

Pamo Dam site - Report

REPORT ON PAMO DAMSITE *B.*
AND
SUGGESTIONS FOR FUTURE WORK.

WM. S. POST,
Oct. 14, 1912.

WILLIAM S. POST
ASSOC. MEM. A.S.C.E.
1217 HIBERNIAN BLDG.
LOS ANGELES, CALIFORNIA

VOLCAN LAND AND WATER COMPANY
REPORT ON PAMO DAMSITE
AND
SUGGESTIONS FOR FUTURE WORK

By William S. Post
Oct. 14, 1912

In compliance with Mr. Fletcher's instructions, I have examined the work thus far done on the Pamo Dam Site, and make certain suggestions regarding keeping the filings of the Volcan Land & Water Company alive.

At the outset, I find a difficulty in making any recommendation regarding the continuance of work hitherto done, as I decidedly disagree with the original arrangement of the conduits and reservoirs. My position was stated in a personal report to Mr. Henshaw, dated Mar. 16, 1912. It involves the abandonment of Pamo Reservoir entirely, and the first third of the Pamo Conduit, and the substitution of Sutherland Reservoir and Ramona Valley Conduits. I am more confirmed in this view at the present time, and urge that the legal steps be taken to transfer the diversion point now stated in filings on the Santa Ysabel to the Sutherland Reservoir and to the Black Canyon. I then urge that all the gravel area possible in the San Pasqual Valley and Bernardo Ranch be secured, so that water may be pumped into the lower Pamo Conduit with power generated from Sutherland Reservoir.

WILLIAM S. POST
ASSOC. MEM. A.C.E.C.
1217 HIBERNIAN BLDG.
LOS ANGELES, CALIFORNIA

But neglecting these recommendations, and assuming the main points of the original plan must be held to, the question is, how shall continuous work be kept up on Pamo Dam Site?

In our studies of Pamo there are four dam sites.

DAM SITE "A" is Alverson's old site, bottom elevation 800, height 160'. This is the best in quality of granite rocks and shortness of crest, but unfortunately depresses the conduit so low as to be almost unpracticable. Its cost will be \$500,000, in concrete.

DAM SITE "B" is a half mile up stream, has a bottom elevation of 840, and will store the same amount of water as Dam Site "A", (40,000 acre feet) with a dam height of 150 feet. This was examined by Mr. Mulholland and is considered to be remotely feasible as an hydraulic fill dam. It would require 1,000,000 cu. yds. and would cost between \$400,000 and \$500,000. The conduit would leave it 50 feet above the stream bed, and this is the dam and conduit estimated in reports.

DAM SITE "C" is a quarter of a mile up stream, and is wider on crest, but better situated for hydraulic material.

DAM SITE "D" was surveyed in June, 1912, and is recommended as the only one which, in my opinion, should be considered of the four sites.

Dam Site "D" lies on Pamo Creek or Valley, immediately above its junction with Santa Ysabel River. Bottom elevation

WILLIAM S. POST
ASSOC. MEM. A.S.C.E.
1817 HIBERNIAN BLDG.
LOS ANGELES, CALIFORNIA

is 900 feet, and the Pano Conduit may be elevated 40 feet, which is desirable. The Dam is planned to be an hydraulic fill, 110 feet high and 2700 feet long. It is off the main stream and therefore not subject to the menace of great floods, and its construction may proceed continuously for several years. It will be sluiced in by the water of Santa Ysabel River, which can be brought to it in a three mile flume on a grade of 4%. This grade will even bring the gravels transported by the Santa Ysabel itself in flood to the construction of the dam. After the dam is built the flume will become the diversion canal supplying the Reservoir.

The capacity of the reservoir will be 20,000 acre feet.

A preliminary estimate is as follows:

Flume 3 miles @ \$15,000	\$ 45,000
Tower and outlet gates	15,000
Excavation puddle trench	30,000
Sluicing 1,500,000 c.y. @ 10¢	<u>150,000</u>
	\$240,000

Prospect work on this site is suggested for continuity of work, required to keep water filings alive. This should consist of a series of prospect shafts 25 to 50 ft. apart, on the portion above ground water line; the remainder should be explored with an hydraulic rig to rock or boulders, and extended with hand diamond drill to bed rock. This would require the employment of five to six men for several months.

PAST EXPLORATION WORK

DONE ON DAM SITE "B"

The attached profile shows the conditions as far as disclosed by open cut and shaft on the upper slopes of the site. A black dotted line indicates the probable bed rock line.

