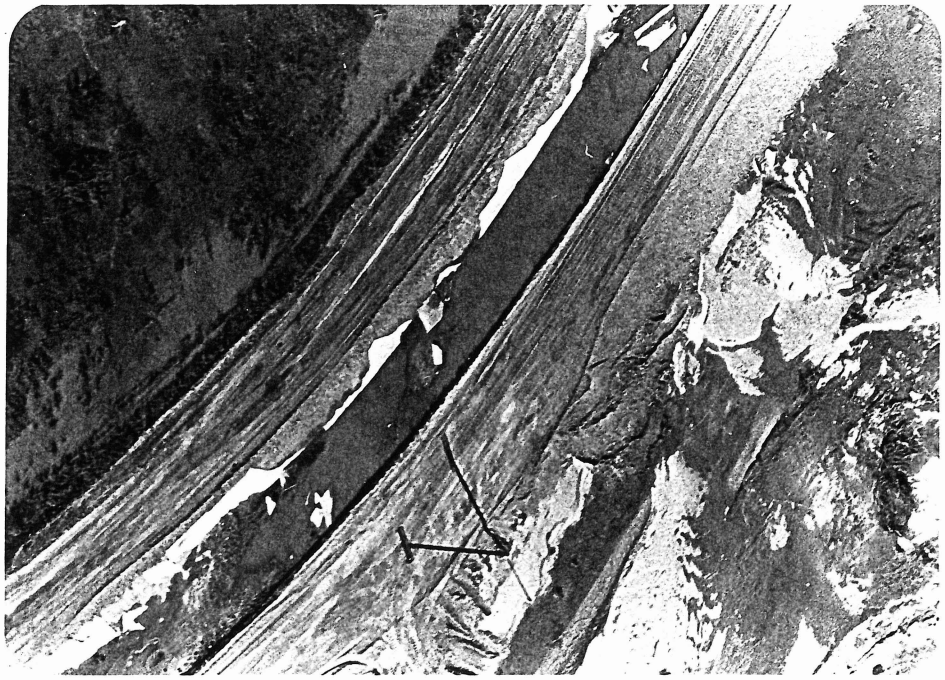

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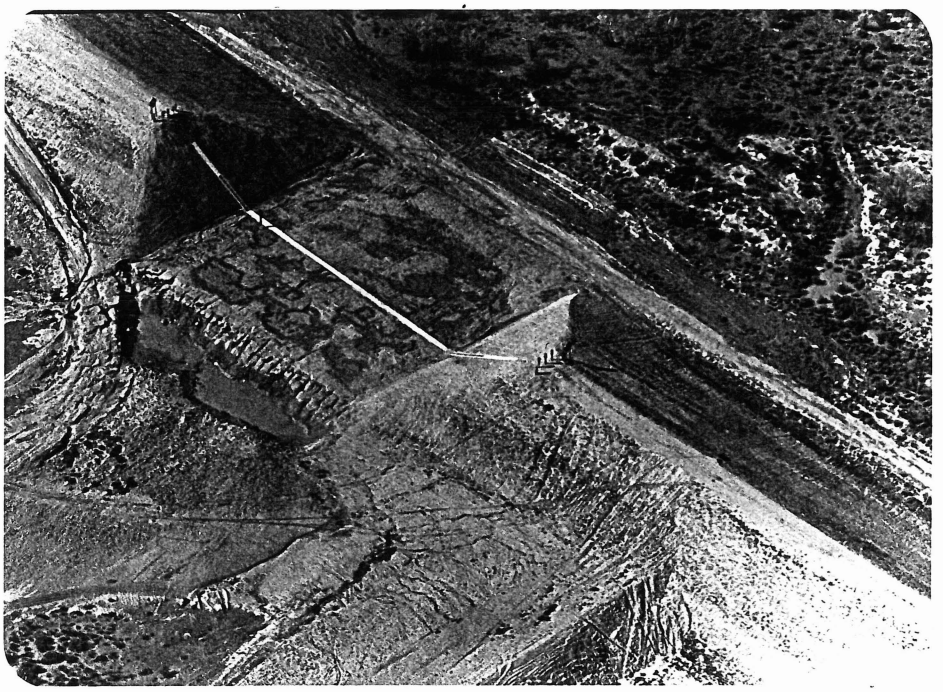

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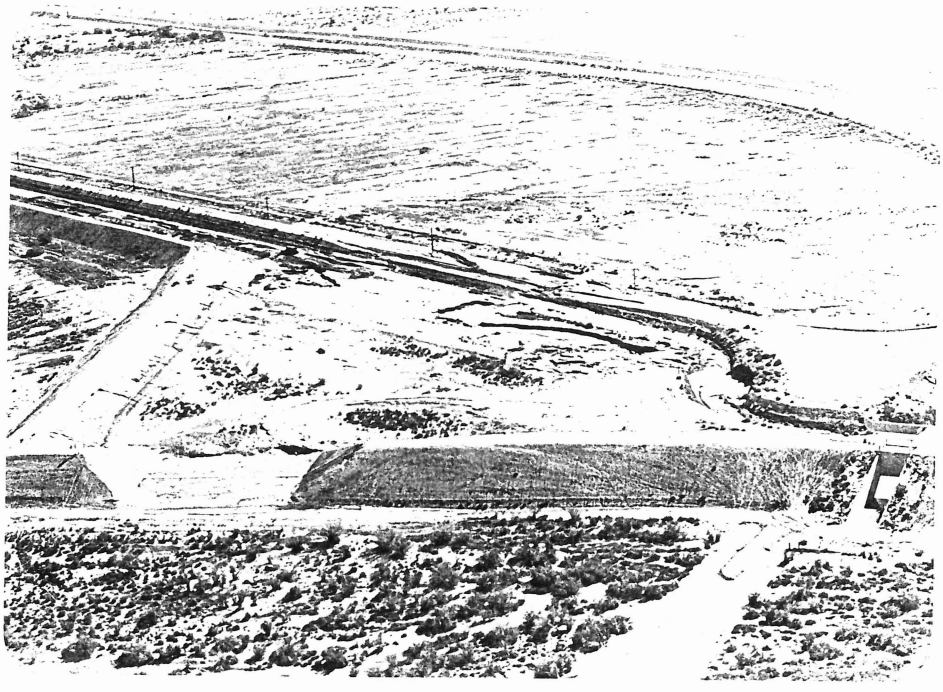

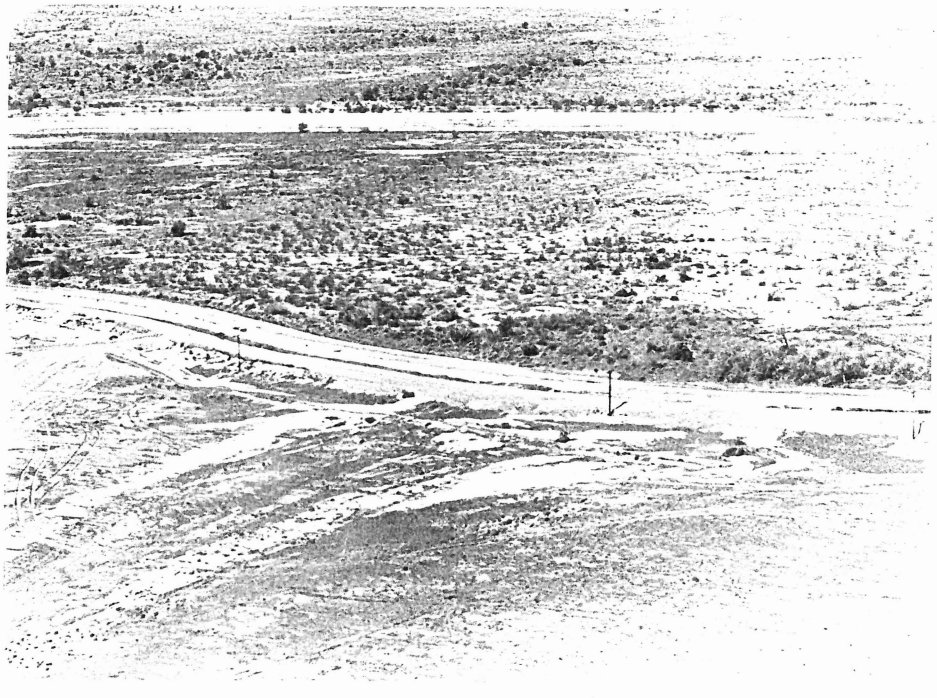

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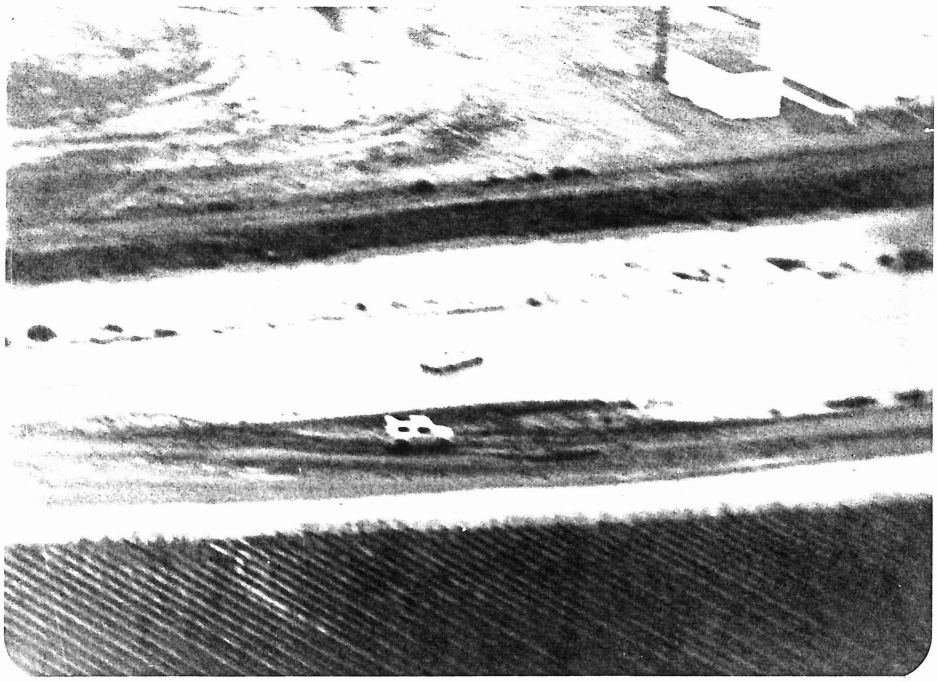

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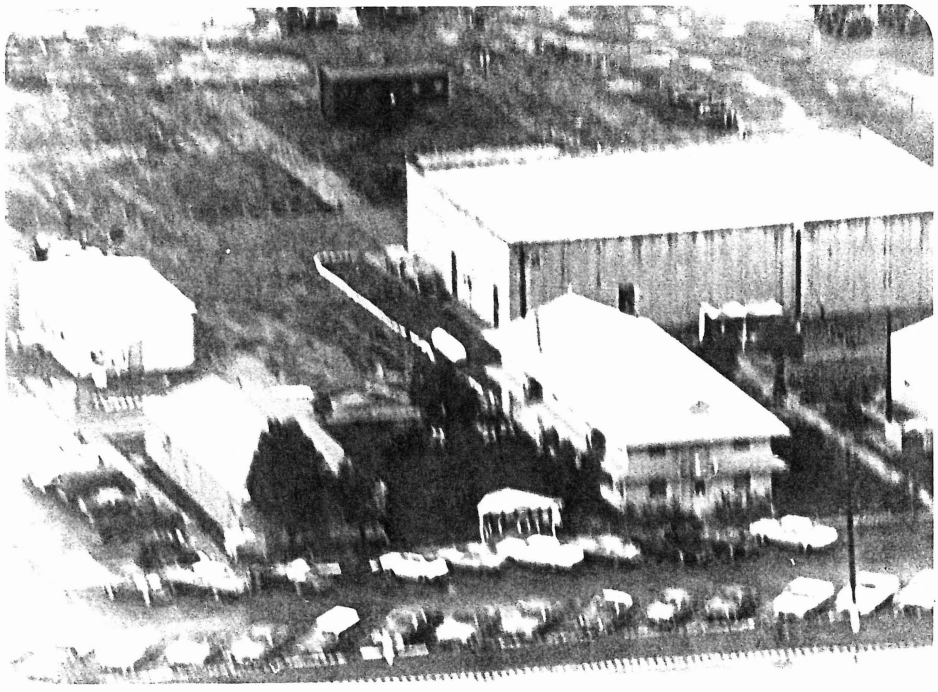

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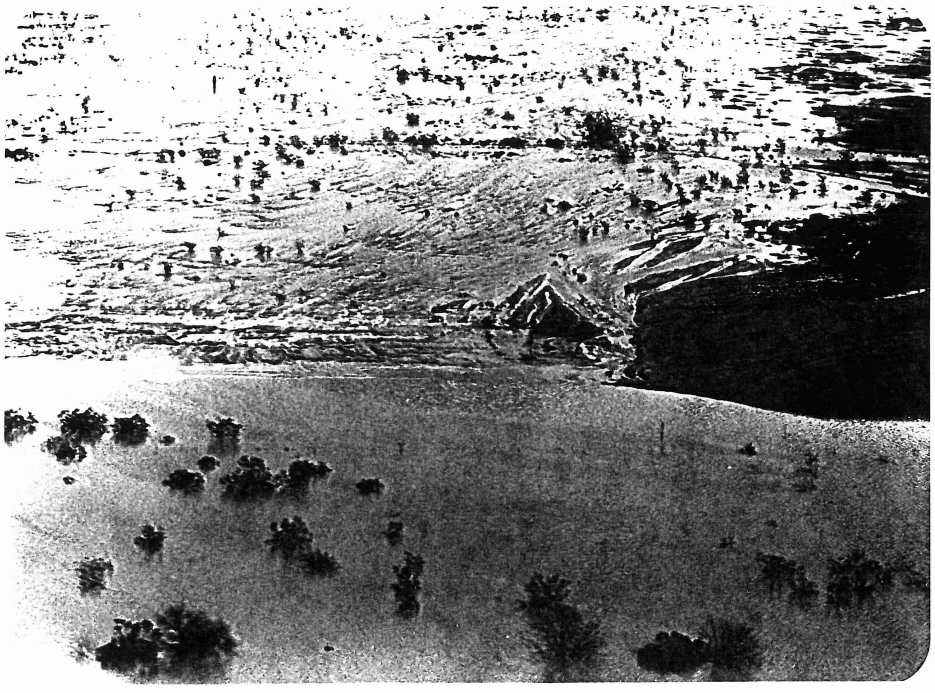

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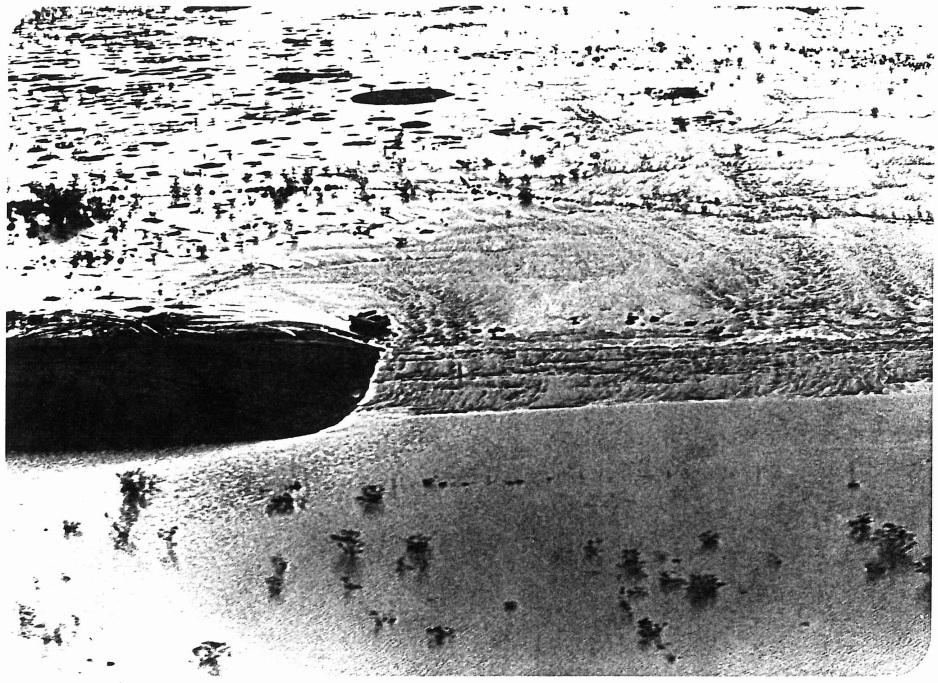

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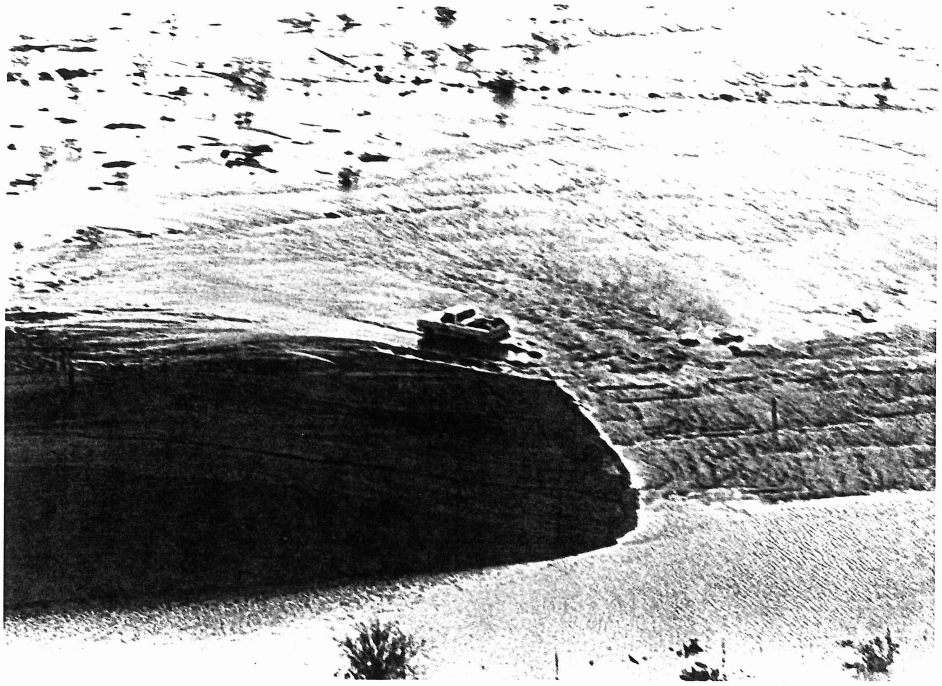

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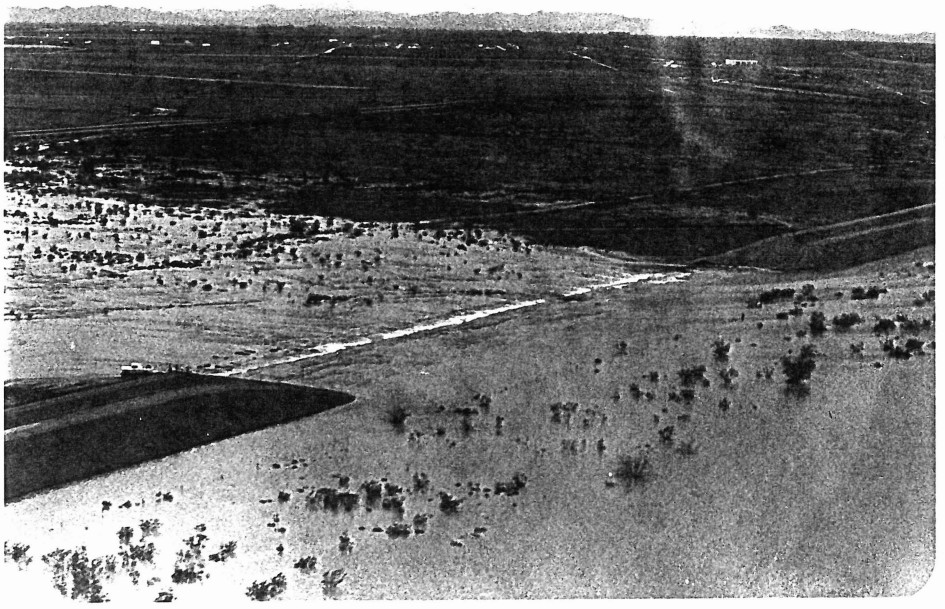