The following is the detail statement prepared by Mr. R. W. Case, during the recent progress survey:

"On the north side of creek an excavation has been made, breaking ground at or near Elev. 1005 and at Sta. 0430, the excavation is to Elev. 955.5, while at Sta. 0435 it is to elev. 954.2; this bottom is about 85 ft. horizontally from the surface of the ground, exposing thoroughly the character of the granite. Several features in the excavation point to formation in place: one of which is the appearance of a fault or tight fissure cutting diagonally across and exposed for 50 ft. or more. The granite is quite hard but disintegrates rapidly when exposed to the elements. It cannot be dislodged in any quantity except by shooting. About 100 ft. down the hill from the bottom of the above mentioned excavation, the granite has been stripped for a length of more than 60 ft. and on the high side to a depth of about 4 ft. This depth practically shows the amount that can be excavated without powder.

About 100 ft. below where the center line crosses the stream bed the granite assumes a slope of nearly 45° and I am informed that even in the driest time with no water flowing above, the water is brought to the surface at this point.

To the south of the stream bed at an elevation of 889 a road has been cut around the mountain side, exposing a similar granitic formation. At an elevation of 908 ft. and 50 ft. south of the road a long cross cut has been made and a shaft sunk 25 ft. in depth. This shaft had been filled up intending to enlarge the excavation but from what is to be seen it is the same granite formation. As the granite formation may reach quite a depth and being exposed on both sides of the creek sufficient to determine its continuity on the mountains sides, some work should be done in the creek bottom, to ascertain its condition here."

S T A T U S O F W A T E R R I G H T S.

The State law does not require "continuous work" until sixty days after the grant of right of way by U. S. Government, provided a statement is made in the filing that a portion of the route of intended division is within a Forest Reserve.

Mr. Sweet and Mr. Lawler drew attention to the point that the original filings might be considered defective in that the Forest Reserve was not specifically mentioned. They therefore requested an additional filing be made which would correct the defect. This has been done. At present therefore work is not obligatory until the U. S. rights of way are granted. It is however necessary to maintain one man for the purpose of obtaining the stream flow data on the Santa Ysabel and the Santa Maria.

R E C O M M E N D A T I O N S .

1. I strongly urge the abandonment in the plans of the Pamo Site and the taking out of new filings at Sutherland Dam and Black Canyon and the eventual transfer of the present filings and priority on the Pamo by change of point of diversion.

2. The following steps should be taken to carry this out.

(a) New filings on Black Canyon and at Sutherland,- one with County recorder for Irrigation and another with the State Water Commission for Power.

(b) A survey begun within sixty days thereafter to furnish a right of way map.

WILLIAM S. POST
ASSOC. MEM. A.S.C.E.
1217 HIBERNIAN BLDG.
LOS ANGELES, CALIFORNIA

R E C O M M E N D A T I O N S (Con'd)

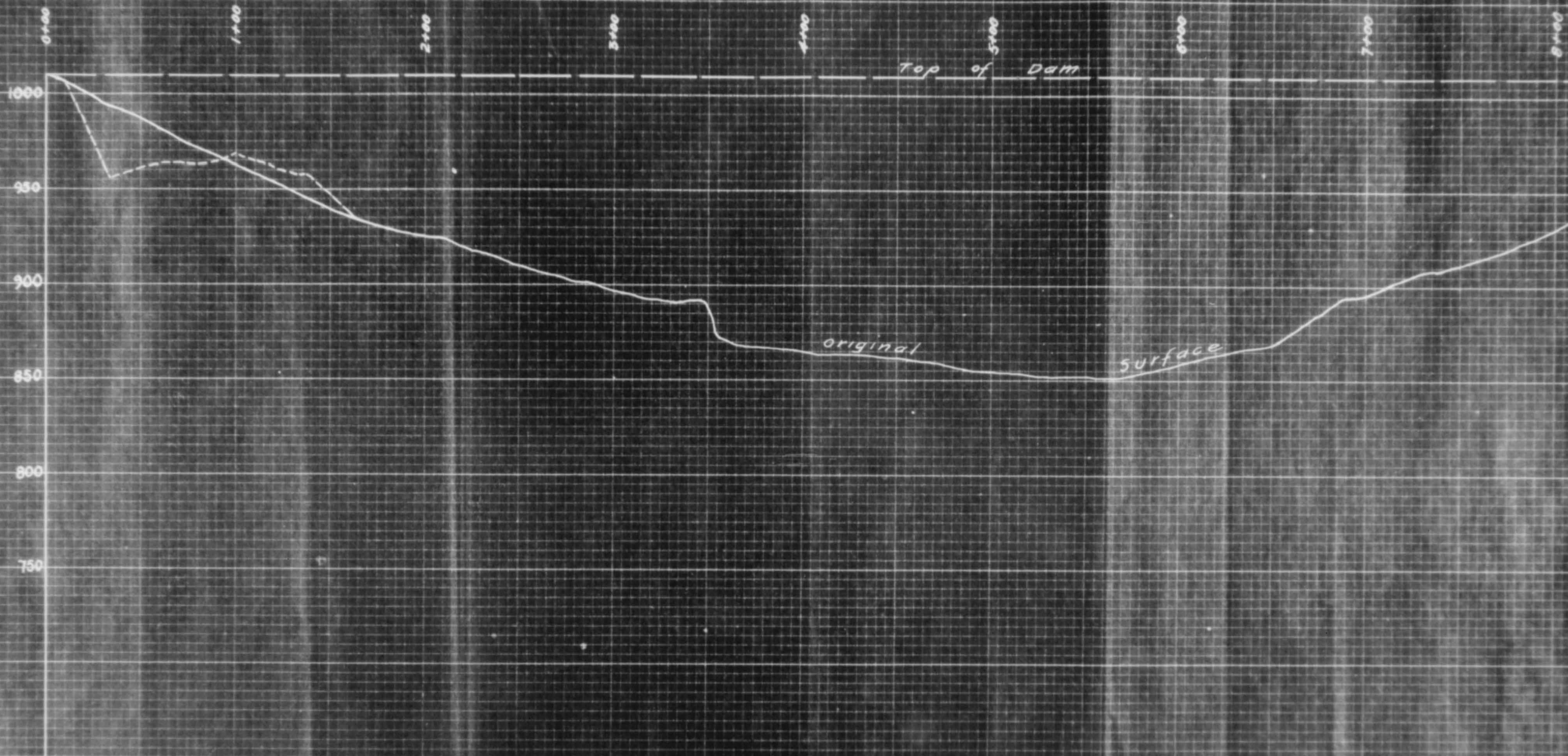
(c) On consultation with the attorneys, determine whether the priorities of filings may be transferred to Sutherland and so propose in a petition to U. S. Interior Department.

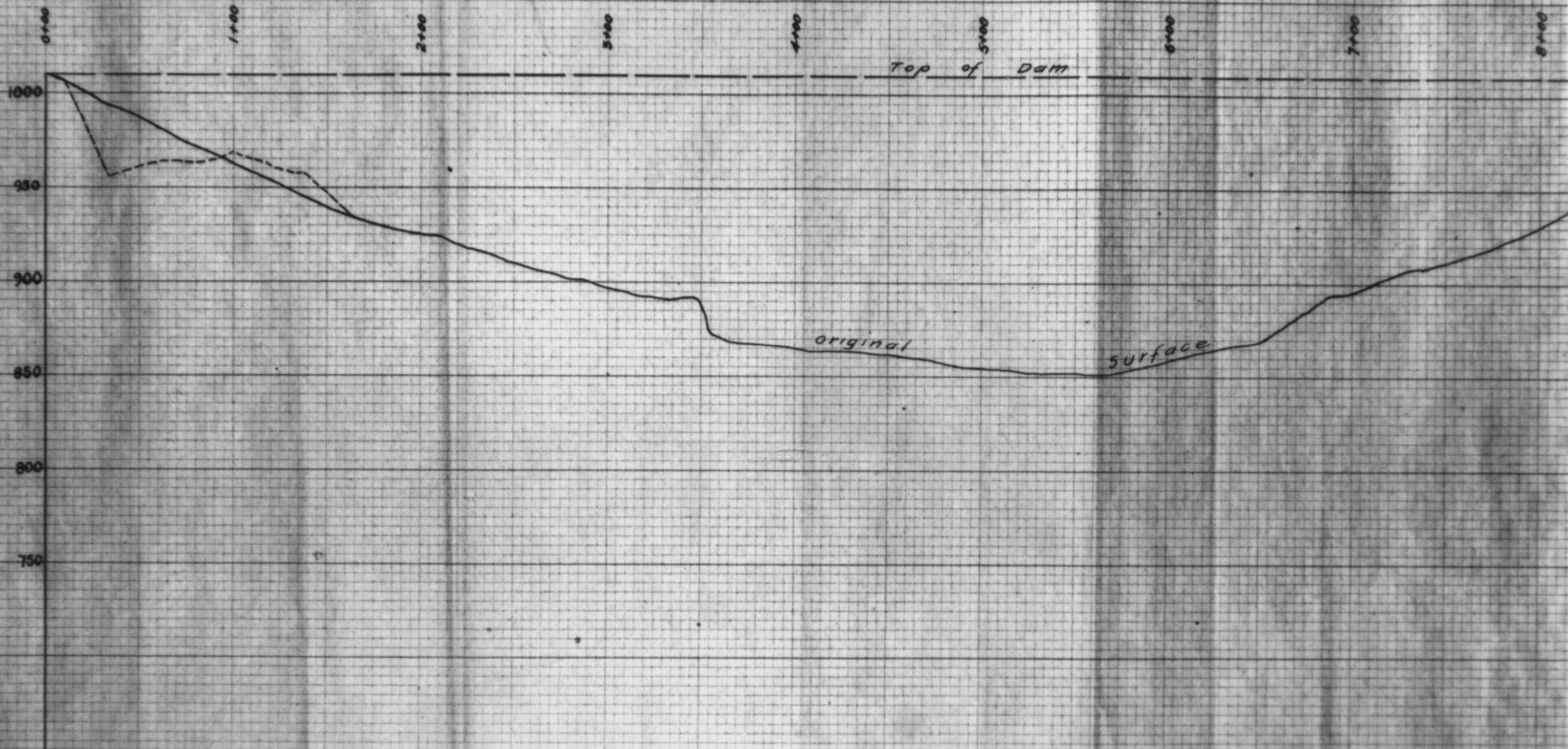
(d) File an amendment right of way map with the Interior Department, showing a line beginning at Sutherland through Santa Maria Reservoir and retaining the last 15 miles of Pamo conduct.