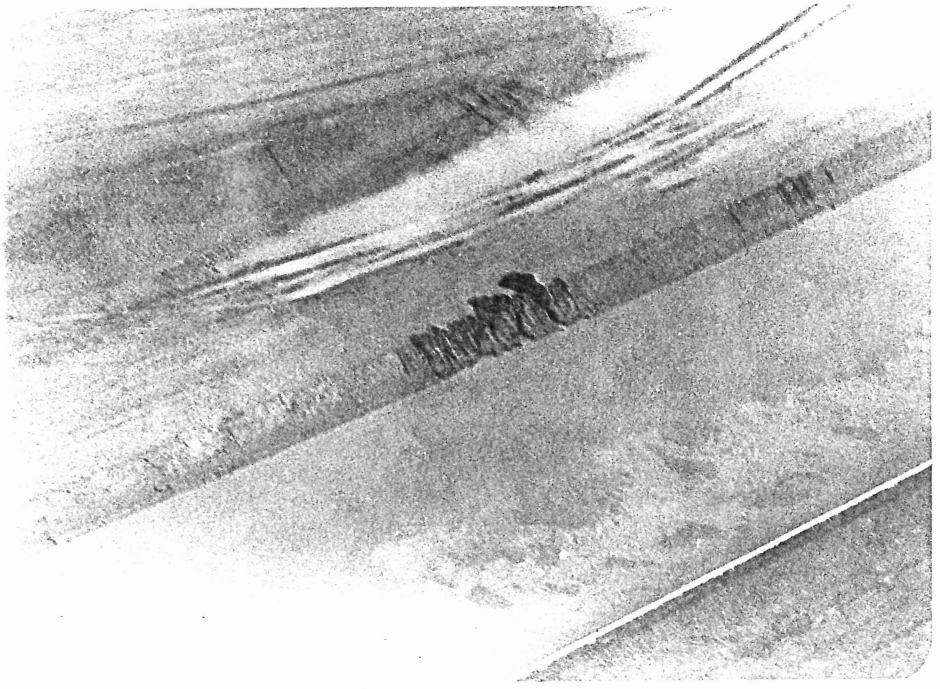

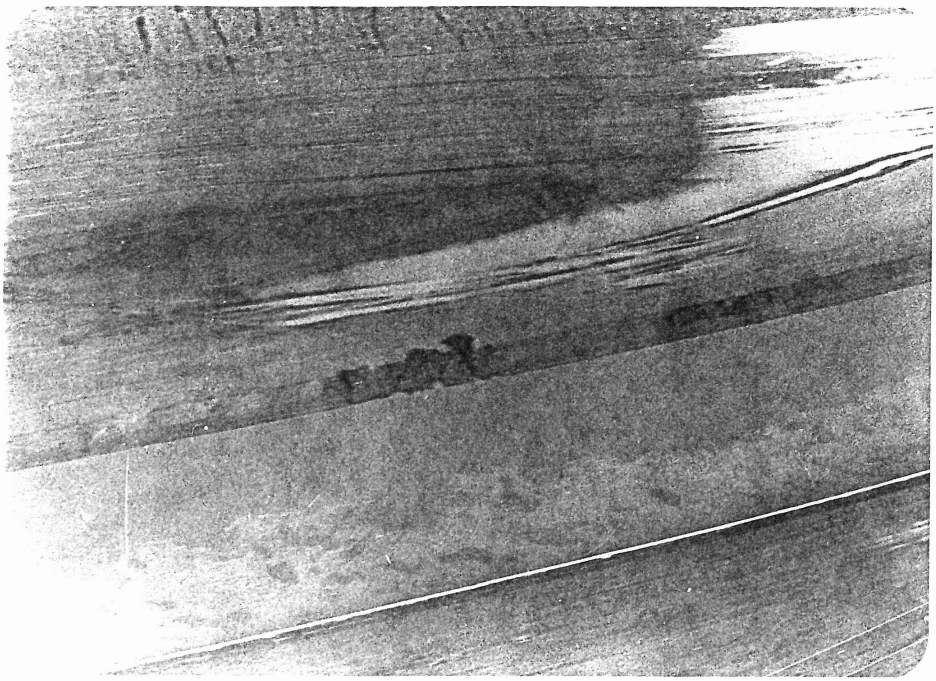

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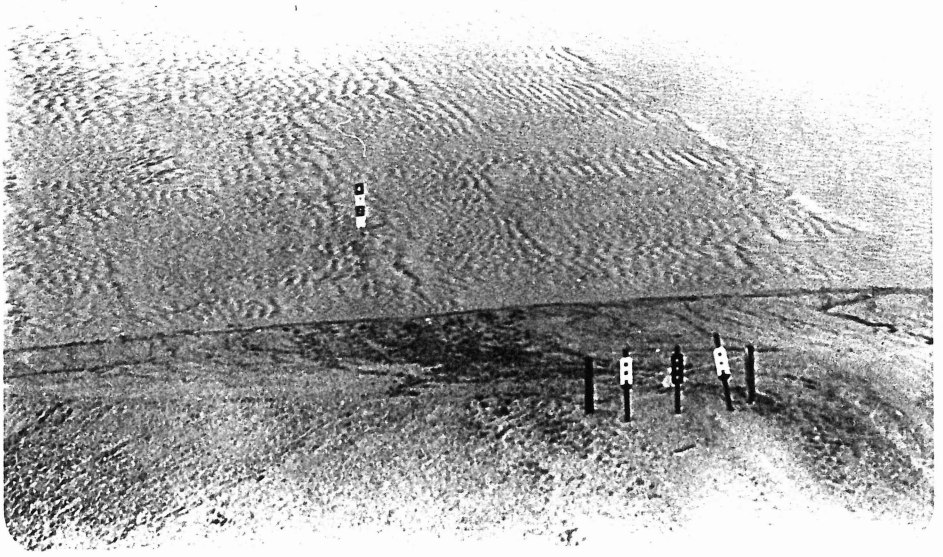

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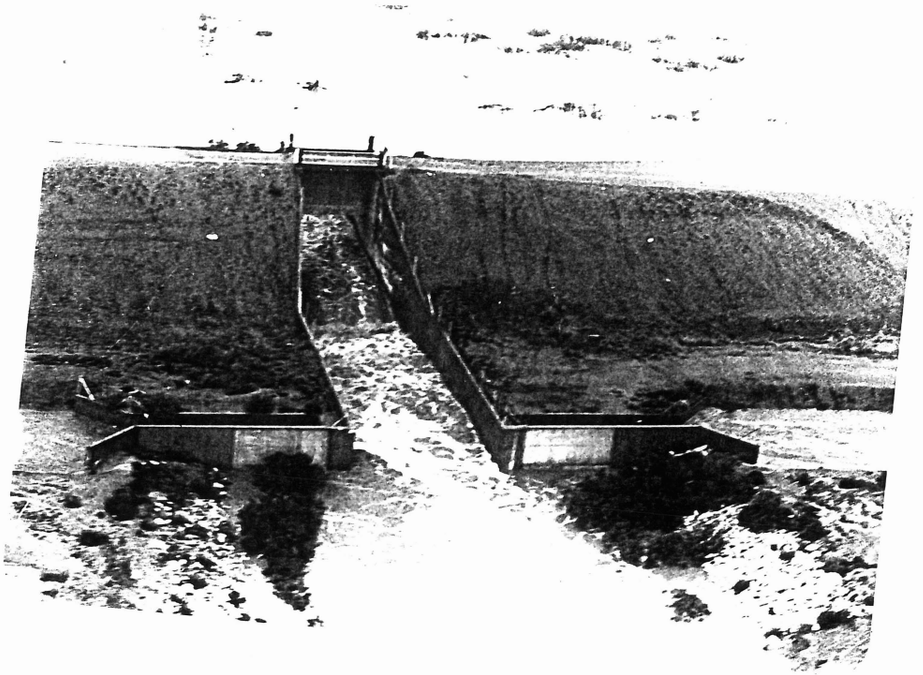

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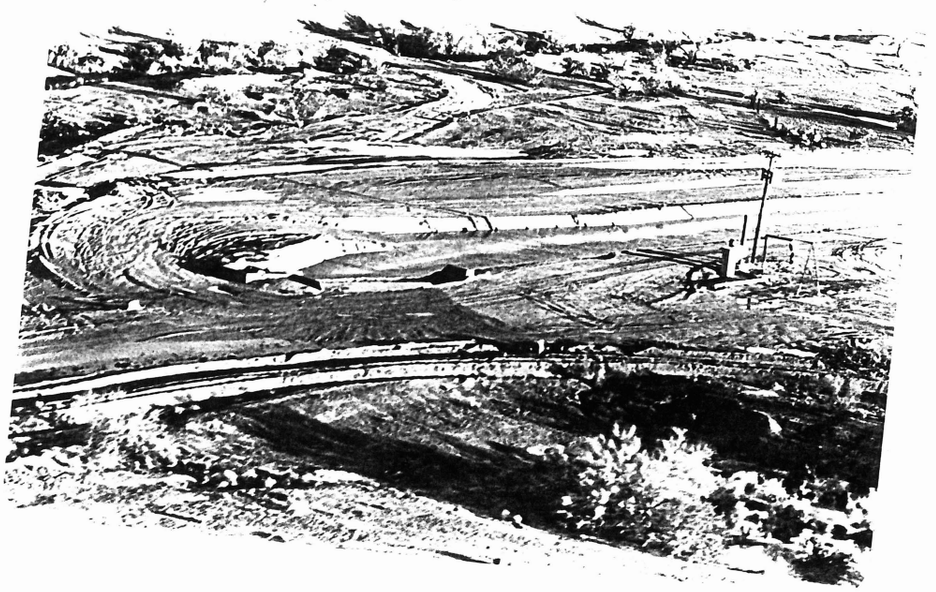

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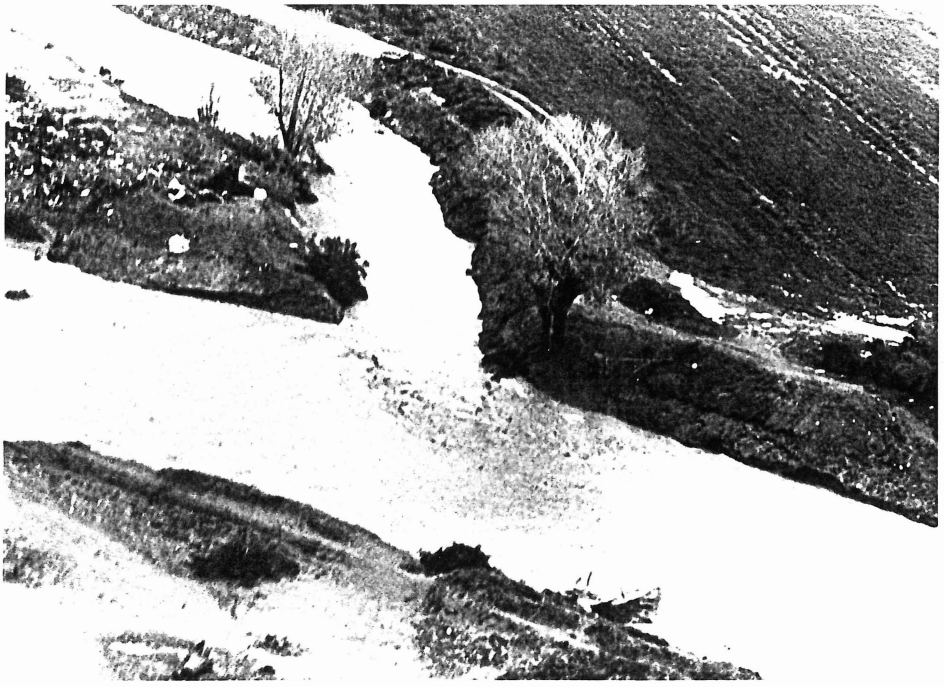

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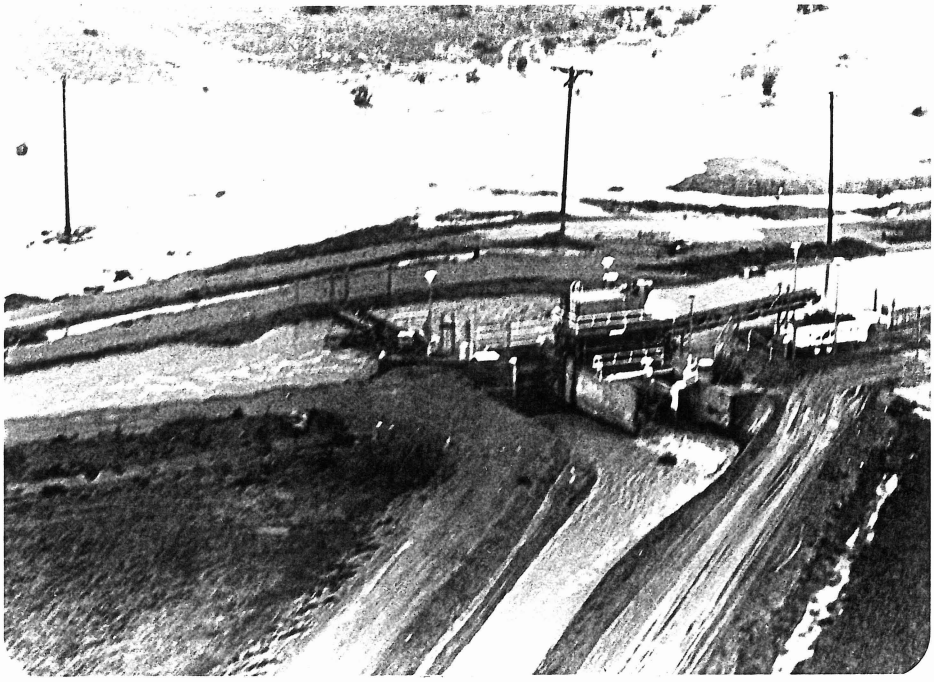

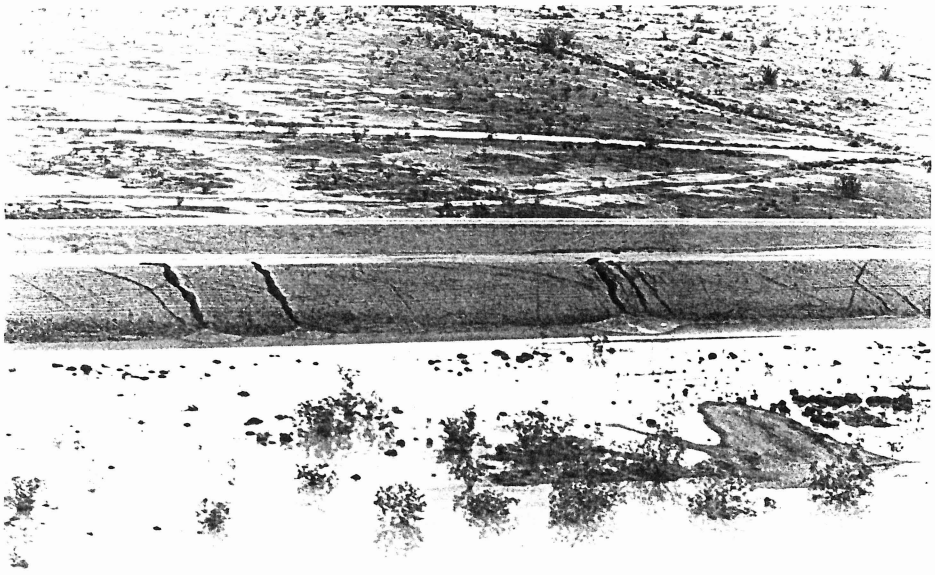

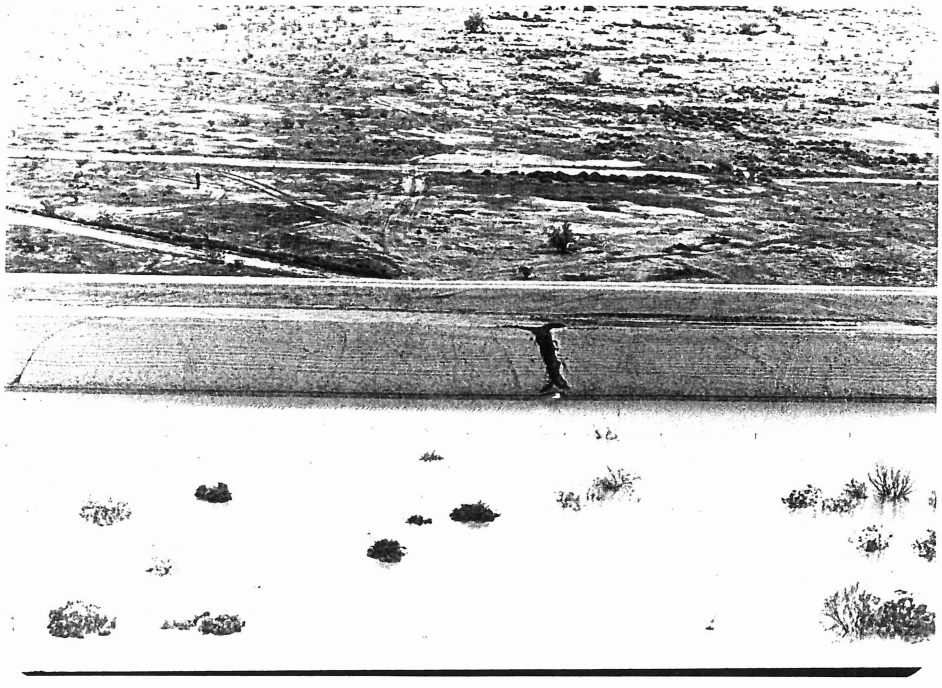

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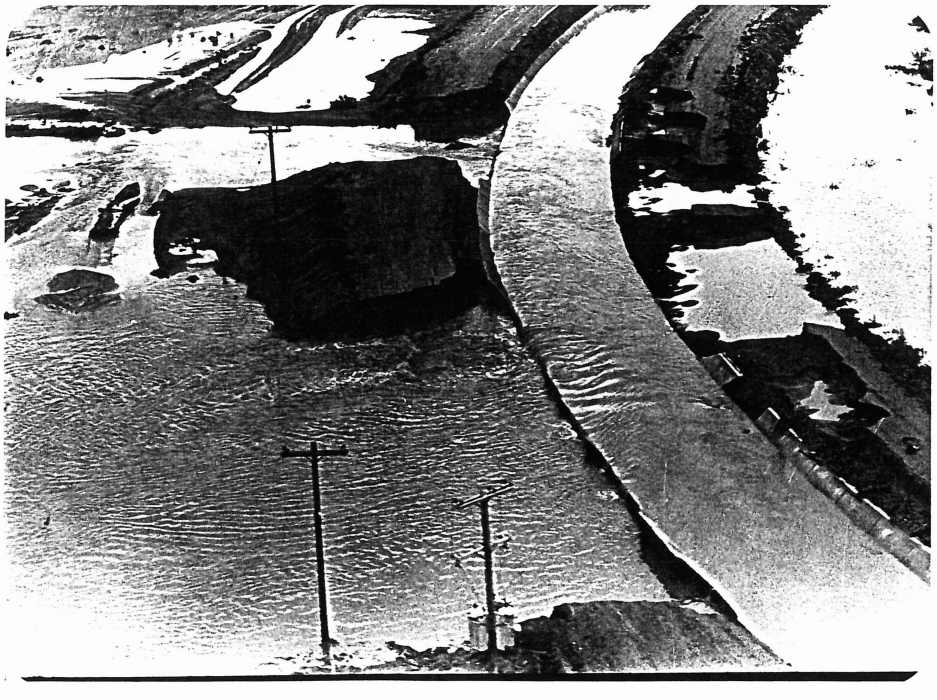

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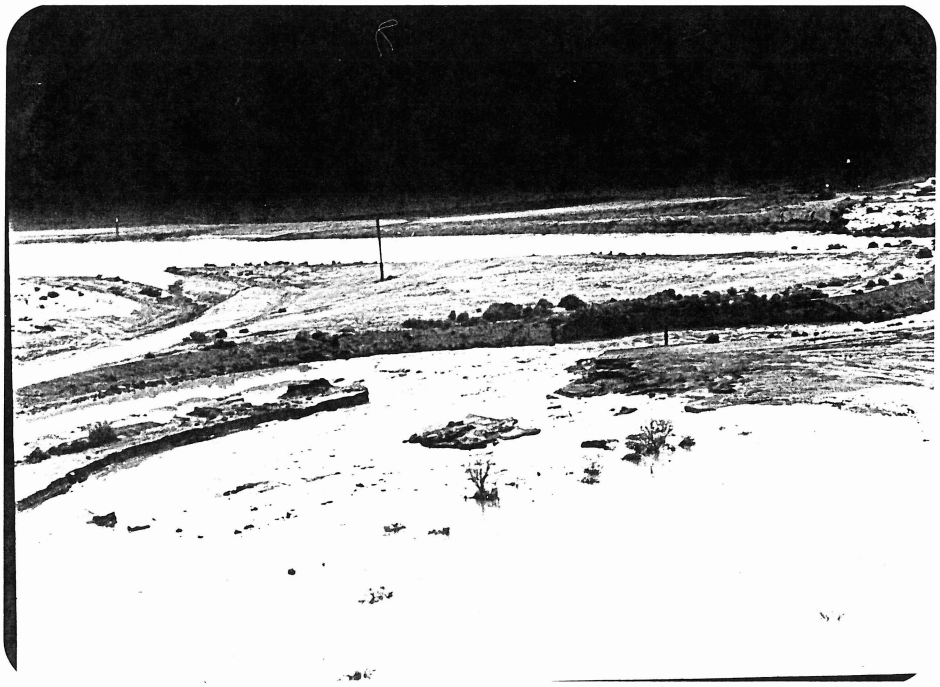

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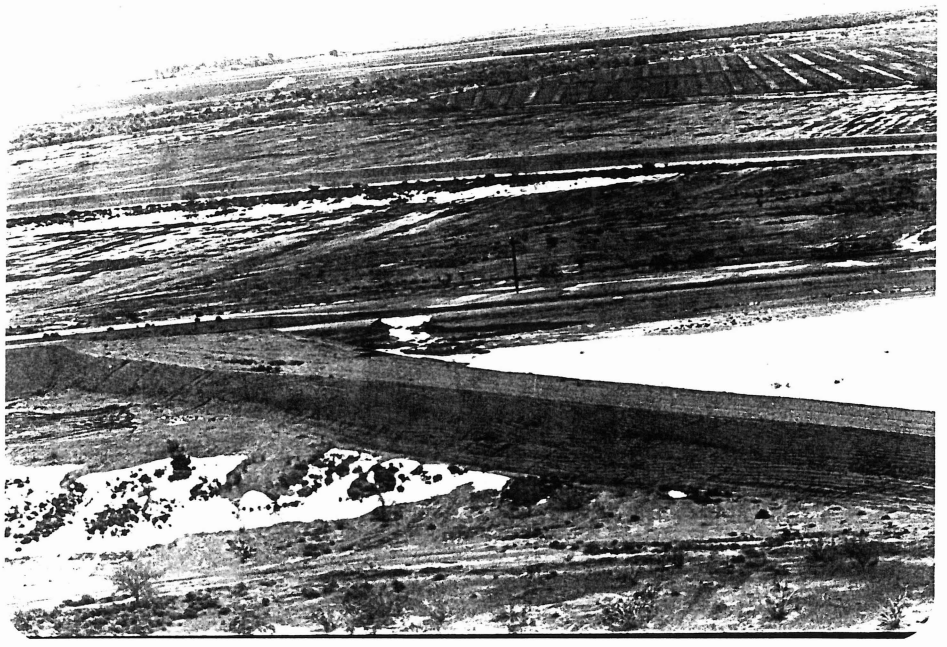

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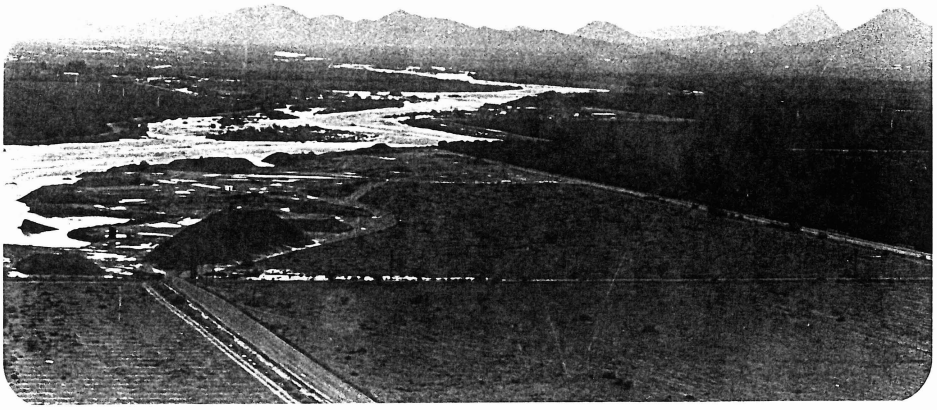

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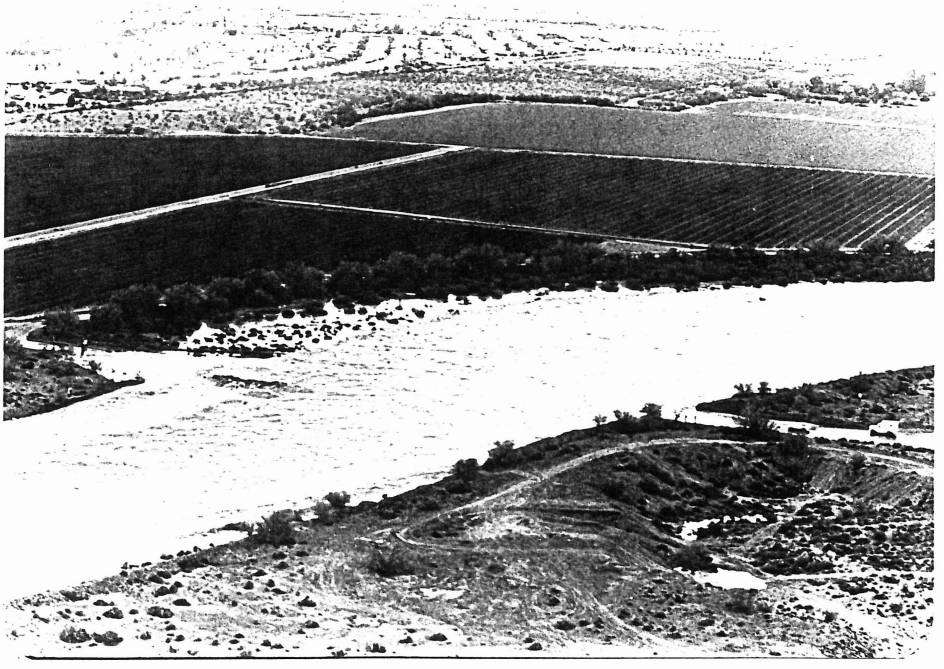

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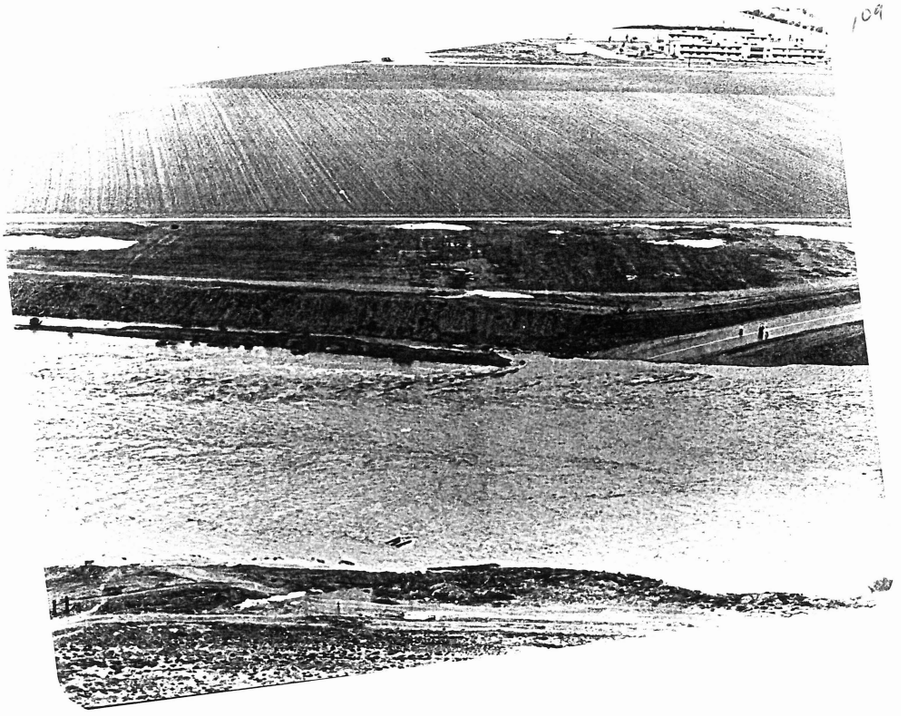

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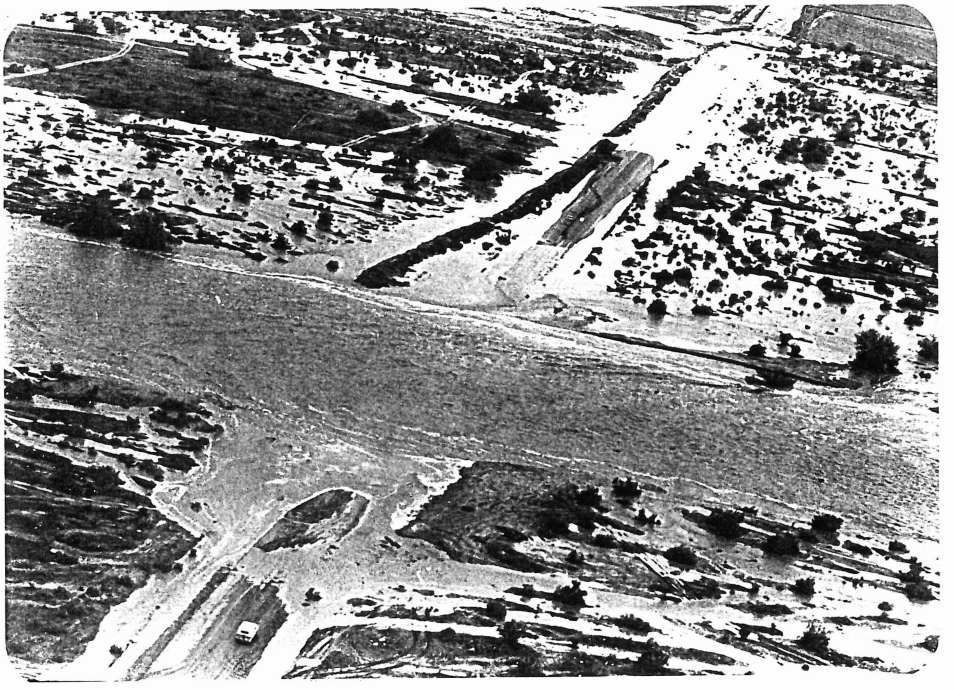

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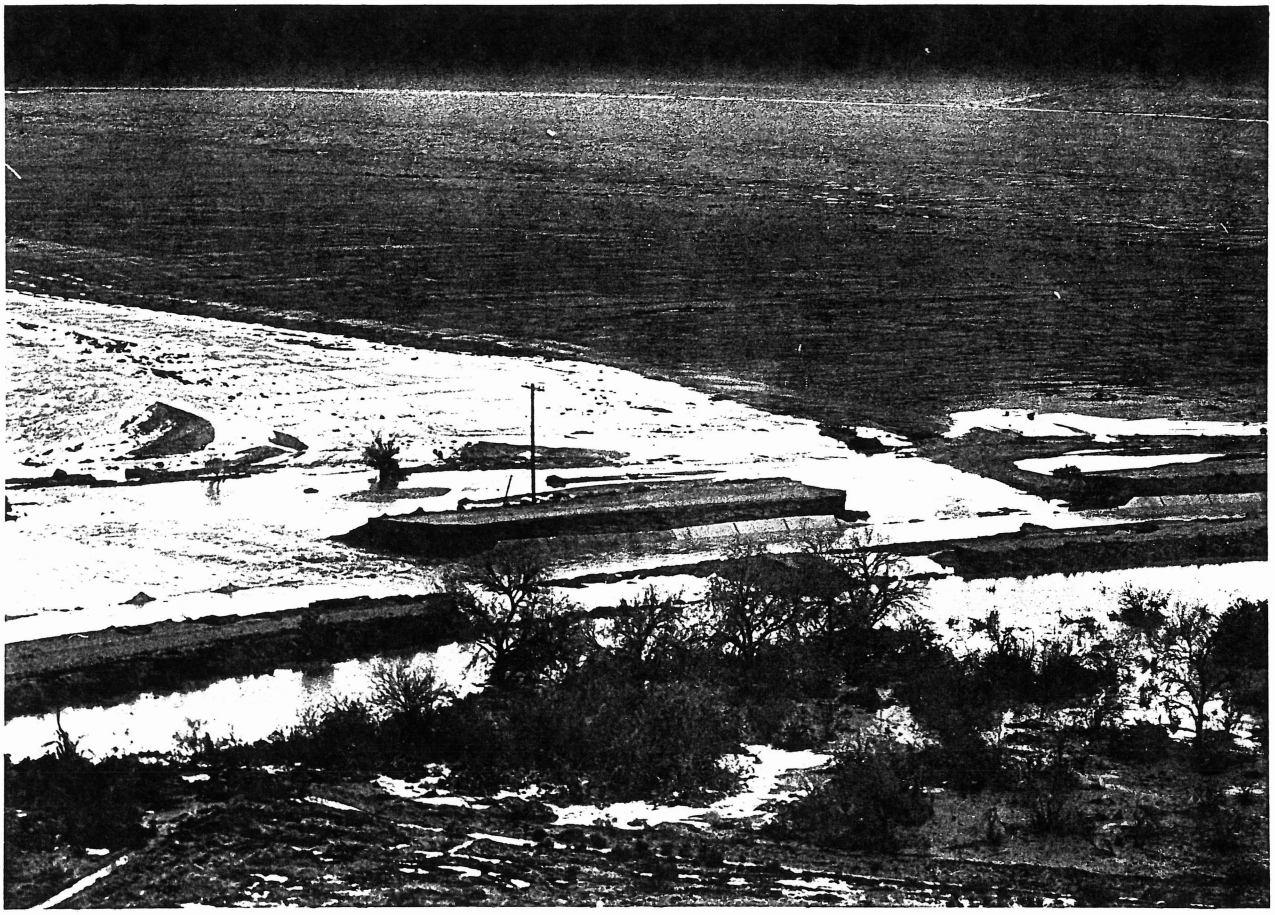

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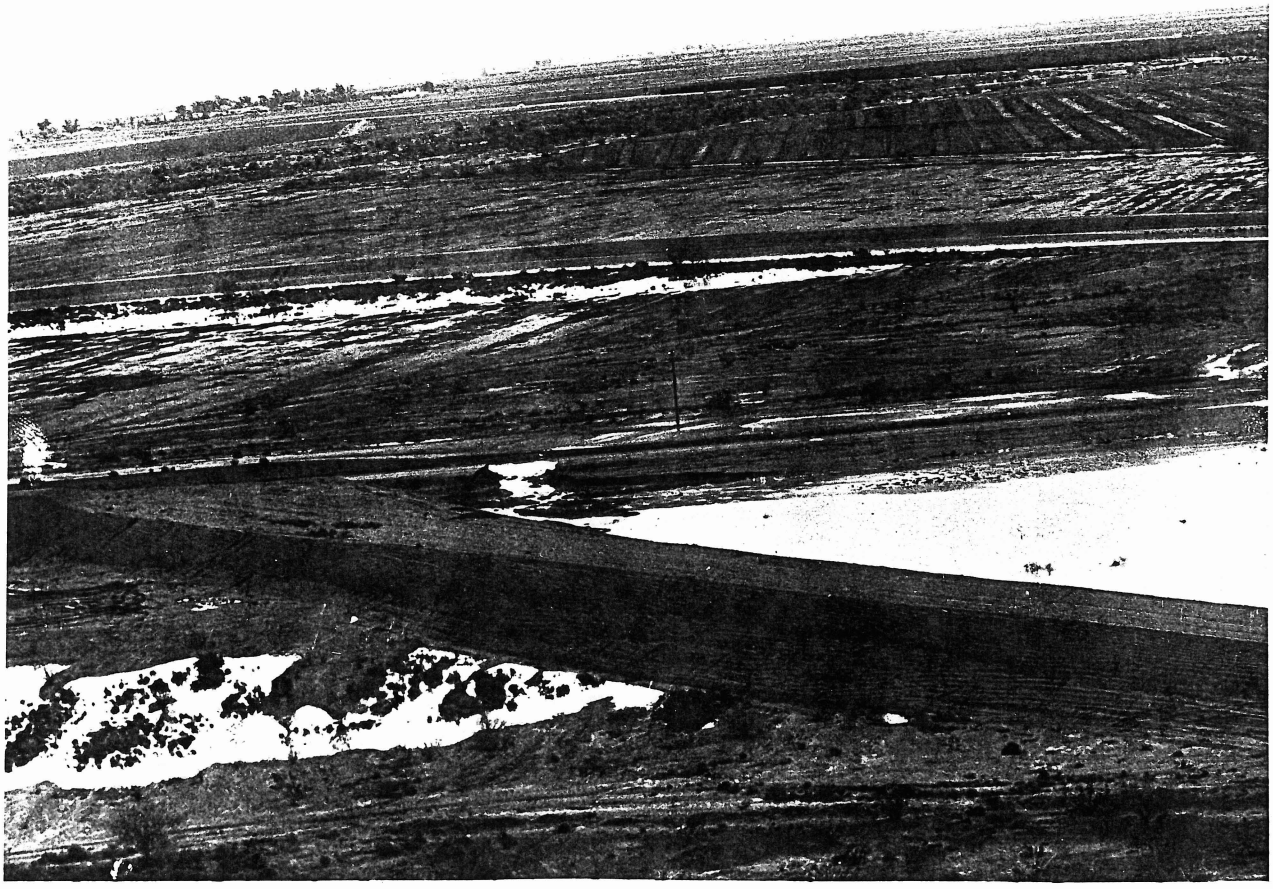

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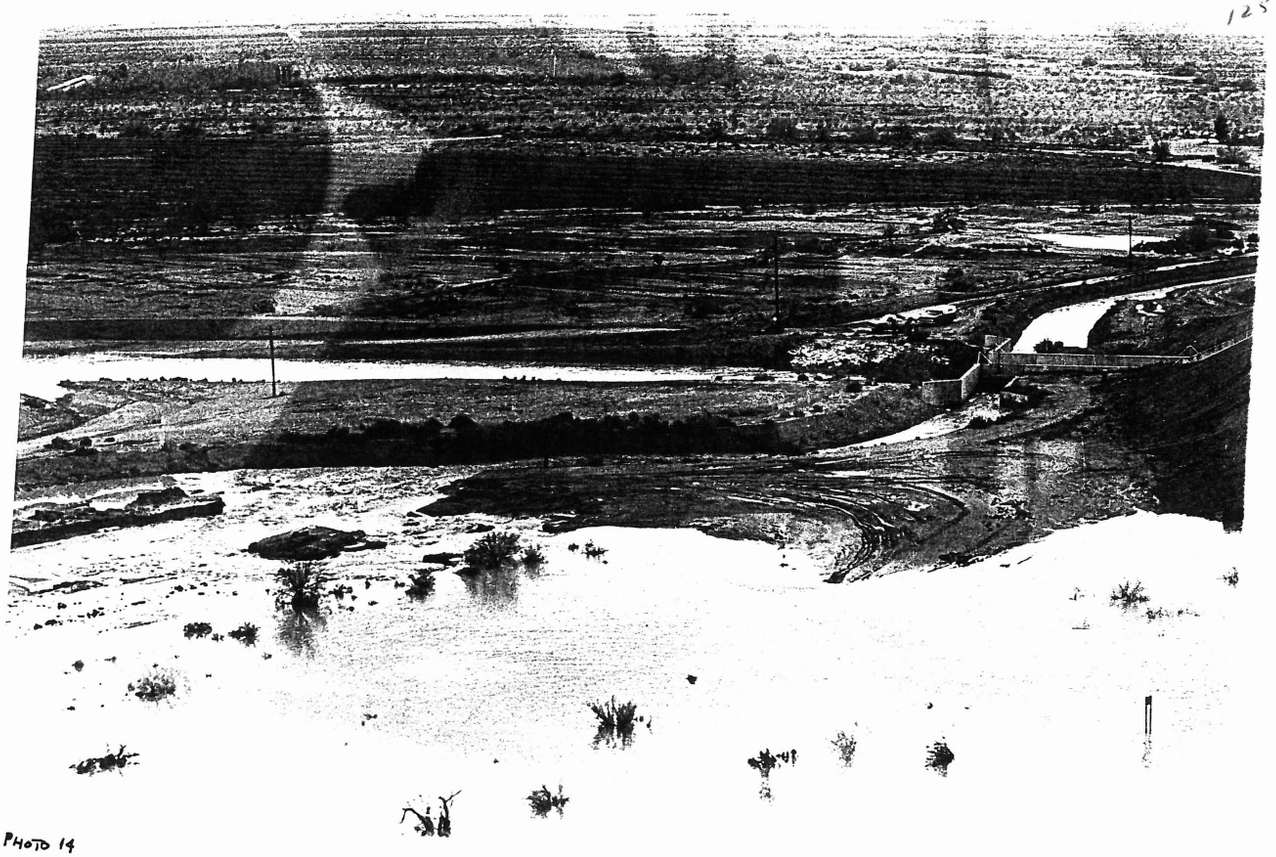

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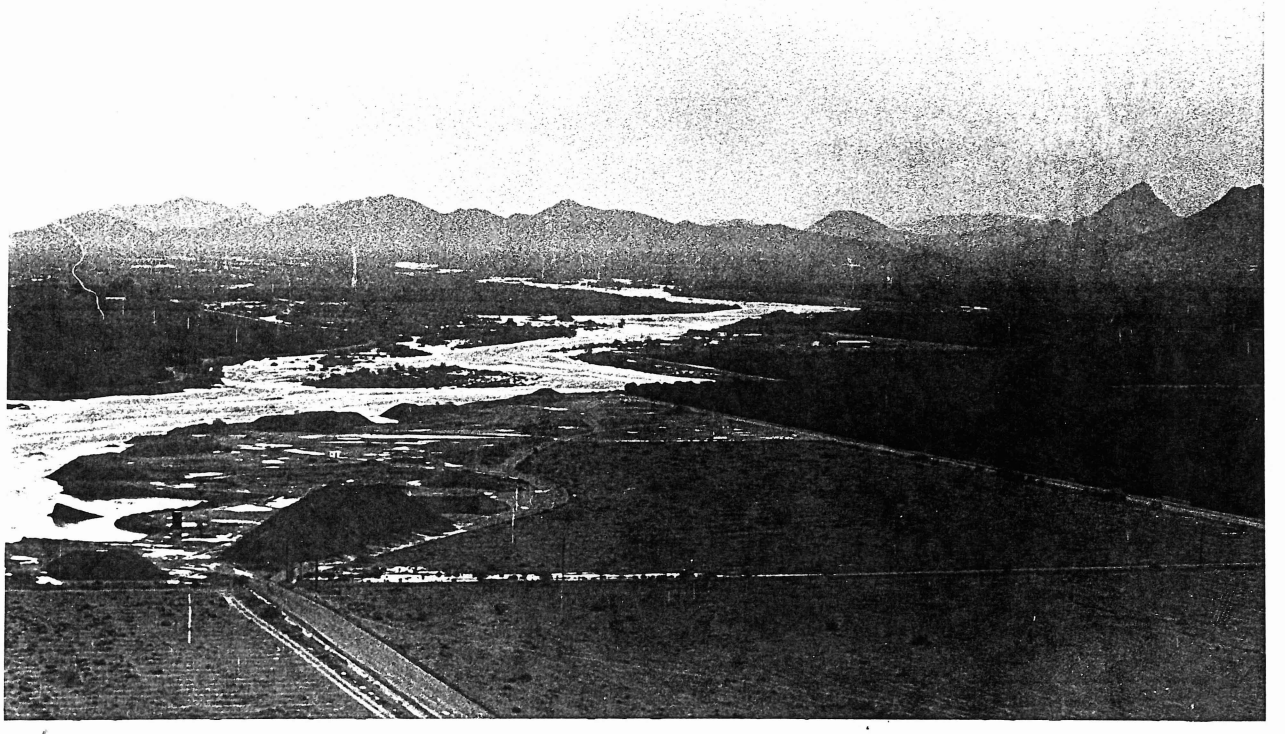

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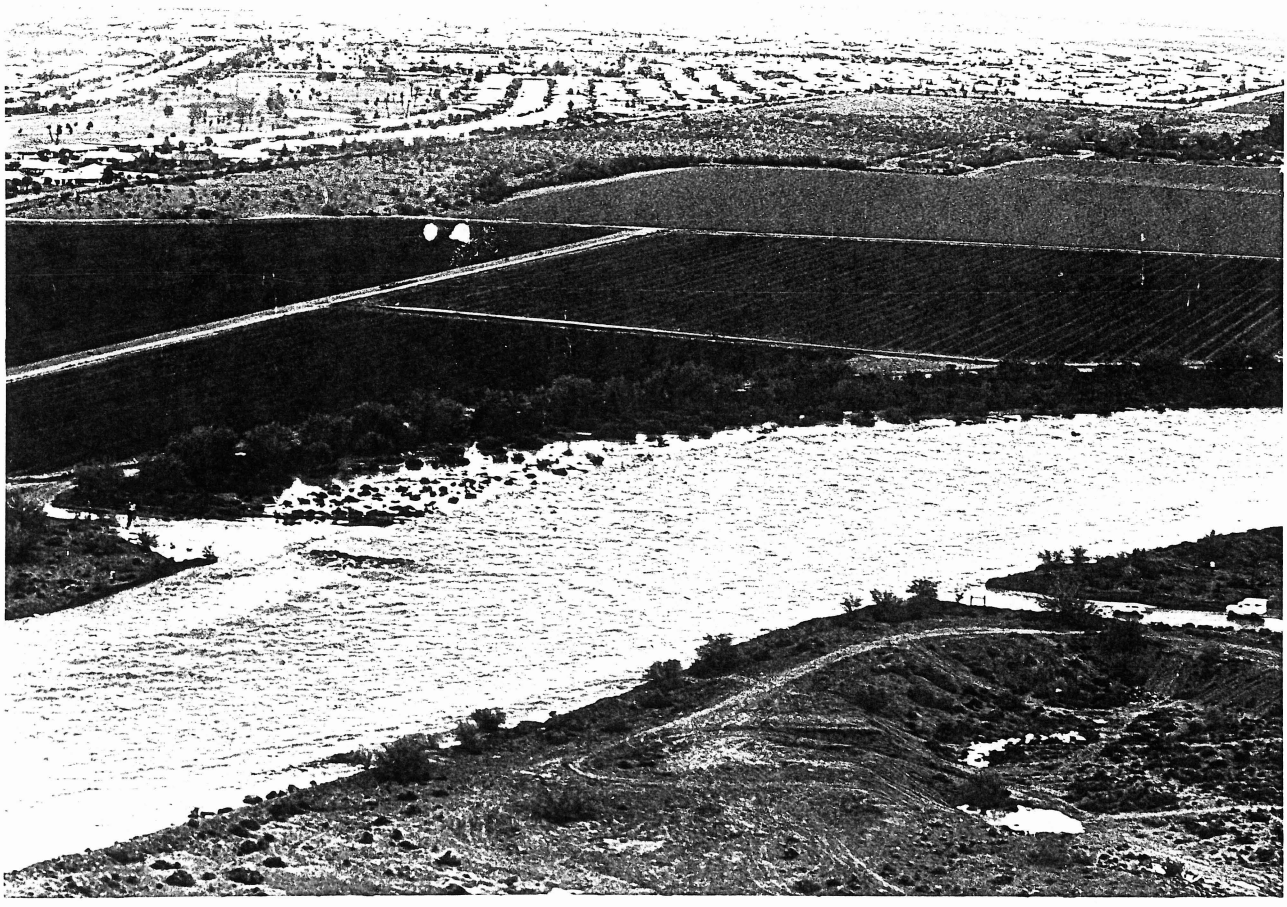