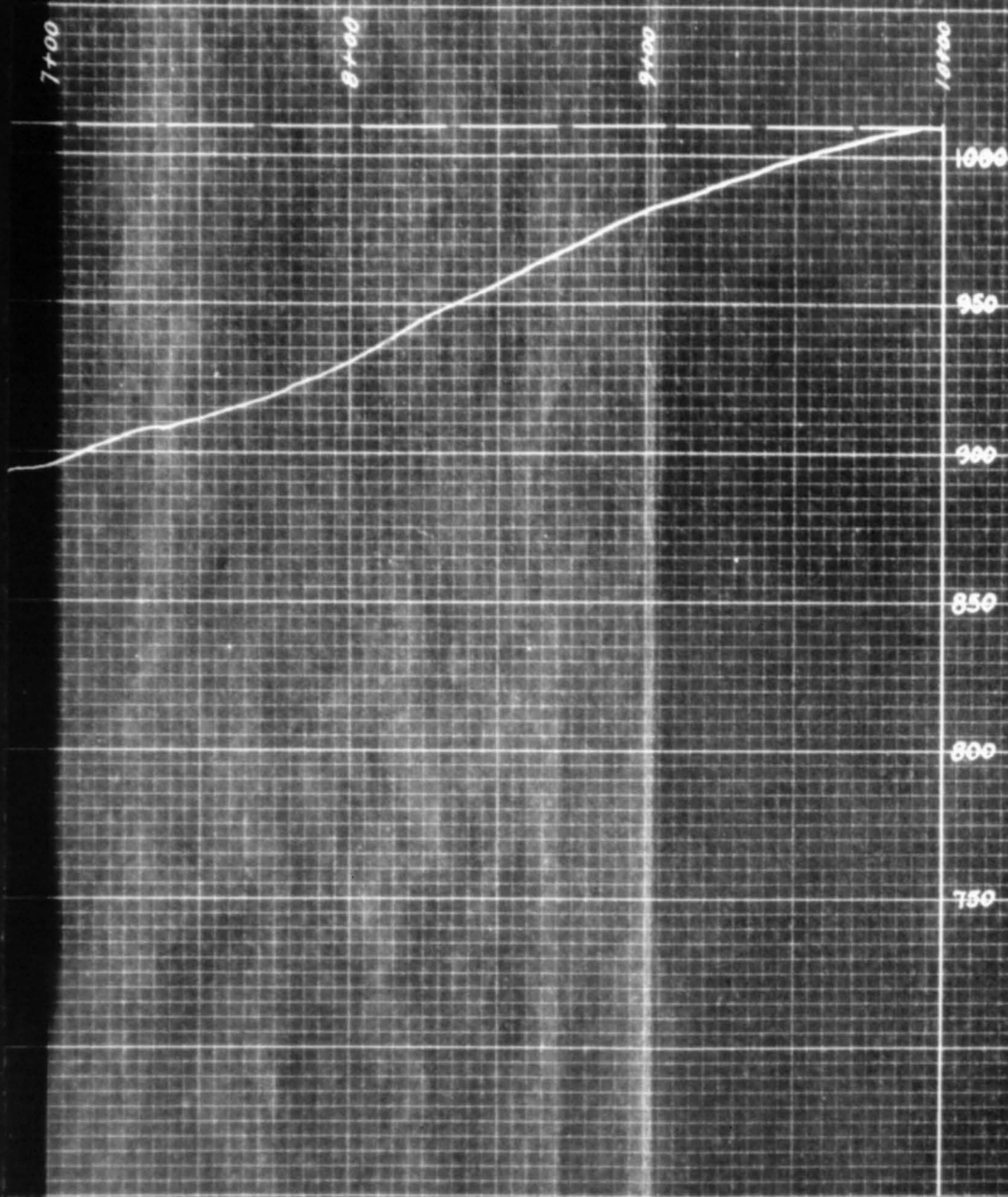
(e) This application will operate to delay need of doing "continuous work" until the amended right of way is granted.