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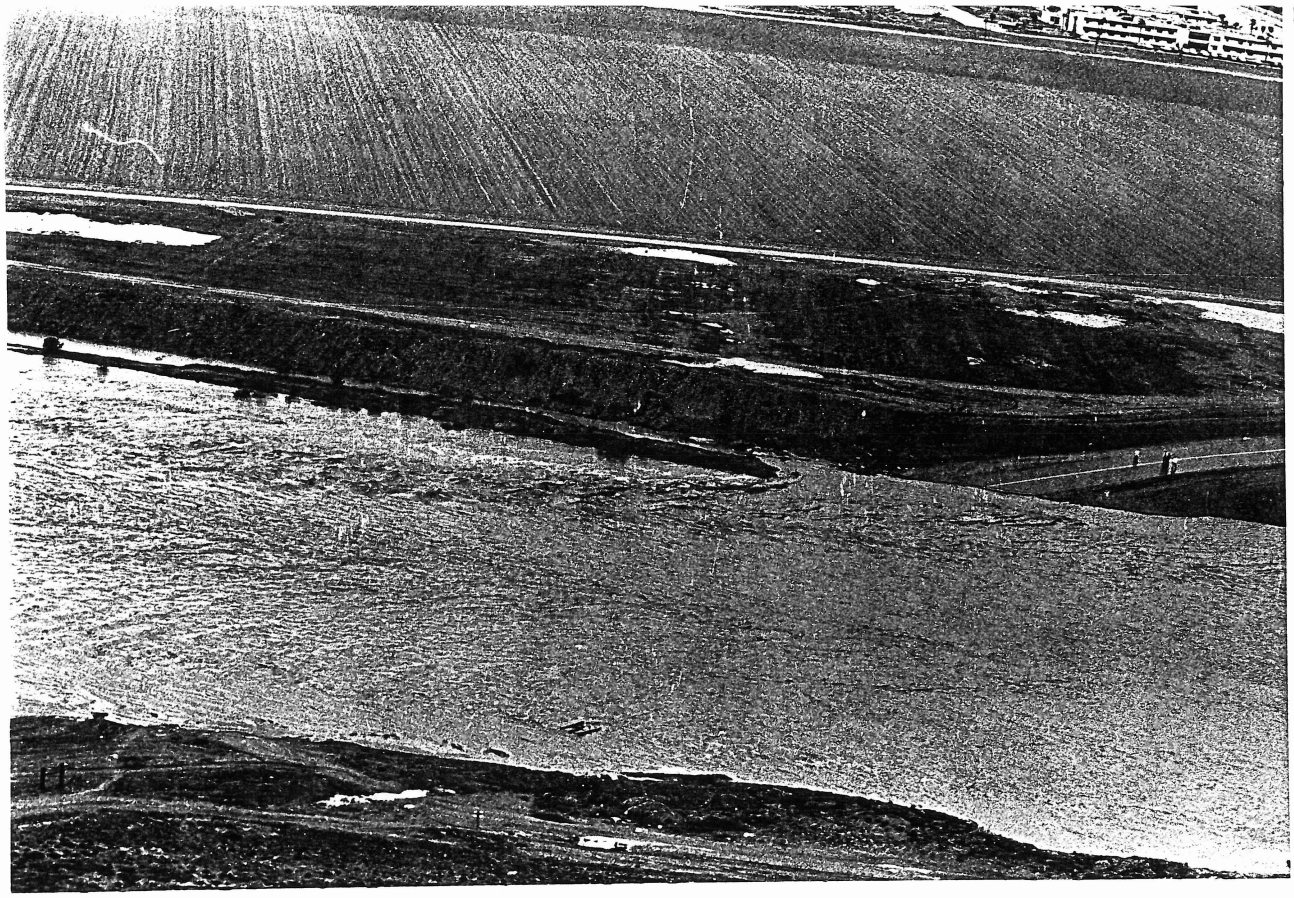

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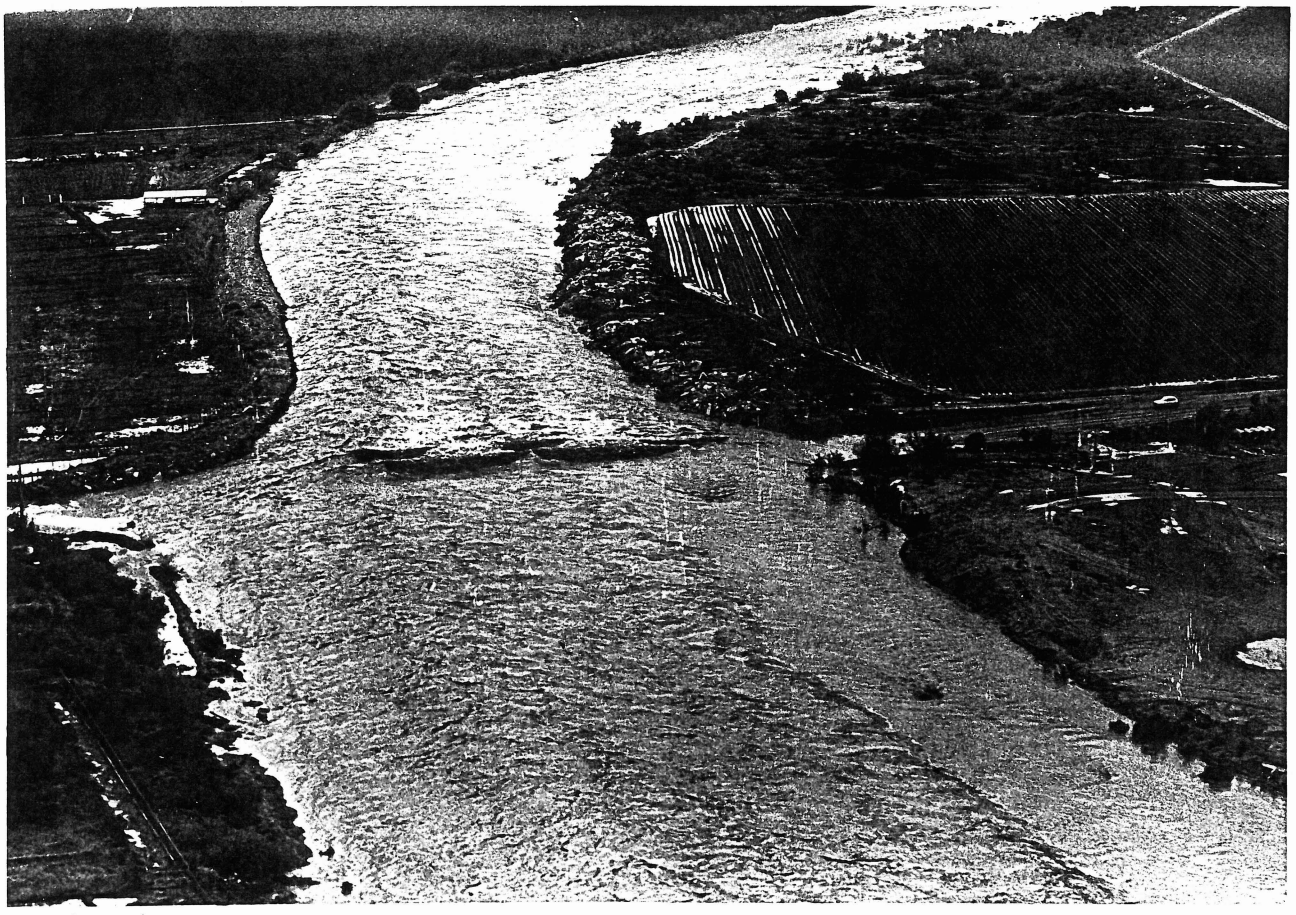

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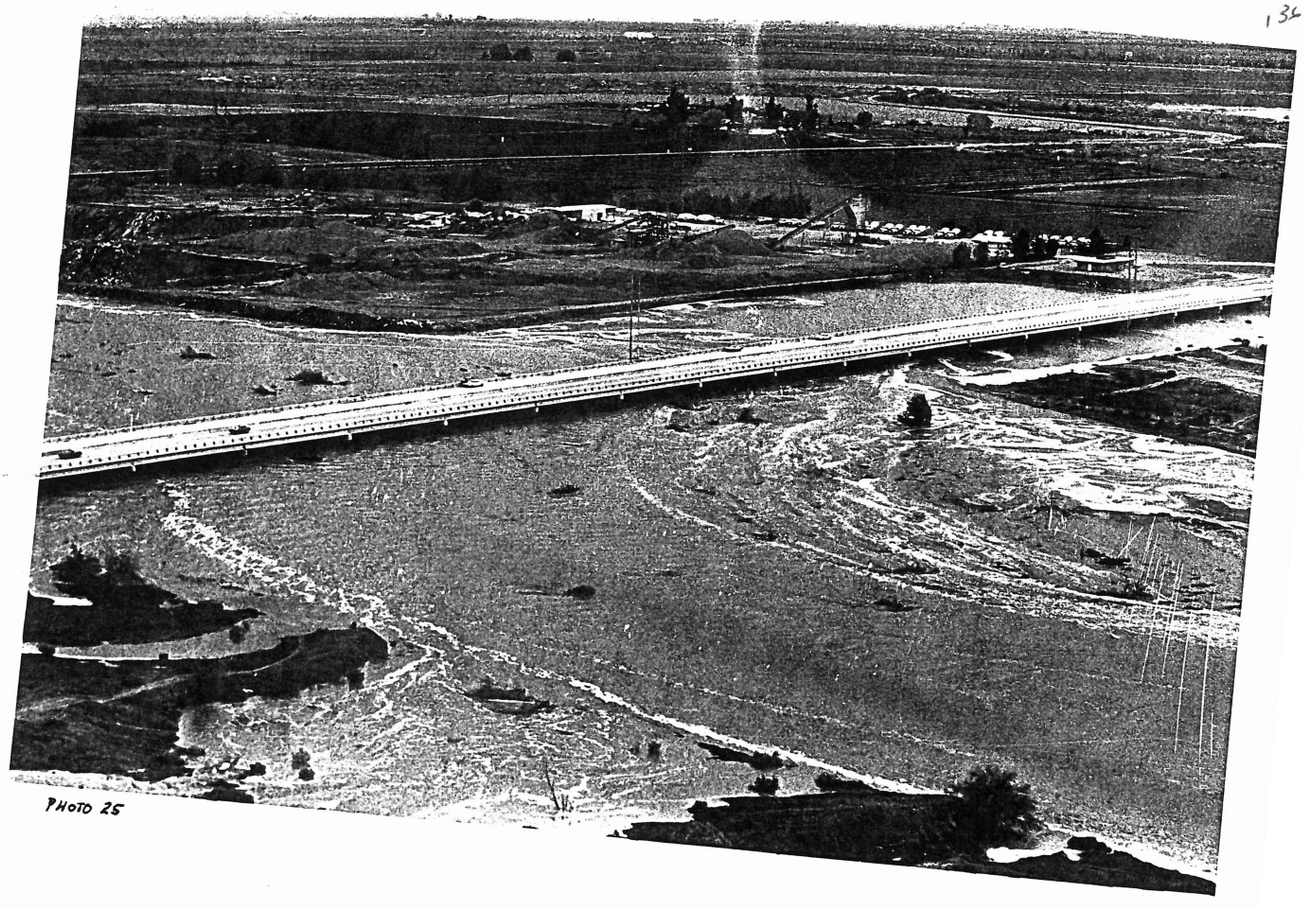

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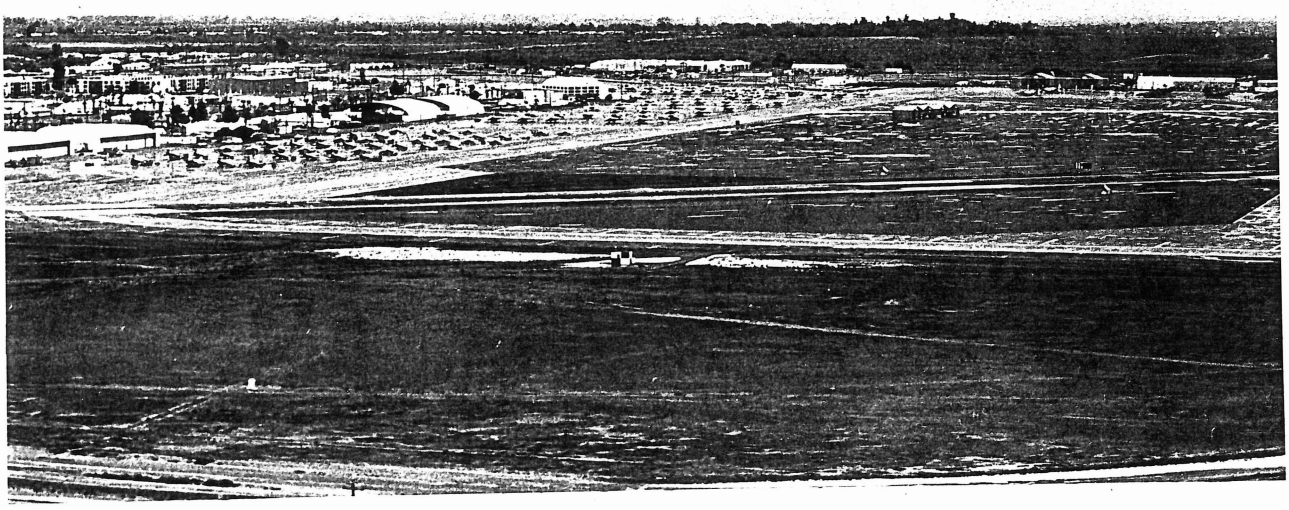

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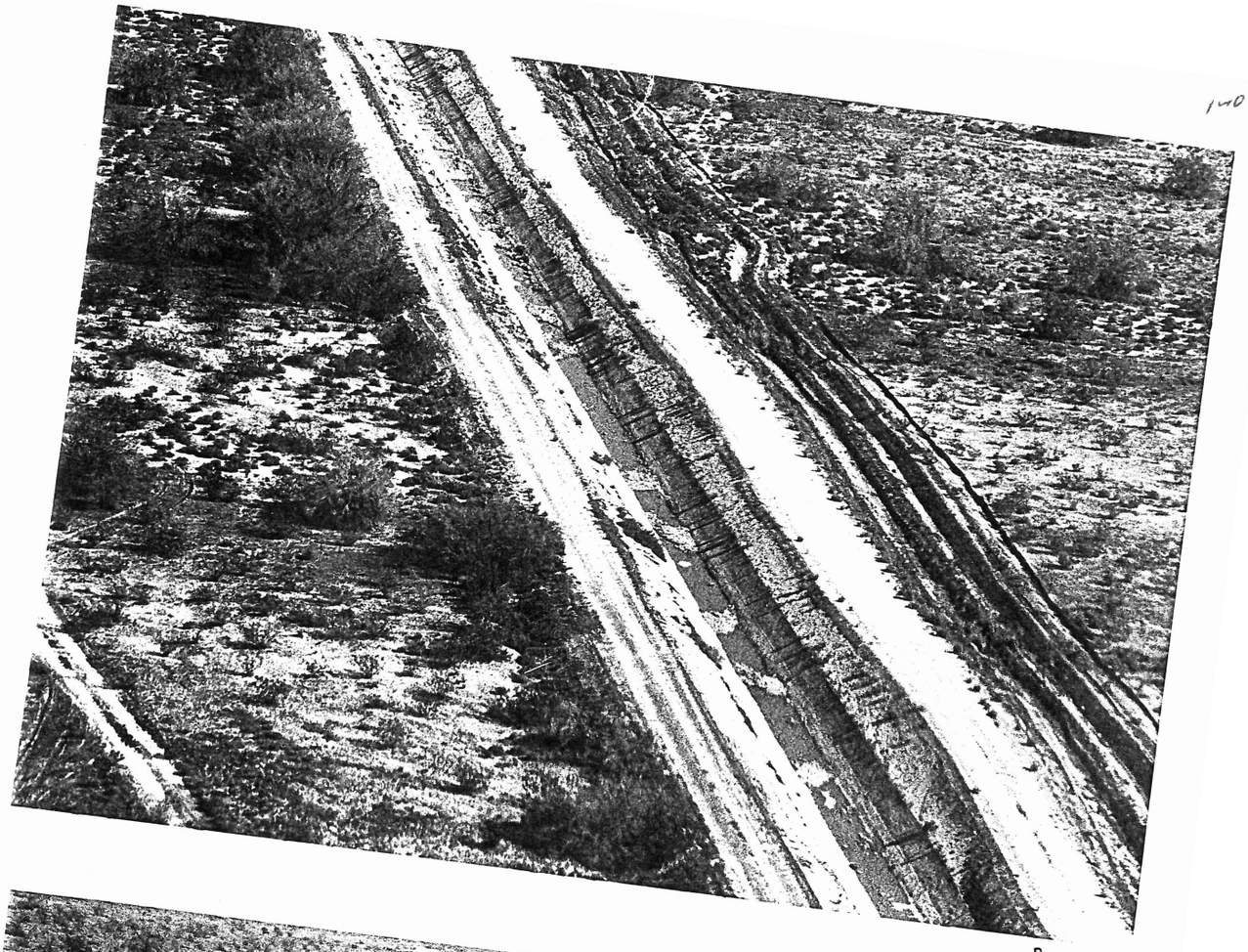

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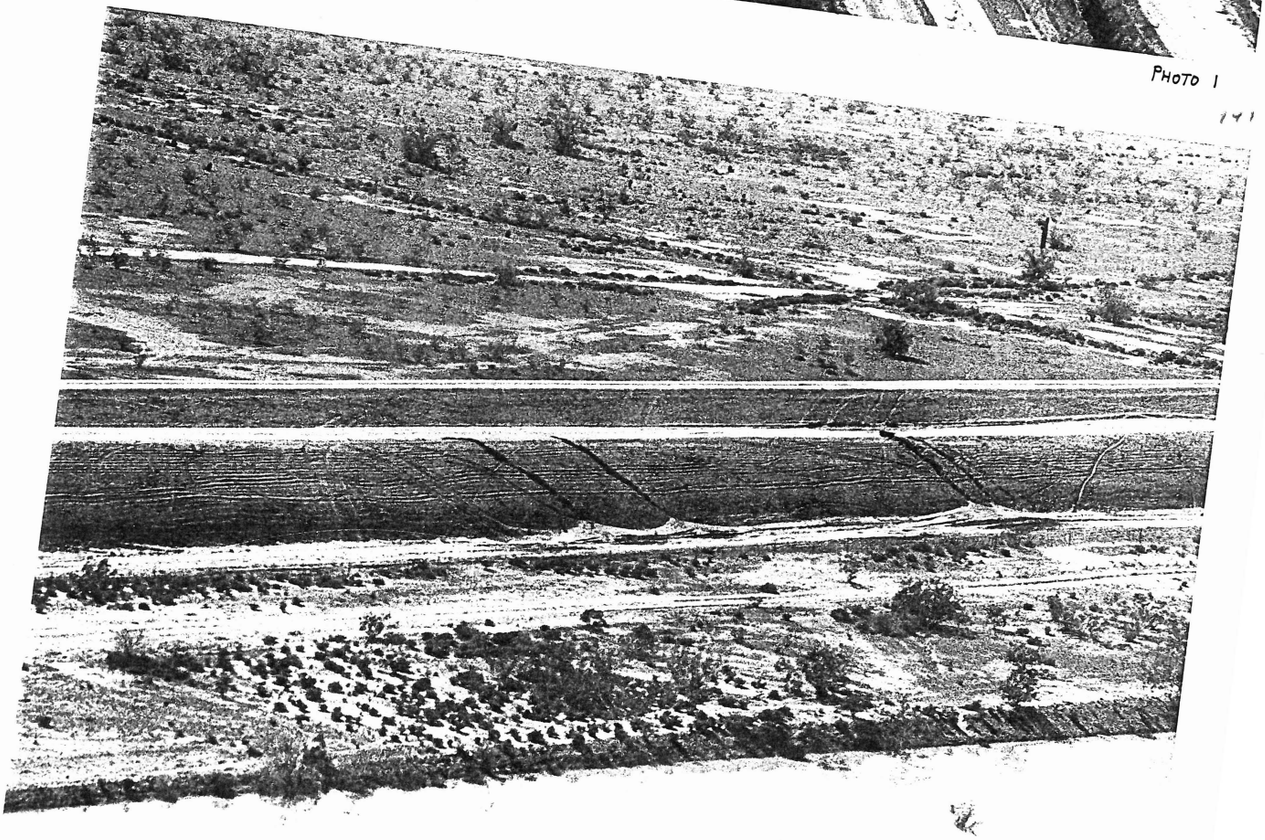