(f) The above surveys should be done in October and November, before the rains.

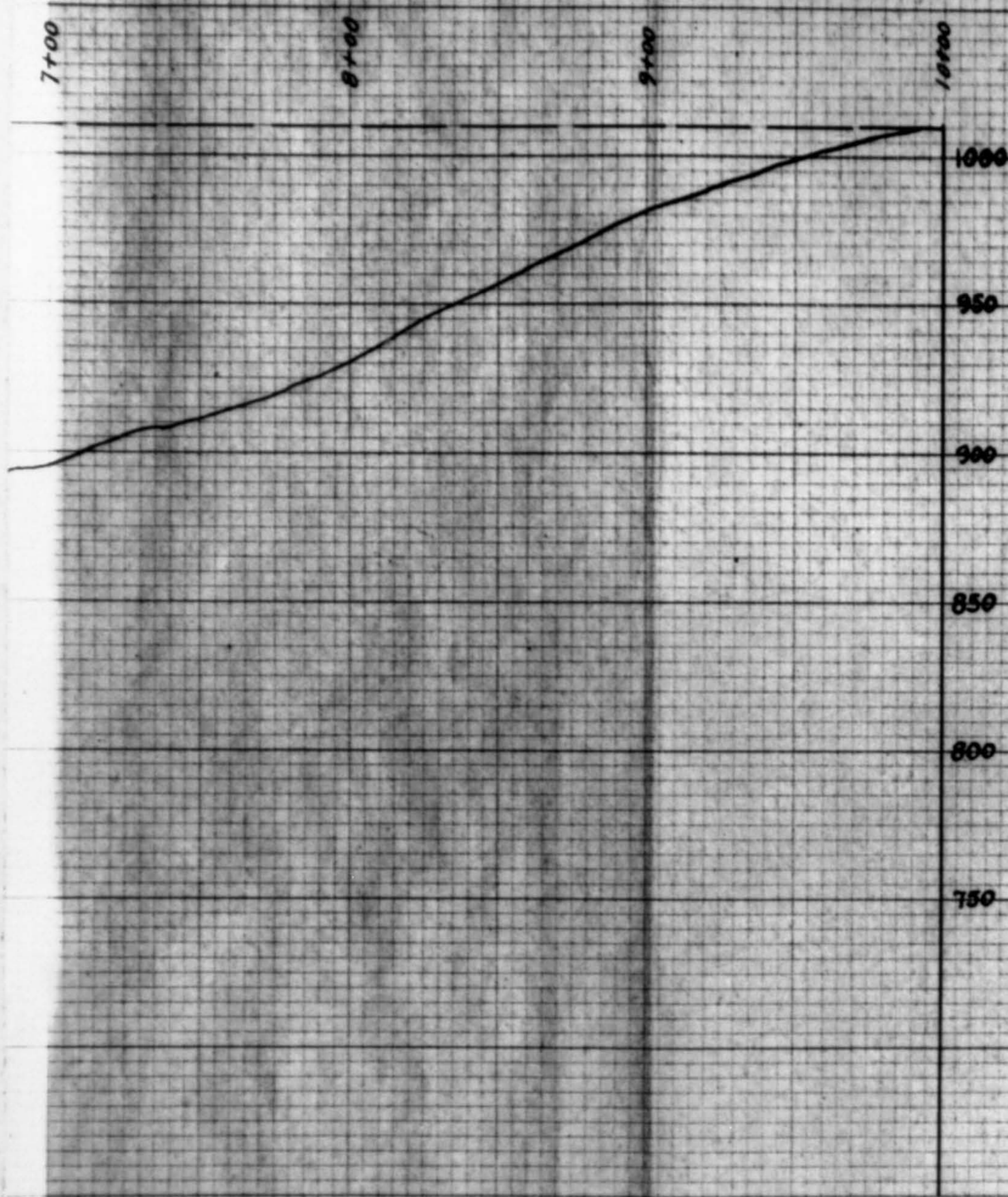
3. If it is still desired to continue some form of "assessment work" at the Pamo Site, it is recommended that all further work be done on Dam Site "D". At first by means of 4' x 6' shafts and later with hand diamond drill apparatus.