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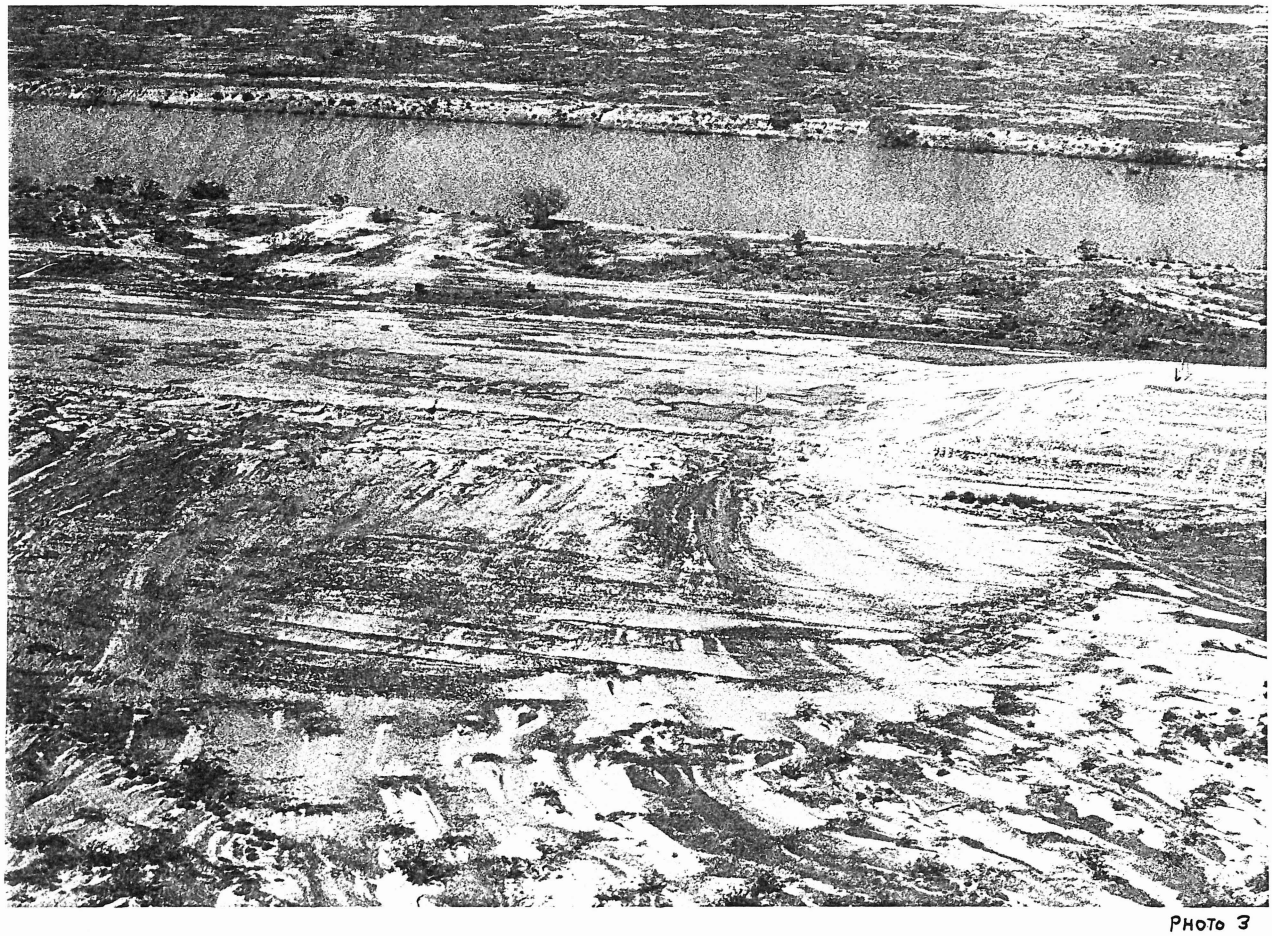

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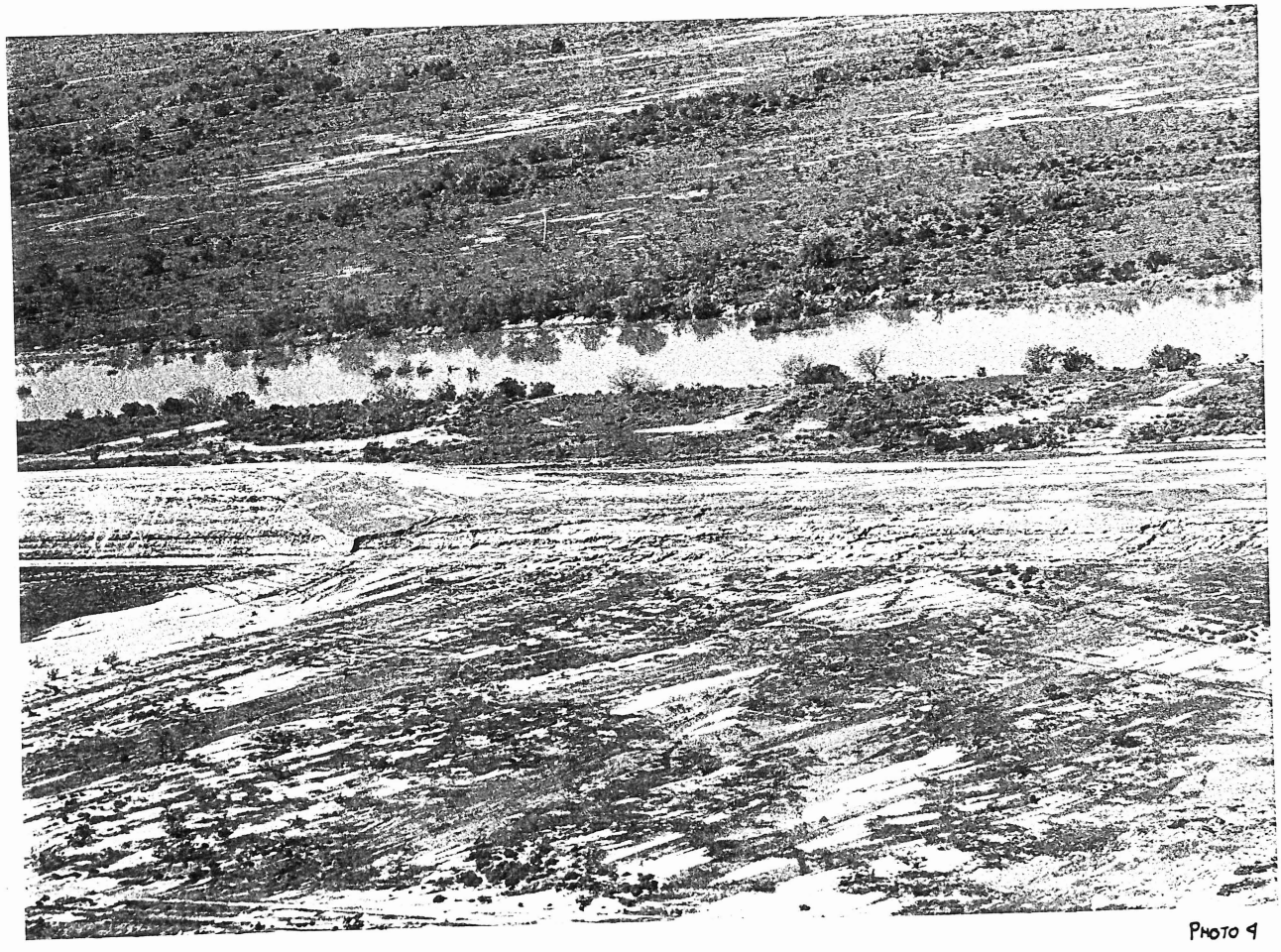

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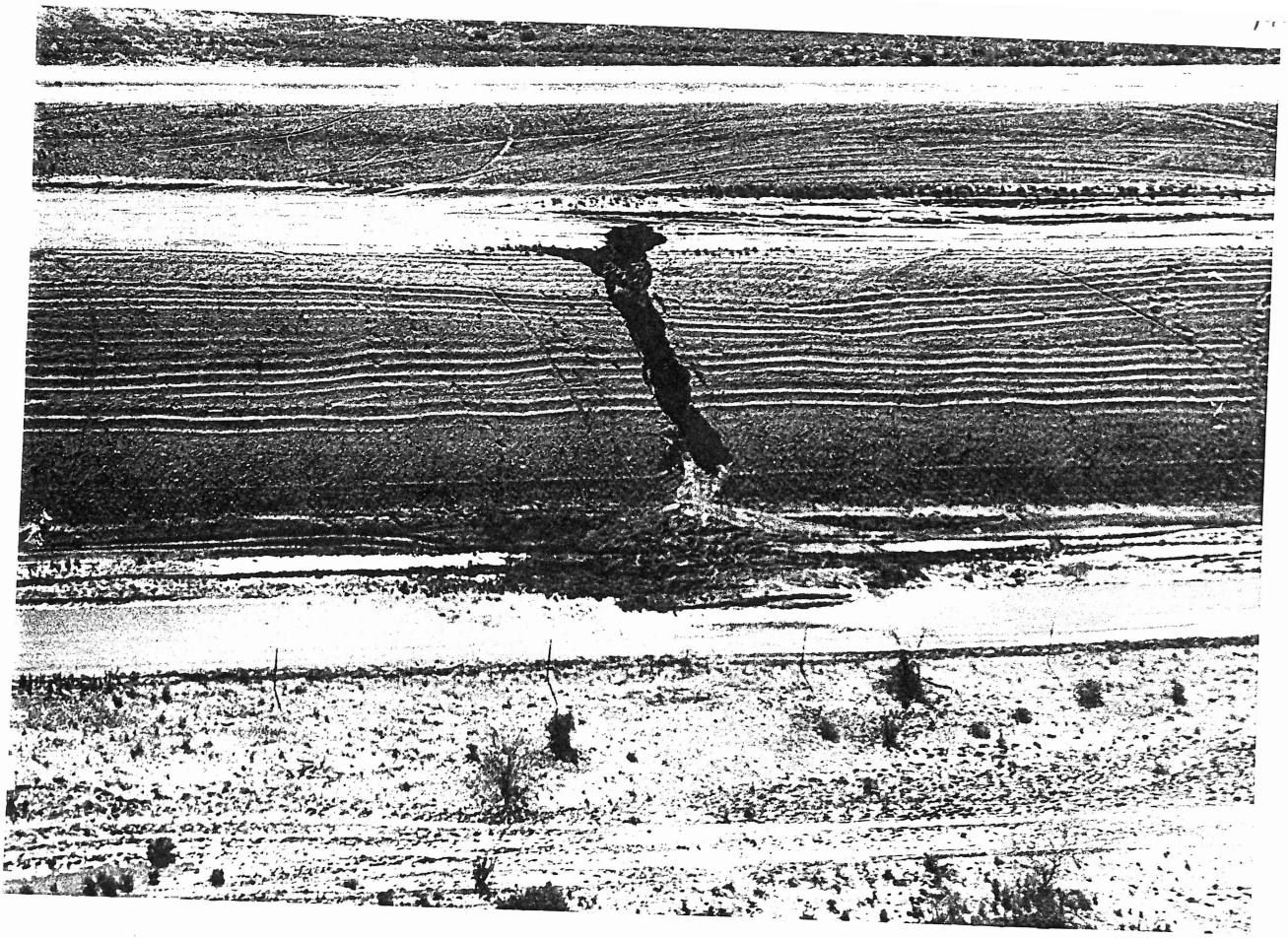

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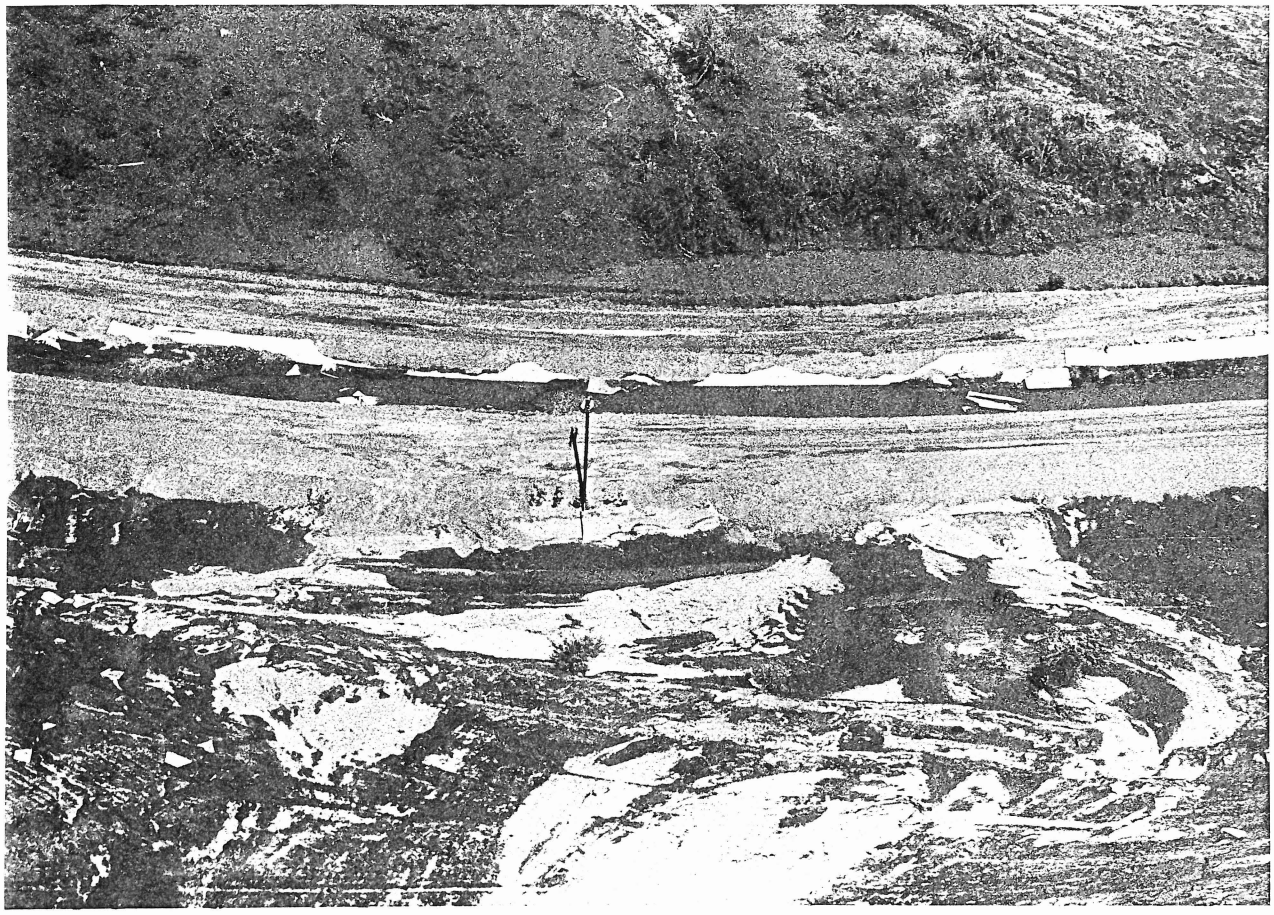

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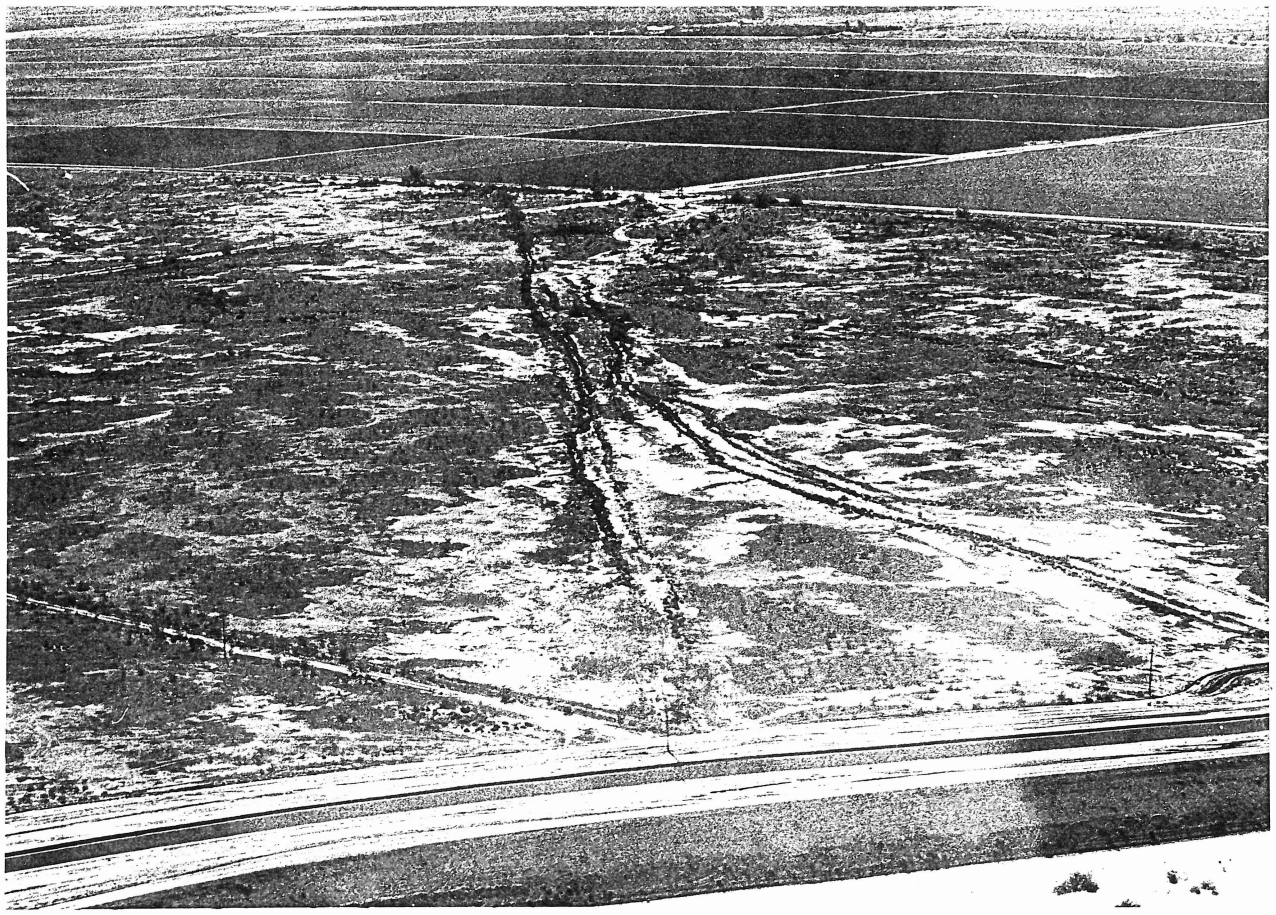

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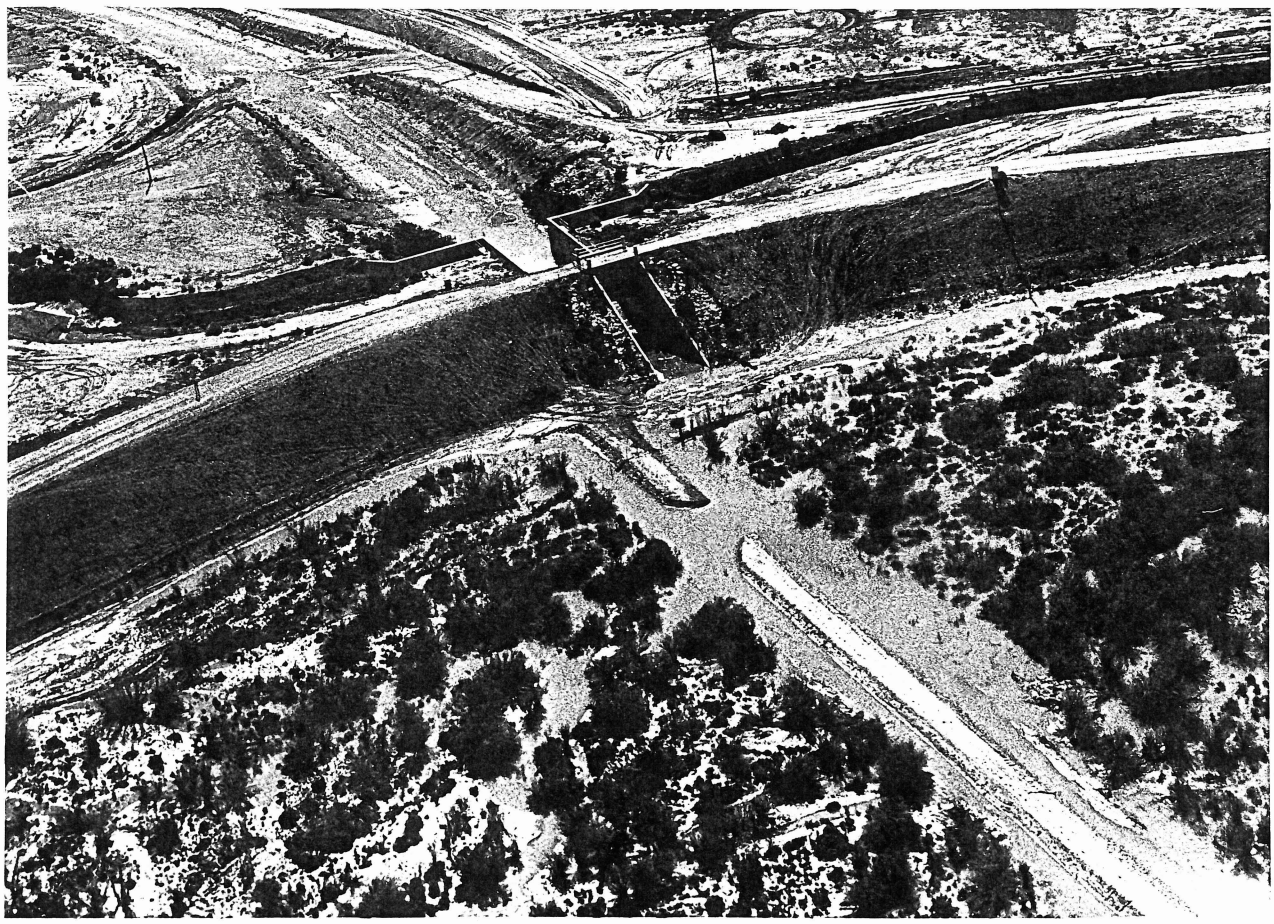

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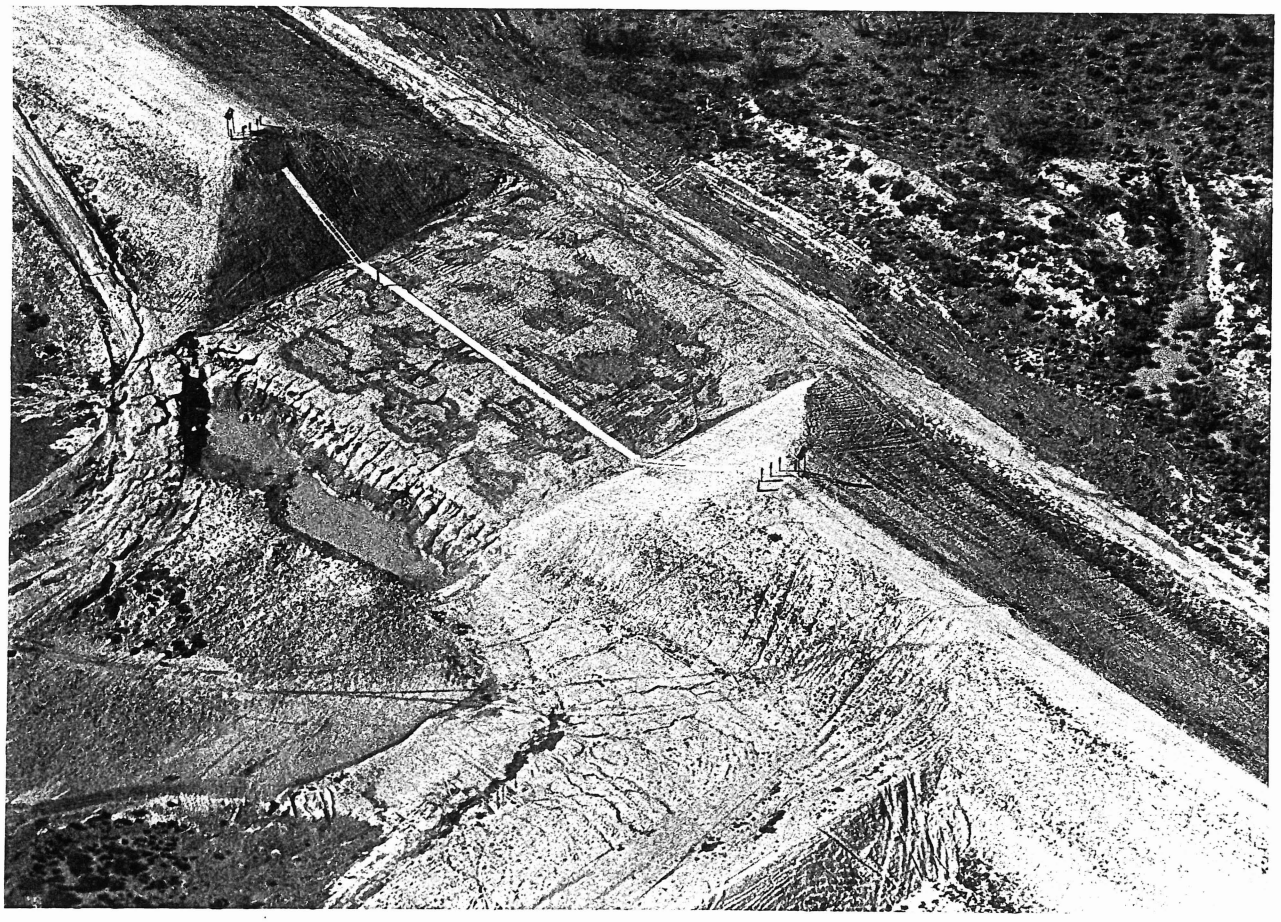

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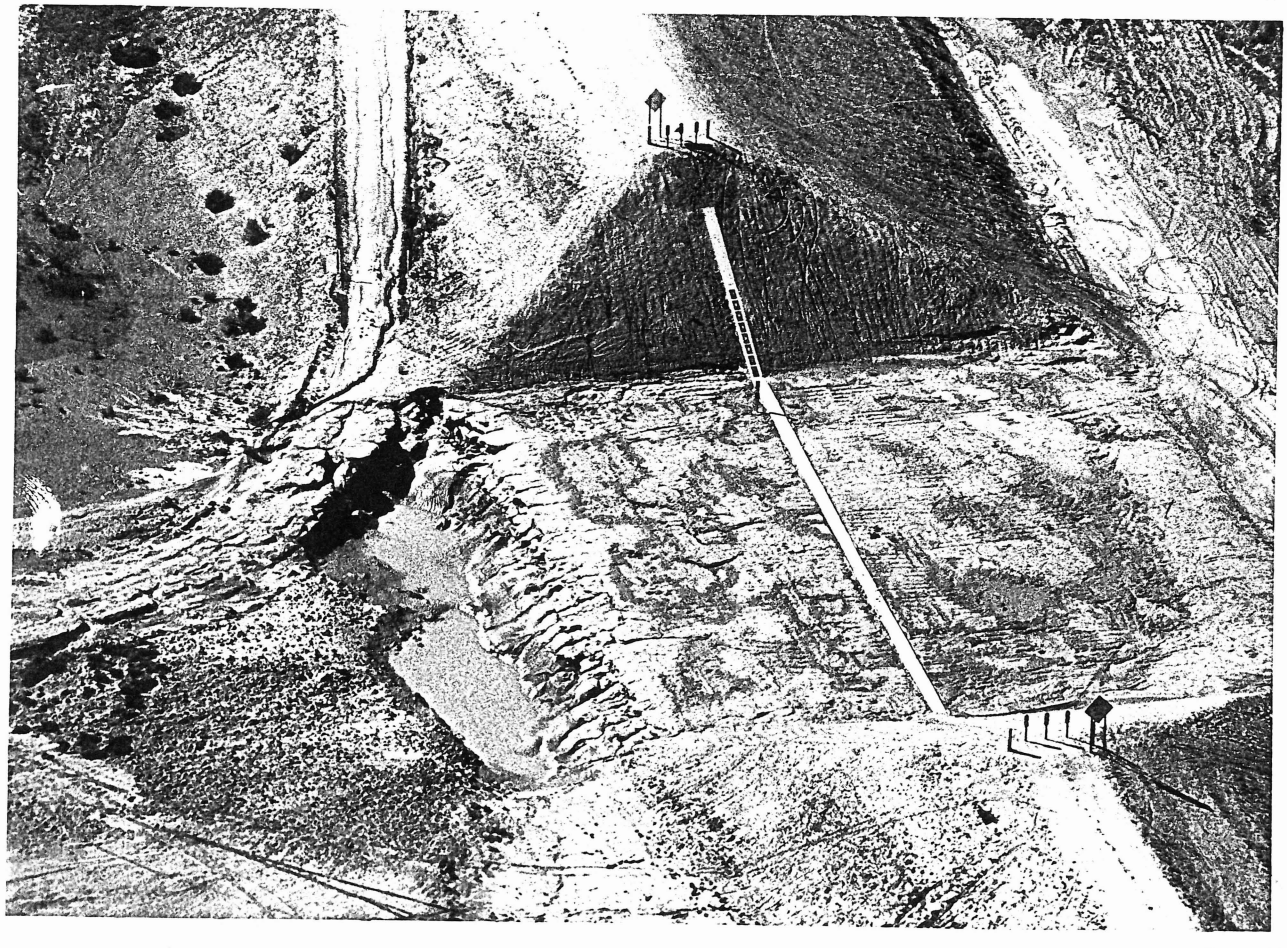

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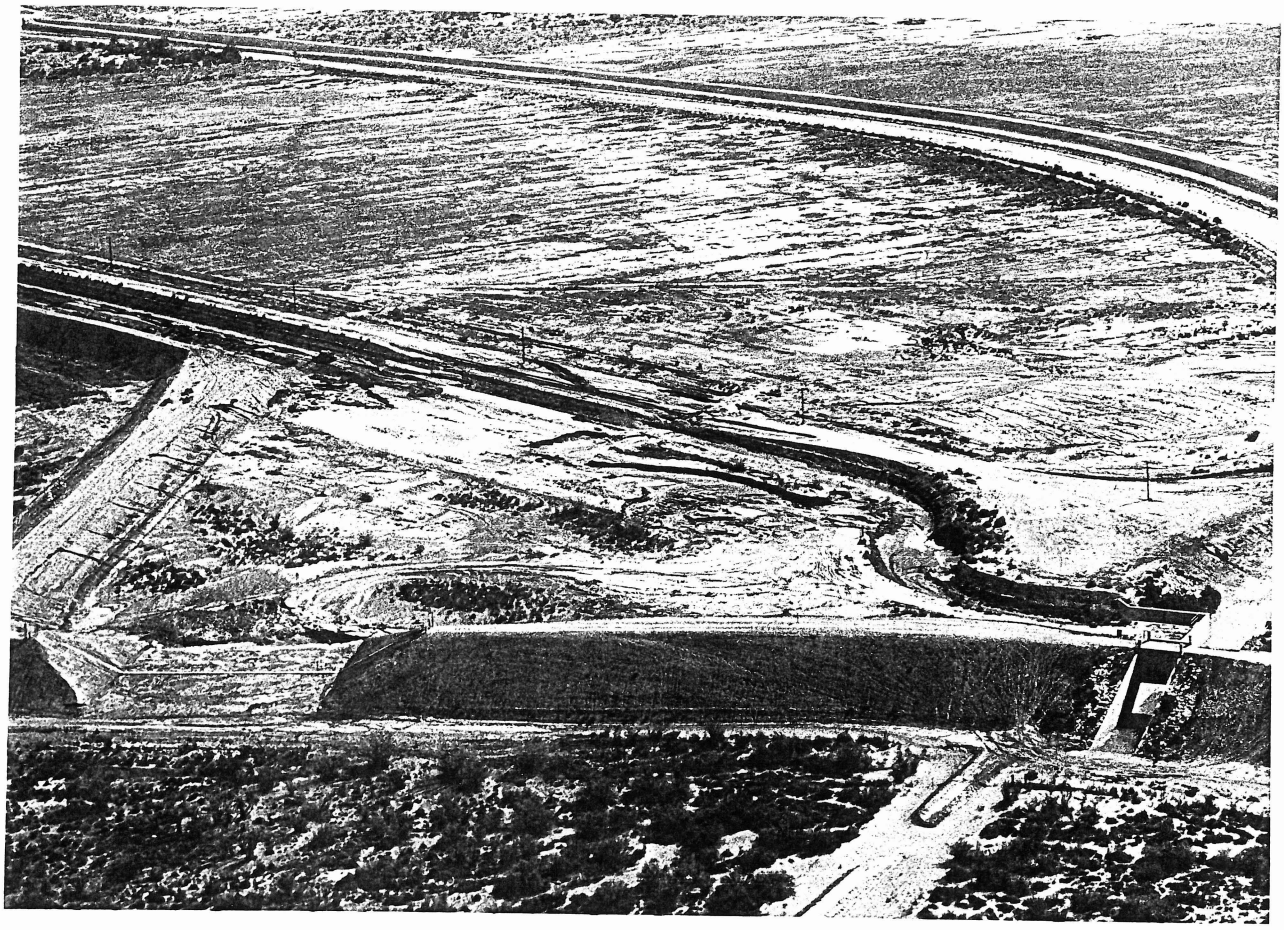

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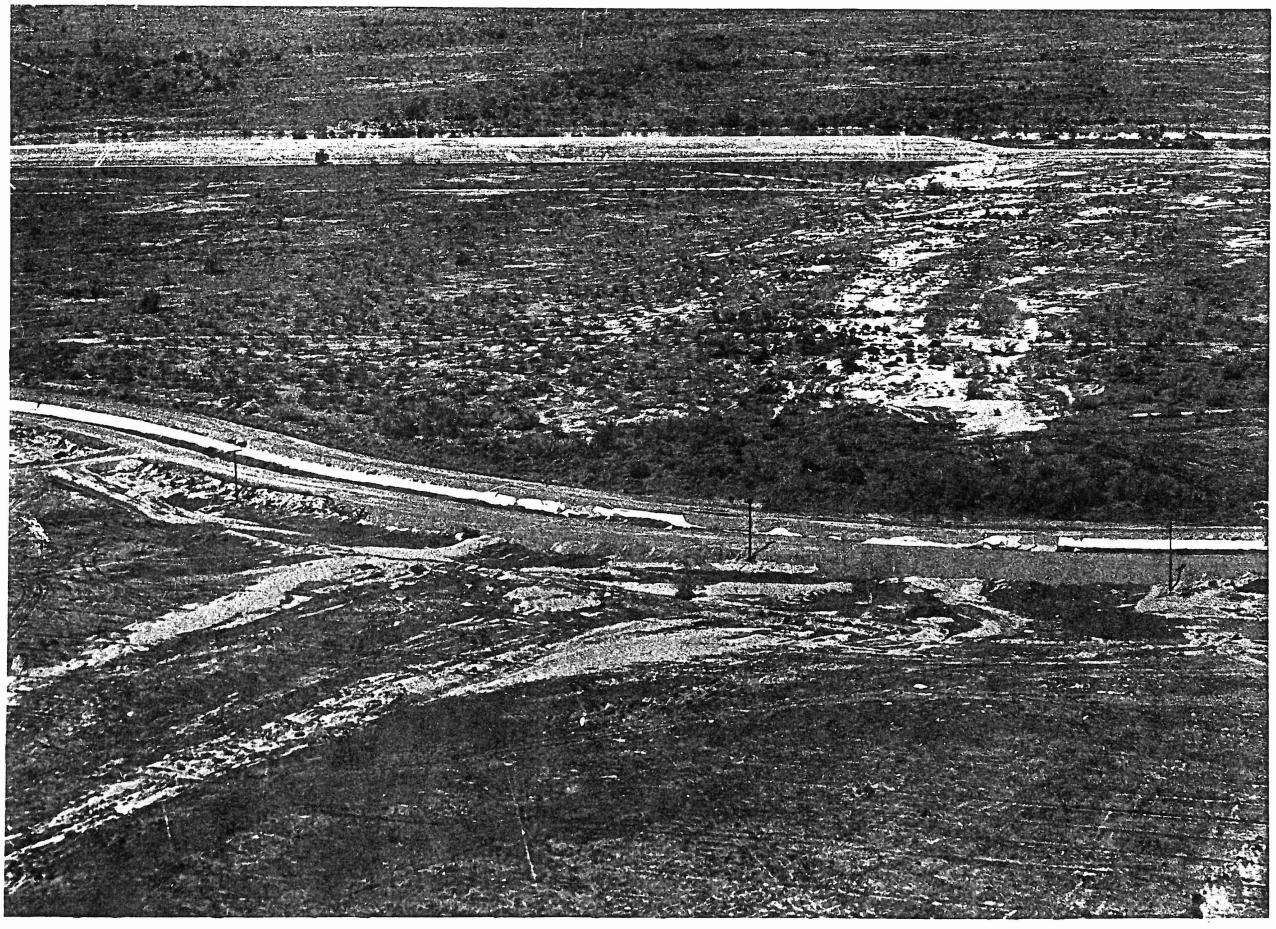

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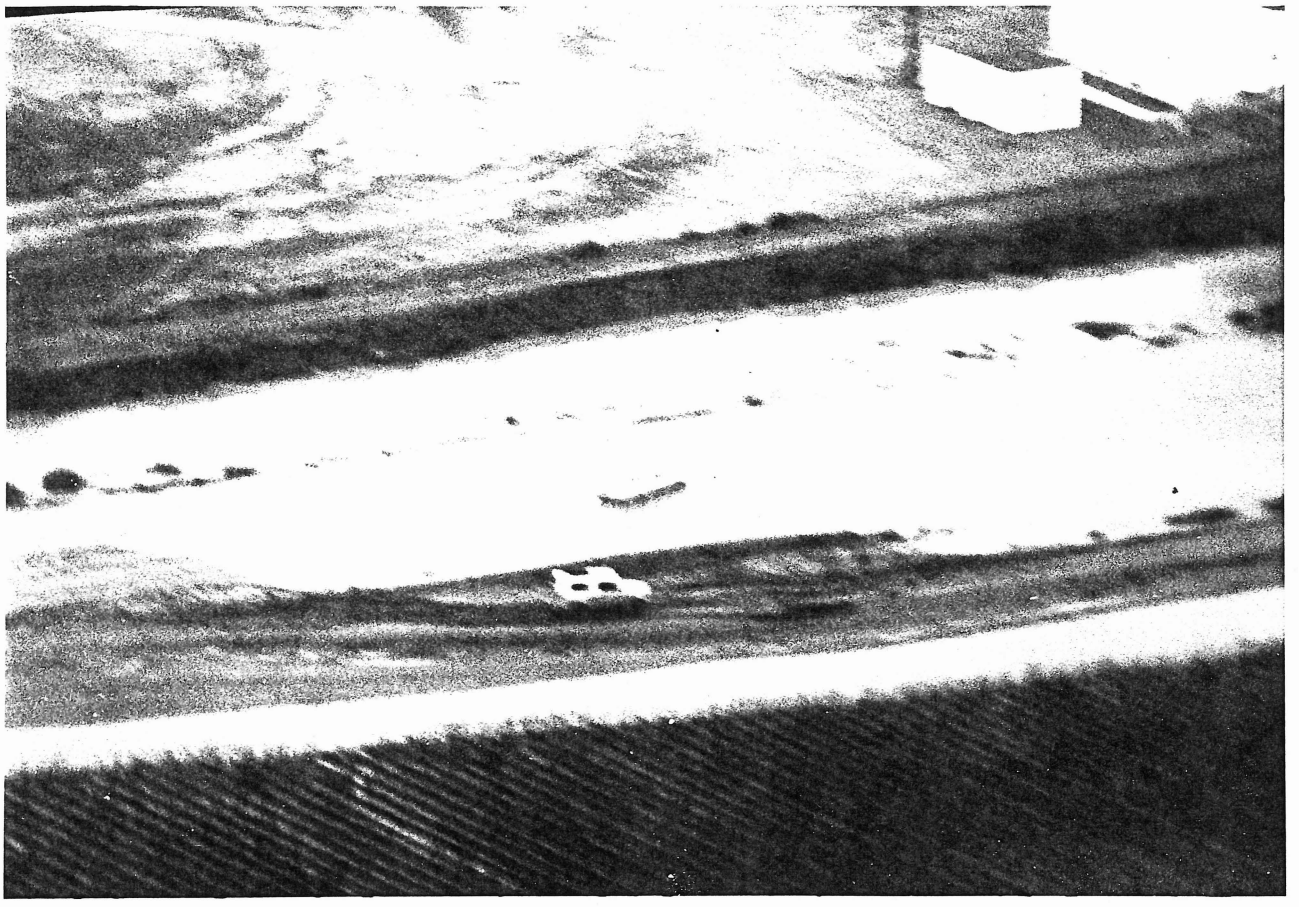

PHOTO 1

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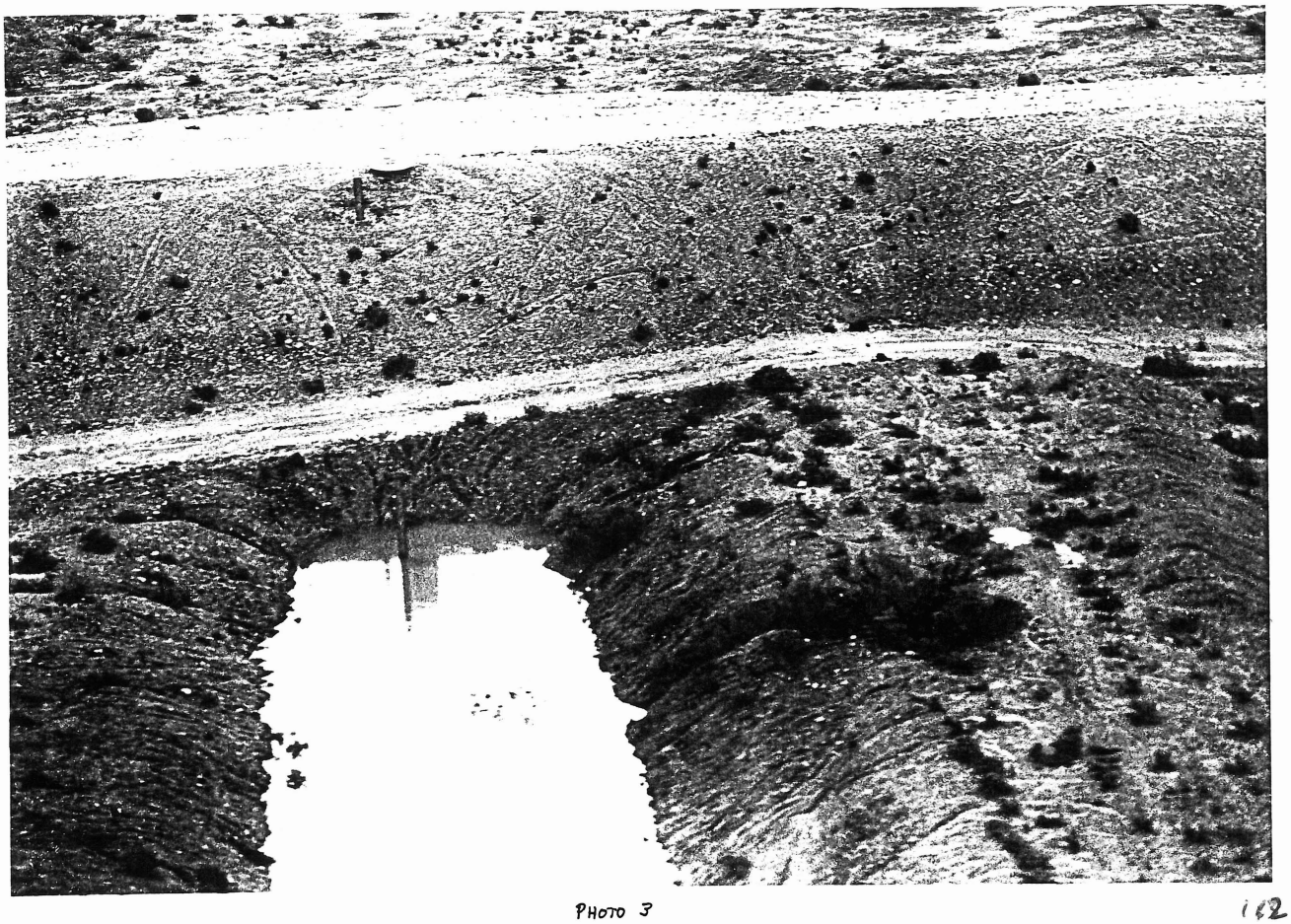