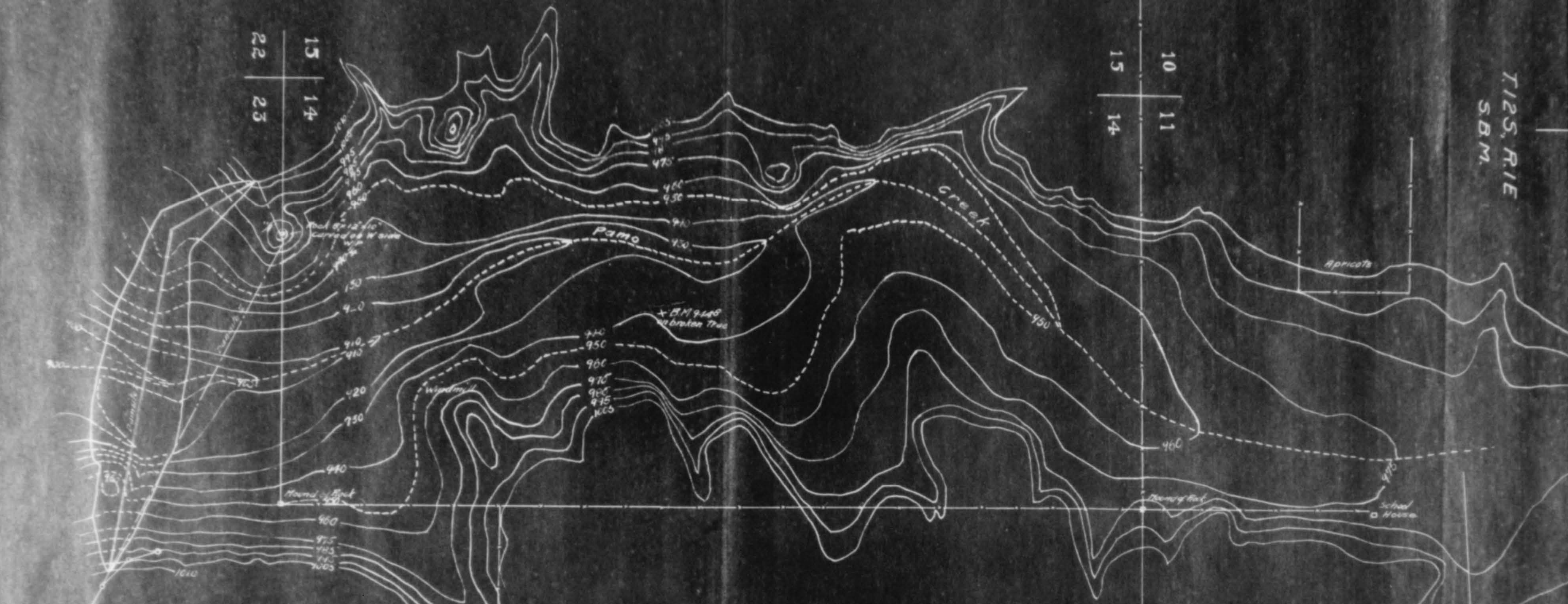


VOLCAN LAND & WATER CO.
~PROFILE PAMO DAMSITE 'B'
by E. W. CASE SEPT. 1912
W. S. POST Engr.
Tie Ref. FB. 15-29



VOLCAN LAND & WATER CO.
~PROFILE PAMO DAMSITE B~
by E. W. CASE SEPT. 1912
W. S. POST ENGR.
Tie Ref. F.B. 15-29

T. J. S. R. I. E.
S. B. M.



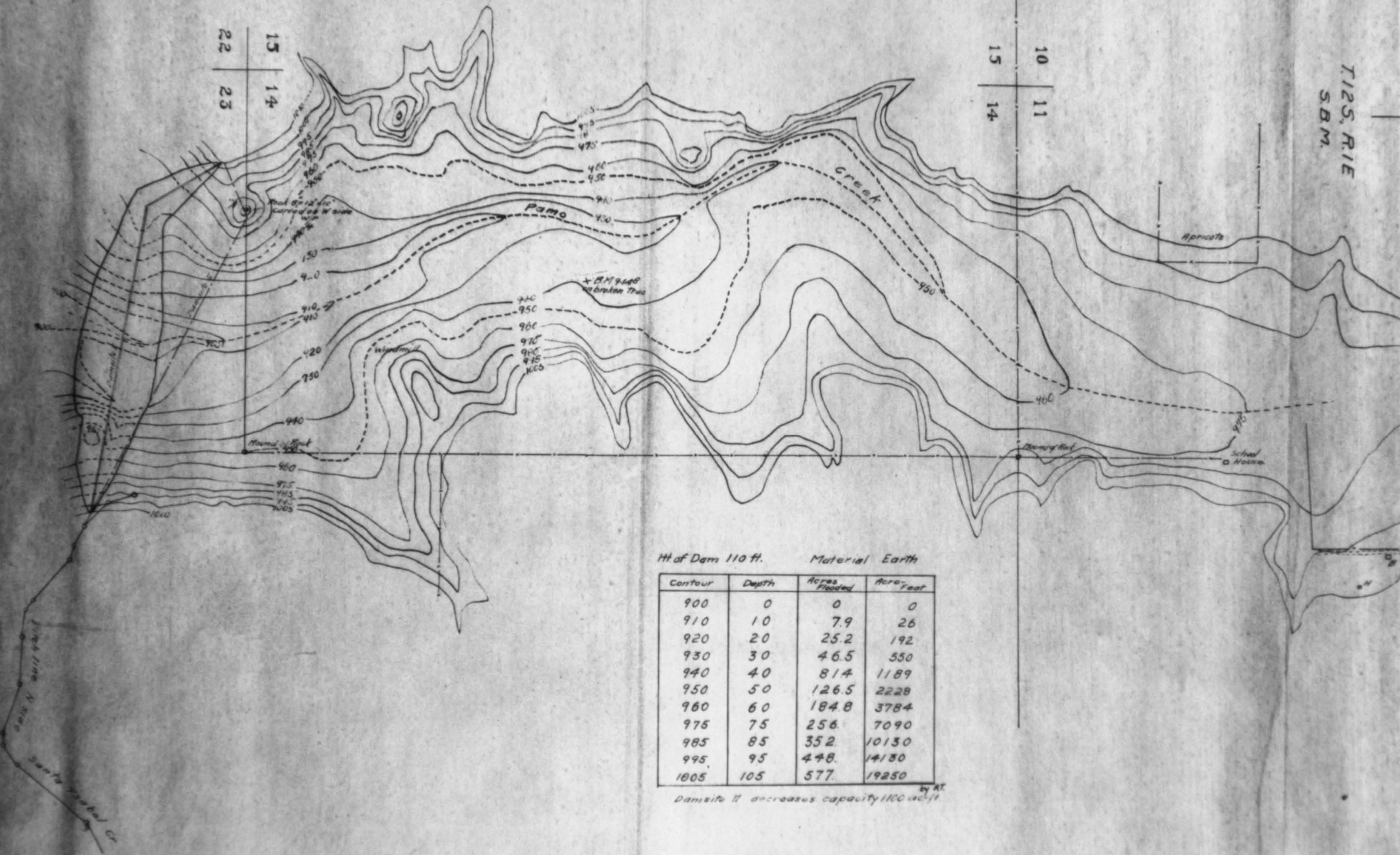
Ht of Dam 110 ft. Material Earth

Contour	Depth	Acres Flooded	Acres Feet
900	0	0	0
910	10	7.9	26
920	20	25.2	192
930	30	46.5	550
940	40	81.4	1189
950	50	126.5	2228
960	60	184.8	3784
975	75	256	7090
985	85	352	10130
995	95	448	14130
1005	105	577	19250

by AT.
Dam site II decreases capacity 1100 ac-ft

Proposed line N. side
Santa Fe National Co.