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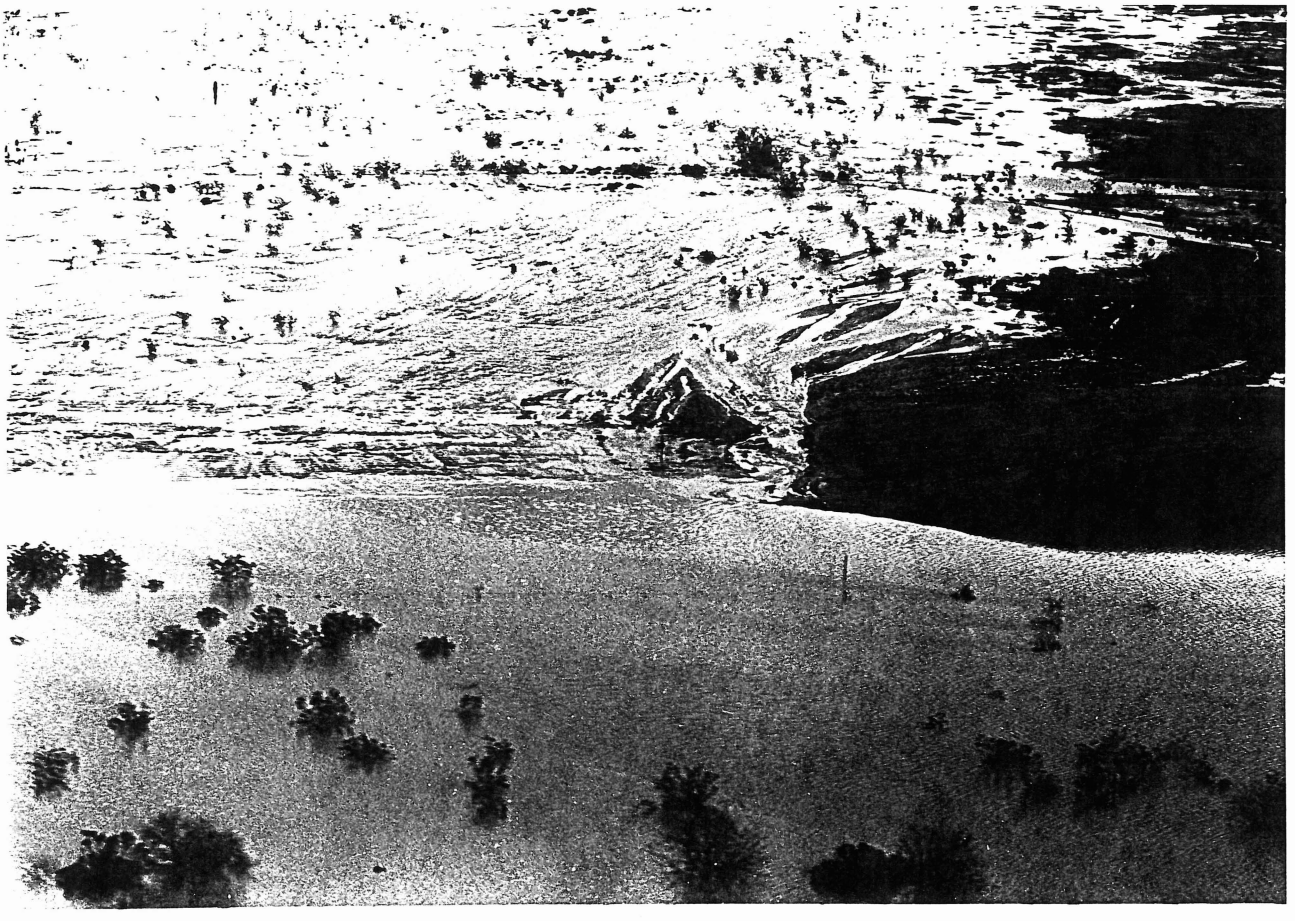

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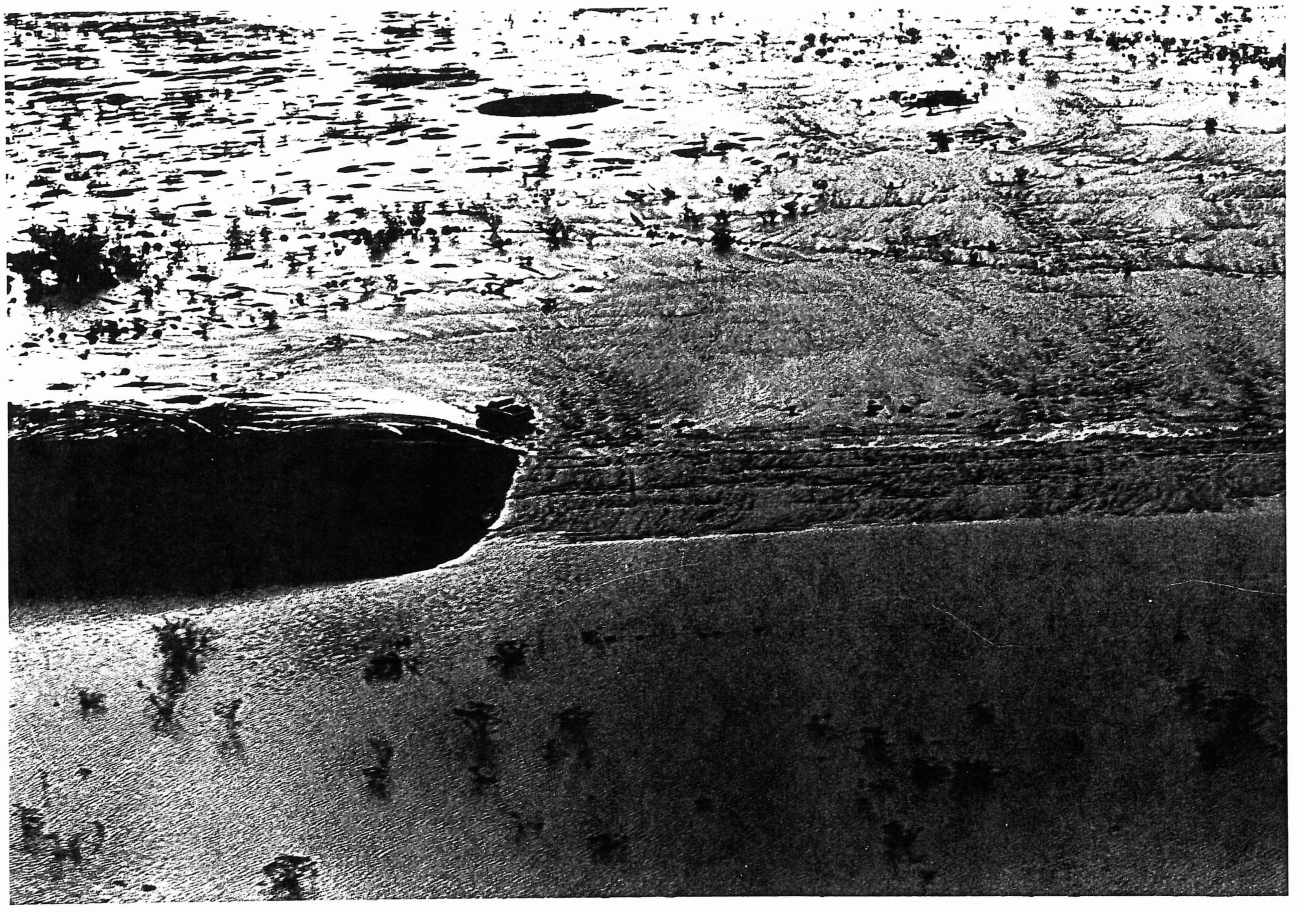

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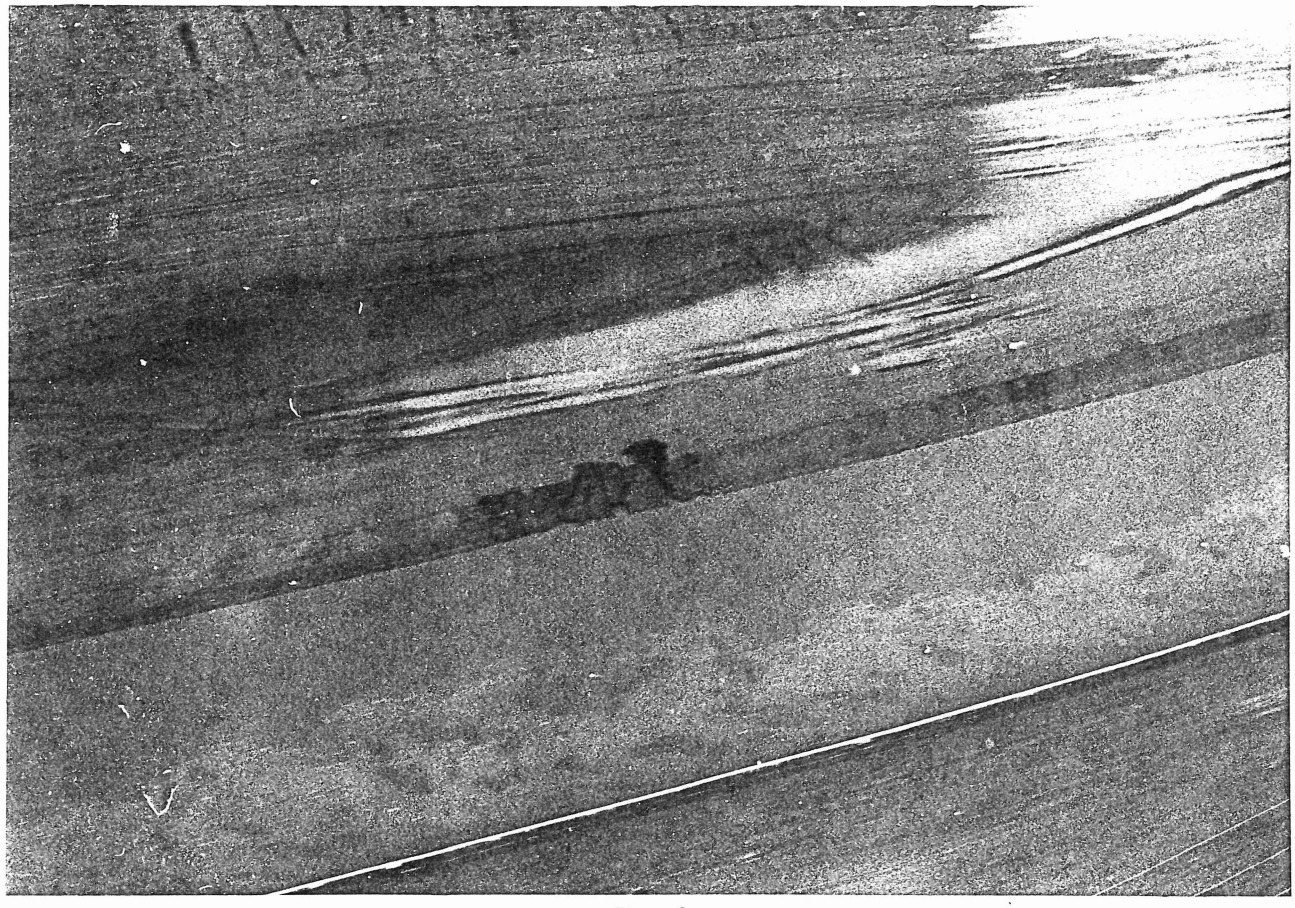

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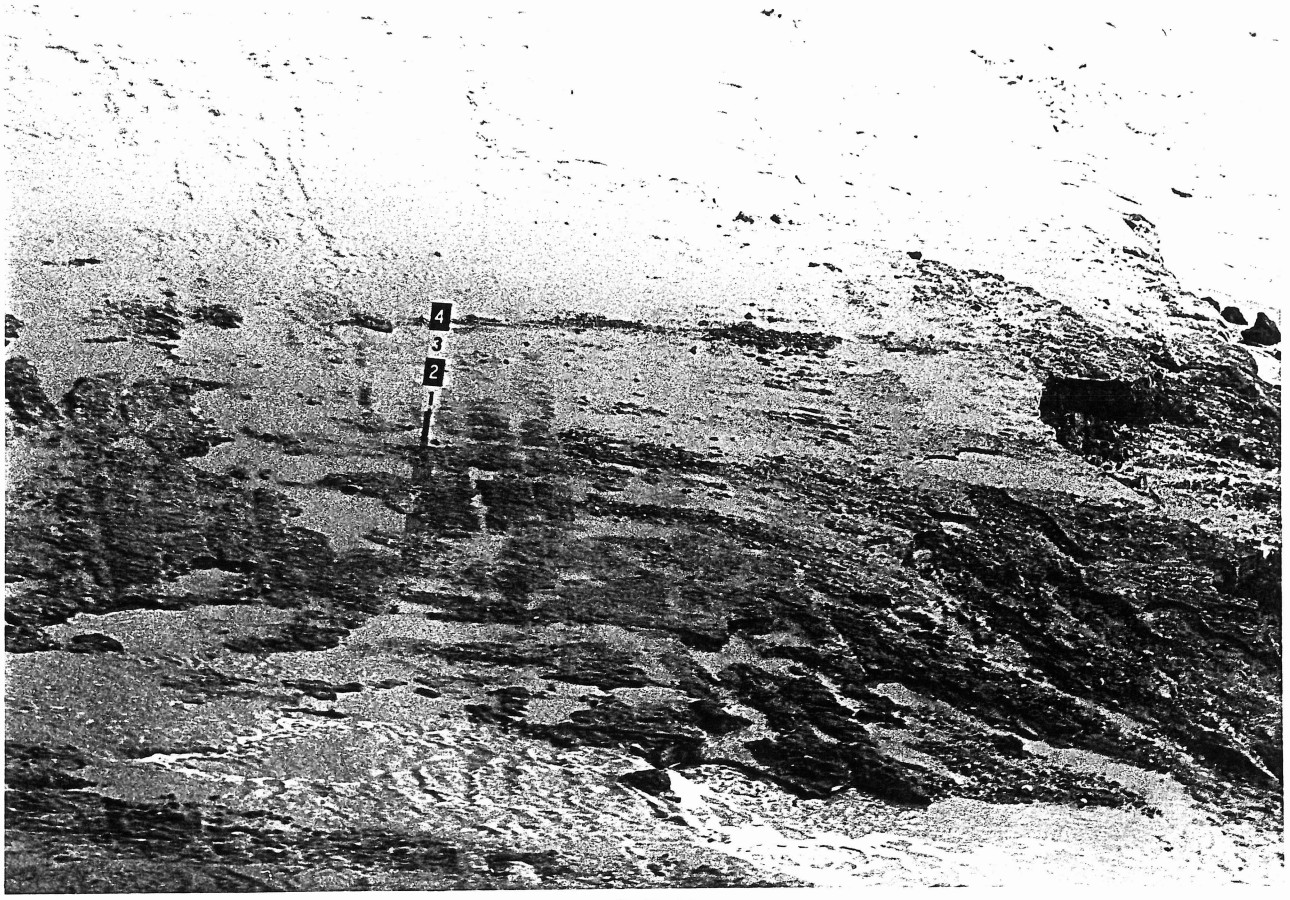

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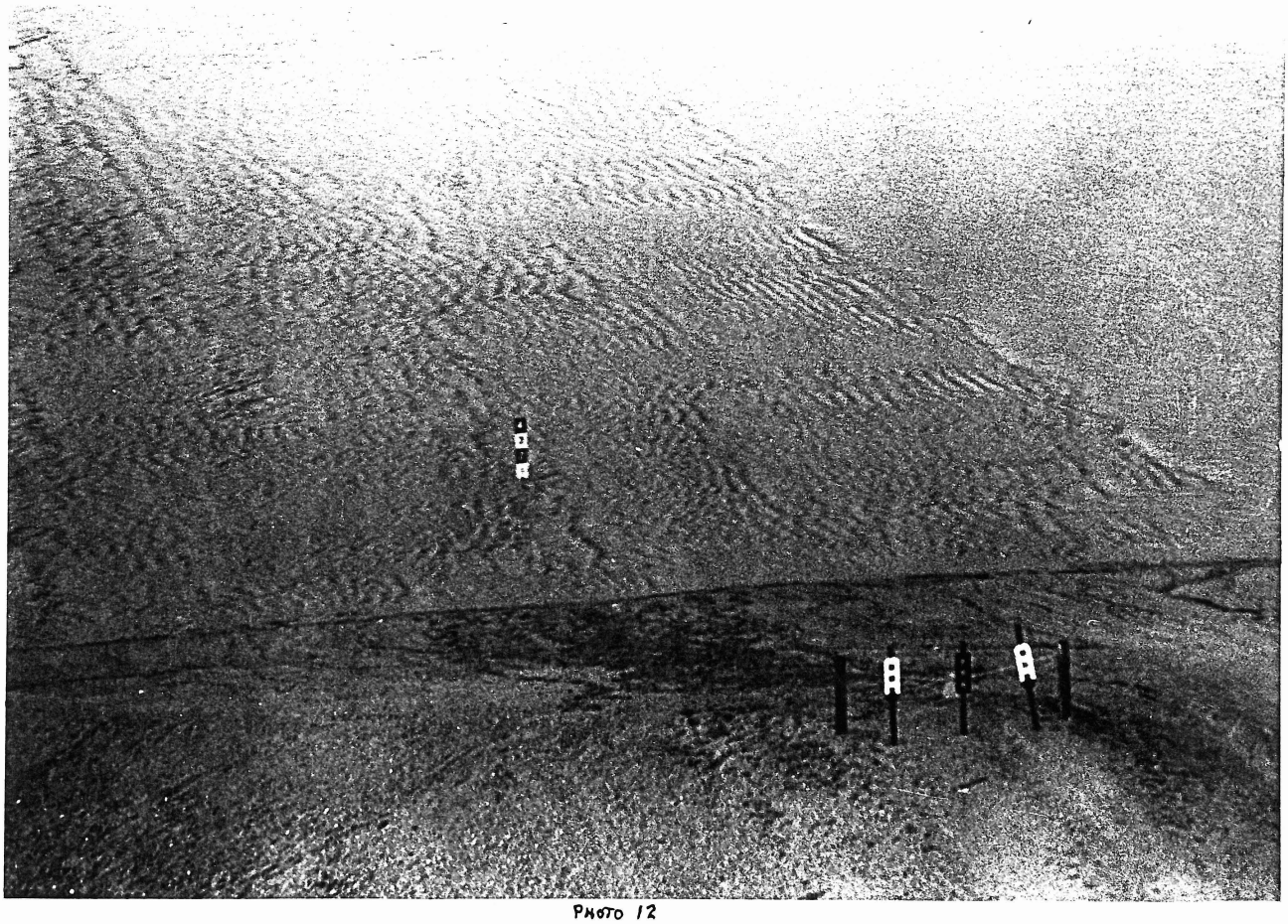

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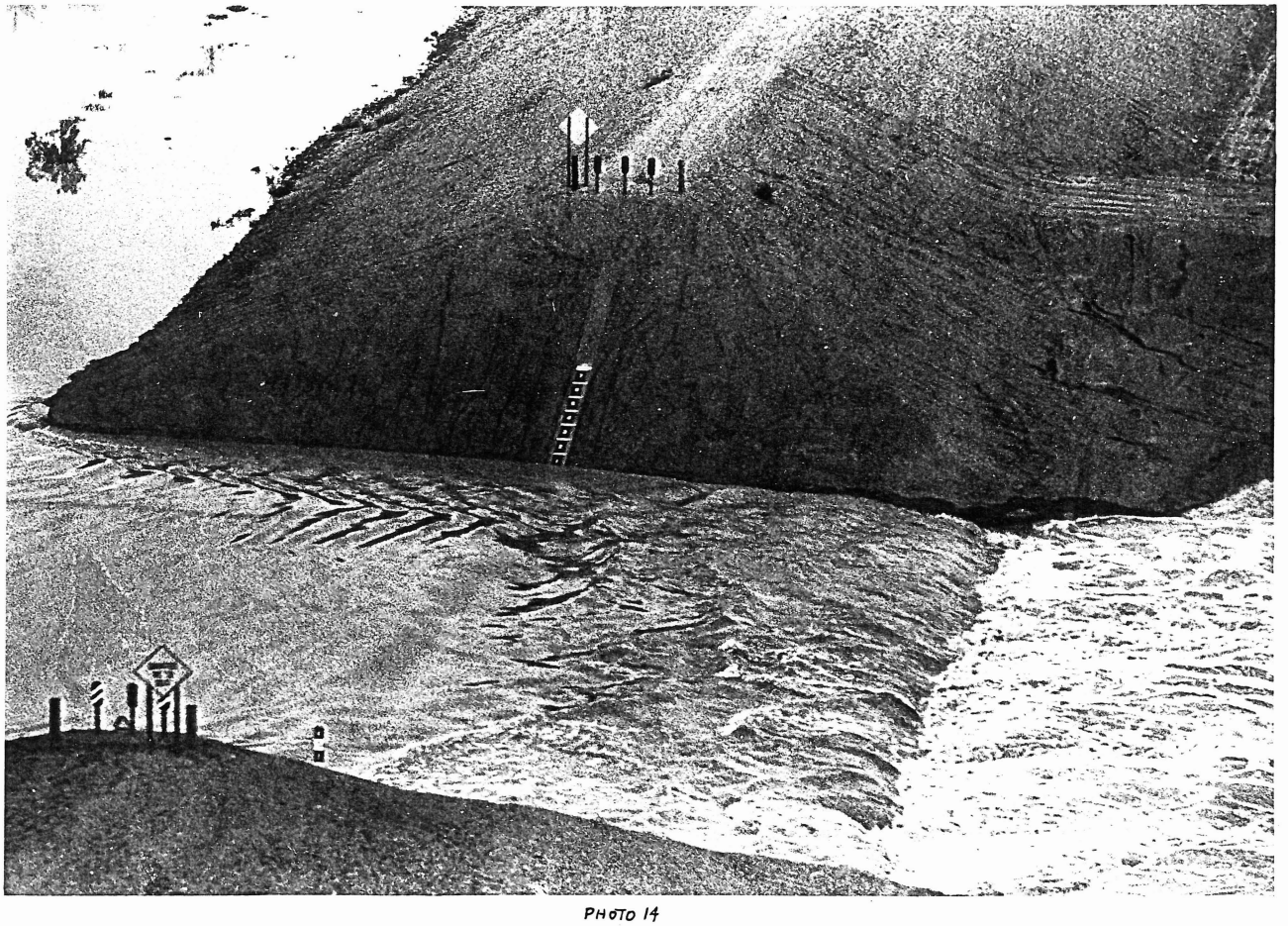

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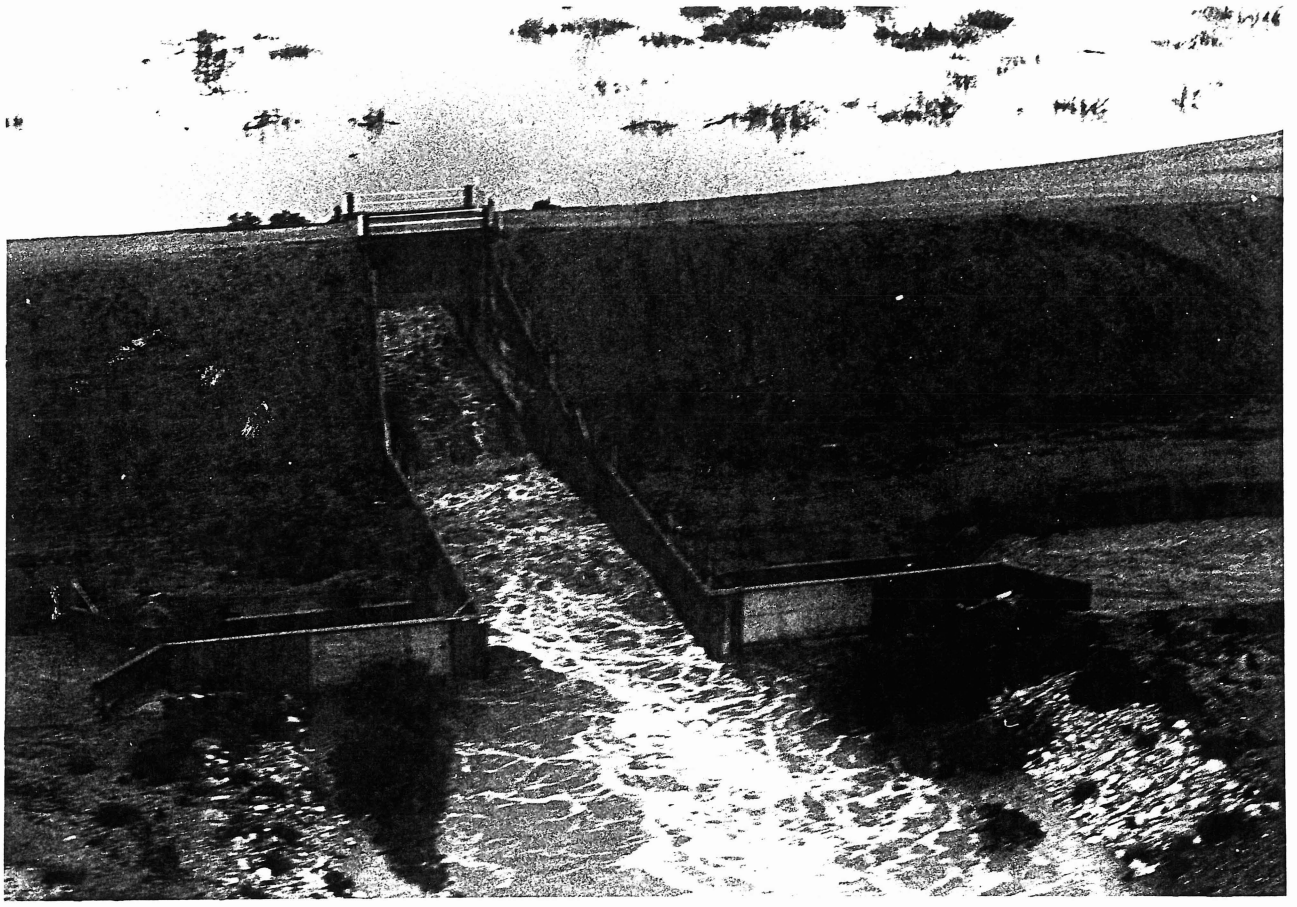

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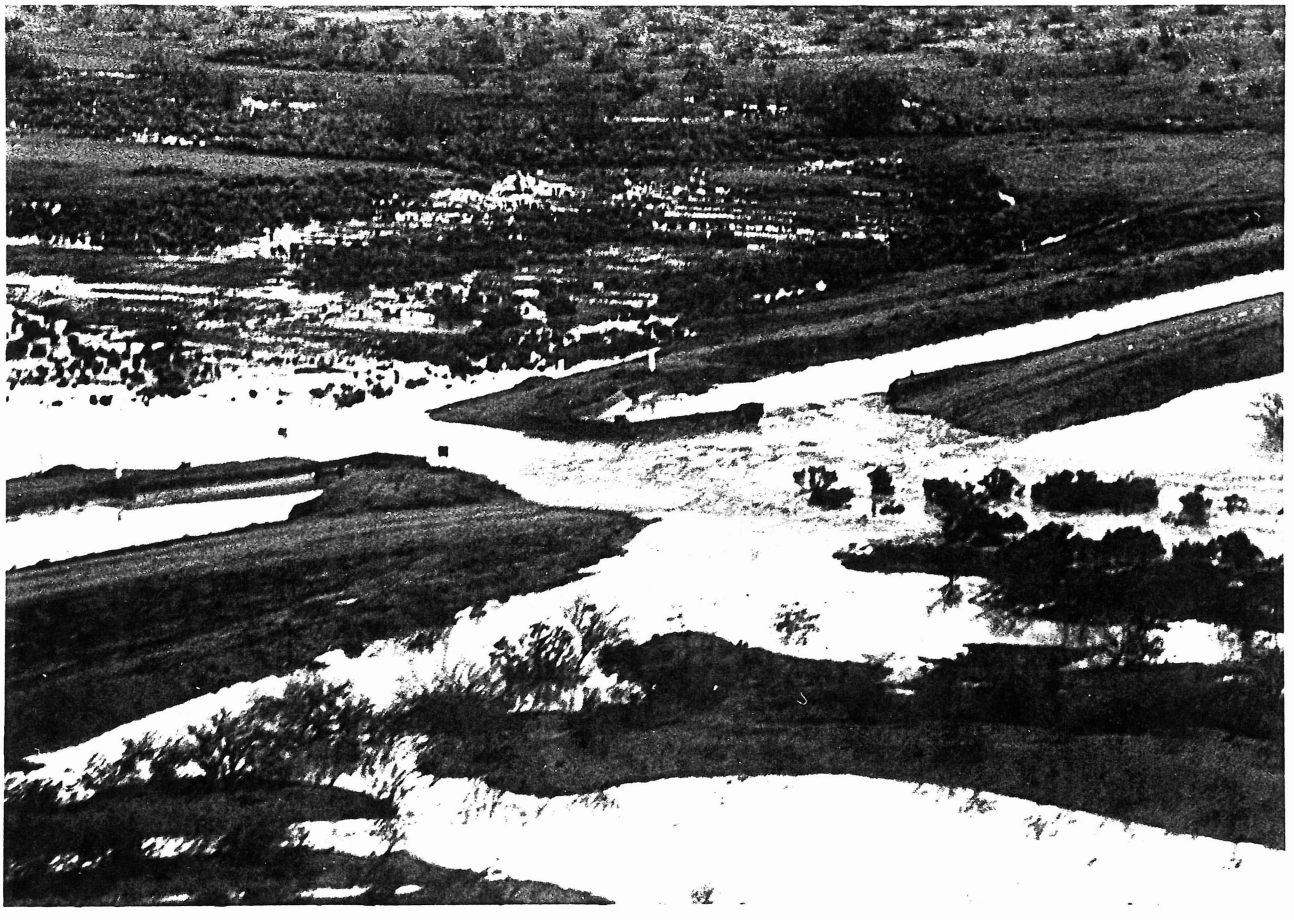

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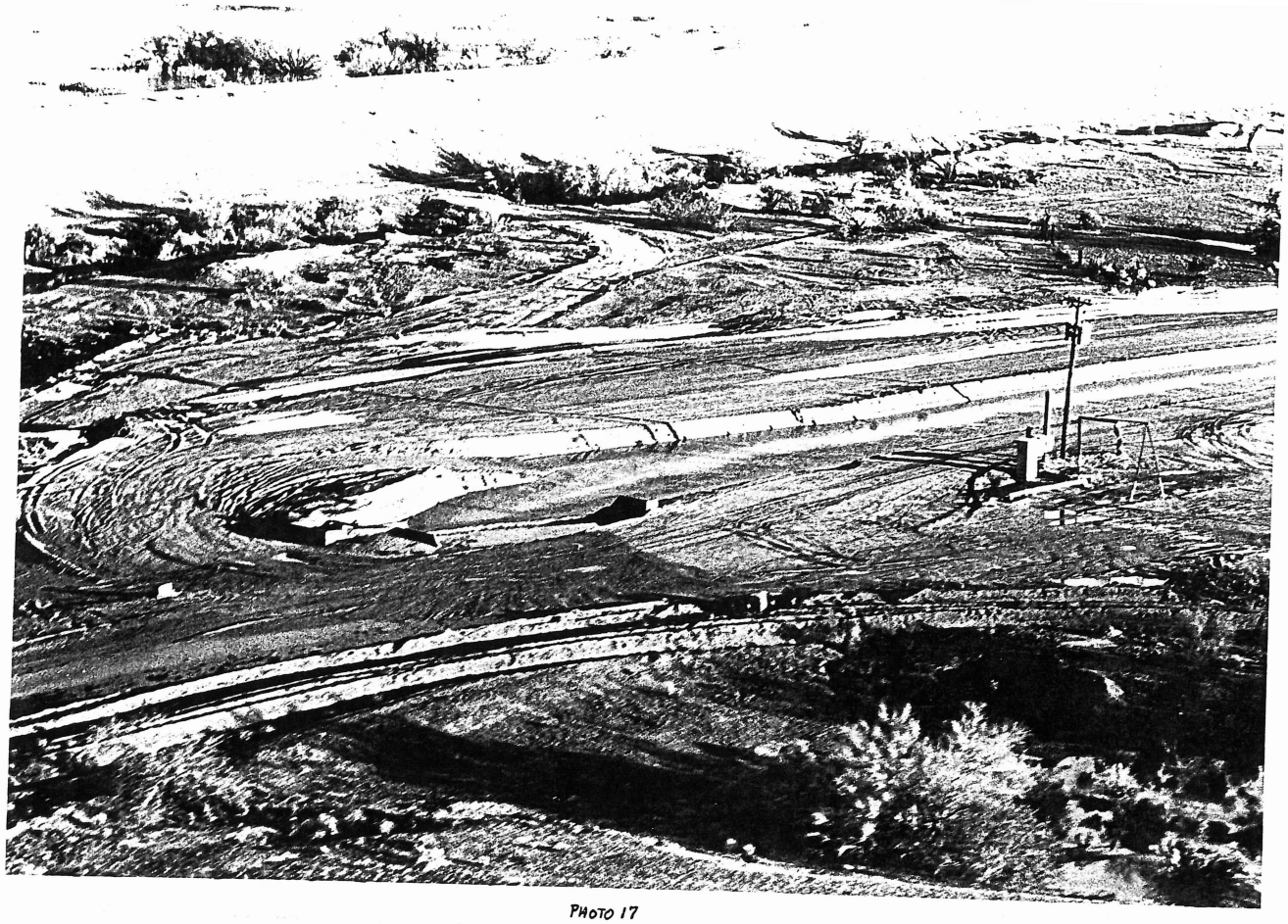

PHOTO 17

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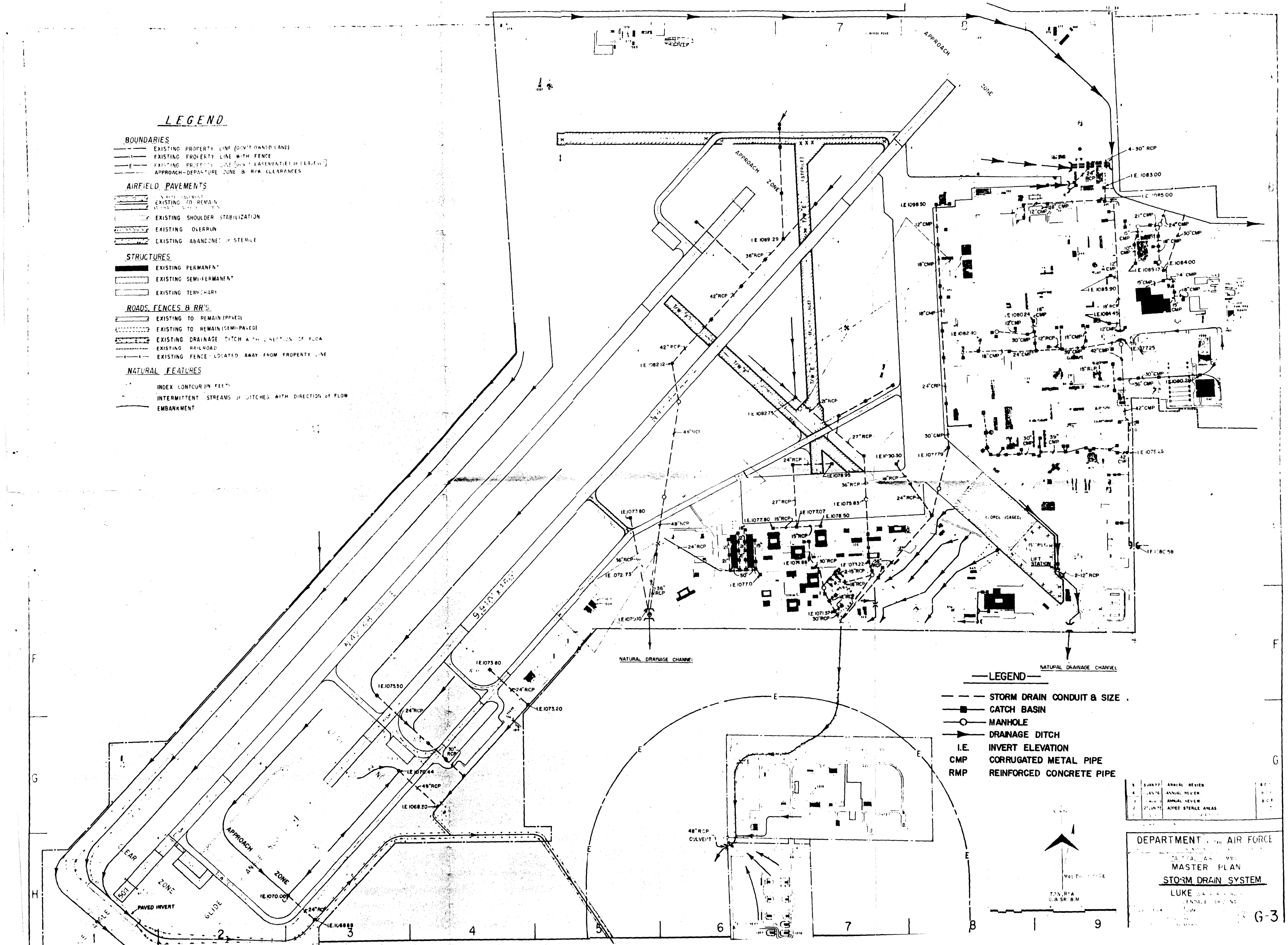
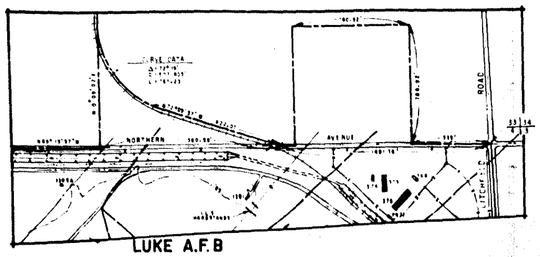
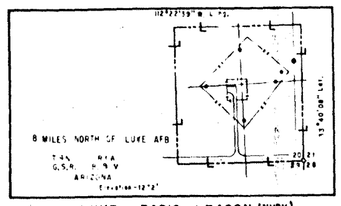

LEGEND
BOUNDARIES
EXISTING PROPERTY LINE (GOV'T OWNED LAND)
EXISTING PROPERTY LINE WITH FENCE
APPROACH-DEPARTURE ZONE & R/W CLEARANCES
AIRFIELD PAVEMENTS
EXISTING TO REMAIN
EXISTING SHOULDER STABILIZATION
EXISTING OVERRUN
STRUCTURES
EXISTING PERMANENT
EXISTING SEMI-PERMANENT
ROADS, FENCES & RR'S
EXISTING TO REMAIN (PAVED)
EXISTING TO REMAIN (SEMI-PAVED)
EXISTING RAILROAD
NATURAL FEATURES
INTERMITTENT STREAMS or DITCHES WITH DIRECTION of FLOW
EMBANKMENT
APPROACH ZONE
T/W "E"
T/W "F"
4-30" RCP
I.E. 1083.00
I.E. 1085.00
I.E. 1098.50
I.E. 1089.29
36"RCP
42"RCP
I.E. 1082.12
I.E. 1082.75
48"RCP
21"RCP
27"RCP
24"RCP
I.E. 1078.95
I.E. 1075.83
I.E. 1077.07
I.E. 1078.50
I.E. 1077.80
15"RCP
I.E. 1073.80
I.E. 1072.73
I.E. 1070.10
I.E. 1077.0
I.E. 1071.32
30"RCP
18"RCP
2-15"RCP
I.E. 1084.00
I.E. 1085.13
I.E. 1085.90
I.E. 1080.24
I.E. 1084.45
I.E. 1082.10
I.E. 1077.25
I.E. 1080.20
I.E. 1077.79
I.E. 1075.25
12"CMP
18"CMP
24"CMP
30"CMP
42"CMP
LIFT STATION
2-12" RCP
NATURAL DRAINAGE CHANNEL
I.E. 1075.50
I.E. 1073.20
30" RCP
I.E. 1070.44
I.E. 1068.20
I.E. 1070.00
I.E. 1068.88
PAVED INVERT
APPROACH ZONE
CLEAR ZONE
GLIDE
48"RCP CULVERT
—LEGEND—
STORM DRAIN CONDUIT & SIZE
CATCH BASIN
MANHOLE
DRAINAGE DITCH
I.E. INVERT ELEVATION
CMP CORRUGATED METAL PIPE
RMP REINFORCED CONCRETE PIPE
5 | 3 JAN 77 | ANNUAL REVIEW
4 | JAN 76 | ANNUAL REVIEW
3 | | ANNUAL REVIEW
2 | 27 JUN 75 | ADDED STERILE AREAS
T2N, R1W
G. & S.R. B.M.
DEPARTMENT OF THE AIR FORCE
MASTER PLAN
STORM DRAIN SYSTEM
LUKE
GLENDALE, ARIZONA
G-3



DETAIL 'A'

Scale: 1"=400'



LUKE RADIO BEACON (NURK)

LEGEND

BOUNDARIES

- EXISTING PROPERTY LINE (GOV'T OWNED LAND)
- XX EXISTING PROPERTY LINE WITH FENCE
- E EXISTING PROPERTY LINE GOV'T EASEMENT(E) or LEASE(L)
- APPROACH-DEPARTURE ZONE & R/W CLEARANCES

AIRFIELD PAVEMENTS

- EXISTING TO REMAIN (CONCRETE PAVEMENT) (ASPHALT CONCRETE PAVEMENT)
- EXISTING SHOULDER STABILIZATION
- EXISTING OVERRUN
- EXISTING ABANDONED or STERILE

STRUCTURES

- EXISTING PERMANENT
- EXISTING SEMI-PERMANENT
- EXISTING TEMPORARY

ROADS, FENCES & RR'S

- EXISTING to REMAIN (PAVED)
- EXISTING to REMAIN (SEMI-PAVED)
- EXISTING DRAINAGE DITCH WITH DIRECTION of FLOW
- EXISTING RAILROAD
- EXISTING FENCE LOCATED AWAY FROM PROPERTY LINE

NATURAL FEATURES

- 1000 INDEX CONTOUR (IN FEET)
- DITCHES WITH DIRECTION of FLOW
- EMBANKMENT

10,000'x150'

N42°48'58"E

9,910'x150'

N42°48'58"E

NOTE:
FINAL DETERMINATION REVEALS NO PRIME OR UNIQUE FARMLAND ON BASE.

NO.	DATE	DESCRIPTION

DEPARTMENT OF THE AIR FORCE

TACTICAL AIR COMMAND

MASTER PLAN

BASE PLAN

LUKE AIR FORCE BASE

GLENDALE, ARIZONA

DWG NO. C-1

STA 537
MC MICKEN DAM
SPILLWAY 1354
BM 1351
BM 1343
BM 1337
BM 1316
Gaging Sta
Reservoir
ATCHISON TOPEKA AND SANTA FE
BEARDSLEY CHANNEL
BEARDSLEY OUTLET
MC MICKEN DAM
LEVEE
BEARDSLEY ROAD
Beardsley
BM 1282
BM 1254
BM 1220
BM 1204
Lizard
Surprise
BM 1189
BM 1206
LUKE AUXILIARY
FIELD NO 3
(CITY OF PHOENIX)
VABM 1216
BM 1203
Landing Strip
Eternal Valley Memorial Park (Cem)
El Mirage
Goldbadge Tanks
Reservoirs
BM 1412
Trilby Wash
BM 1374
BM 1331
BM 1332
BM 1328
BM 1335
BM 1330
BM 1307
BM 1278
BM 1232
BM 1199
BM 1171
BM 1137
BM 1084
VABM 1593
Fenne 1463
STA 19+08
Waddell
Fennemore
Wayne
Citrus Park
Citrus Park (Siding)
Bumstead
Webb
Swimming Pool
Trailer Park
Dysart Sch
Pipeline
Siphon
Flume
Reservoirs
DETENTION BASIN
TRILBY WASH CANAL
TRILBY WASH LEVEE
GREENWAY ROAD
UNION HILLS DRIVE
WADDELL ROAD
PEORIA AVENUE
OLIVE AVENUE
NORTHERN AVENUE
GLENDALE AVENUE
LIGHT BROWN
DARK BROWN
LT. BROWN
WHITE GREEN
STANDING WATER
GREEN VEGETATION
DRAINAGE DITCH ENLARGED
FORCE BASE