T125, R1E
S.B.M.



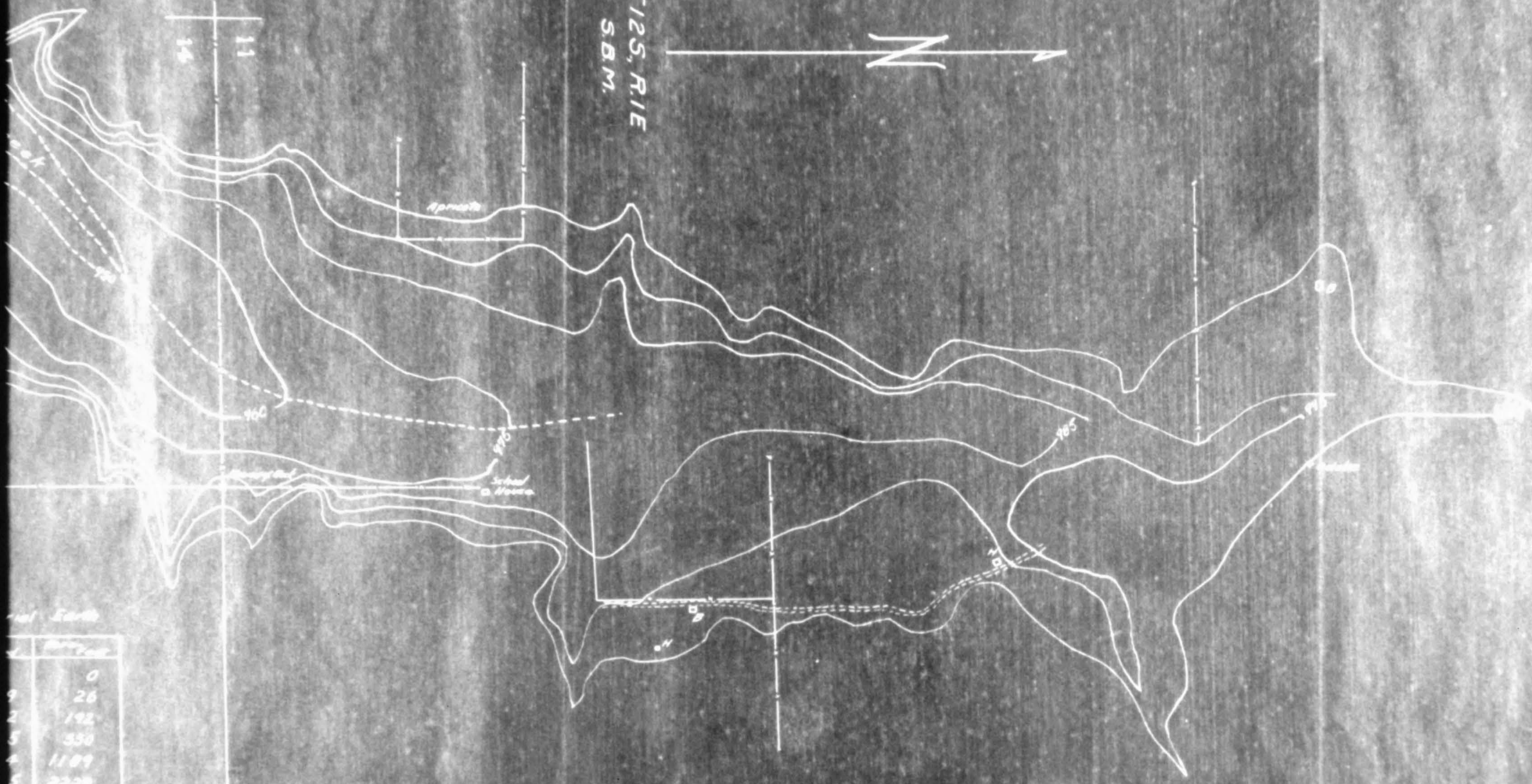
Ht of Dam 110 ft. Material Earth

Contour	Depth	Acres Flooded	Acres Feet
900	0	0	0
910	10	7.9	26
920	20	25.2	192
930	30	46.5	550
940	40	81.4	1189
950	50	126.5	2228
960	60	184.8	3784
975	75	256.	7090
985	85	352.	10130
995	95	448.	14130
1005	105	577.	19250

by AT.
Dam site if decreased capacity 1100 ac-ft

10 11
15 14

T125, R1E
S.B.M.

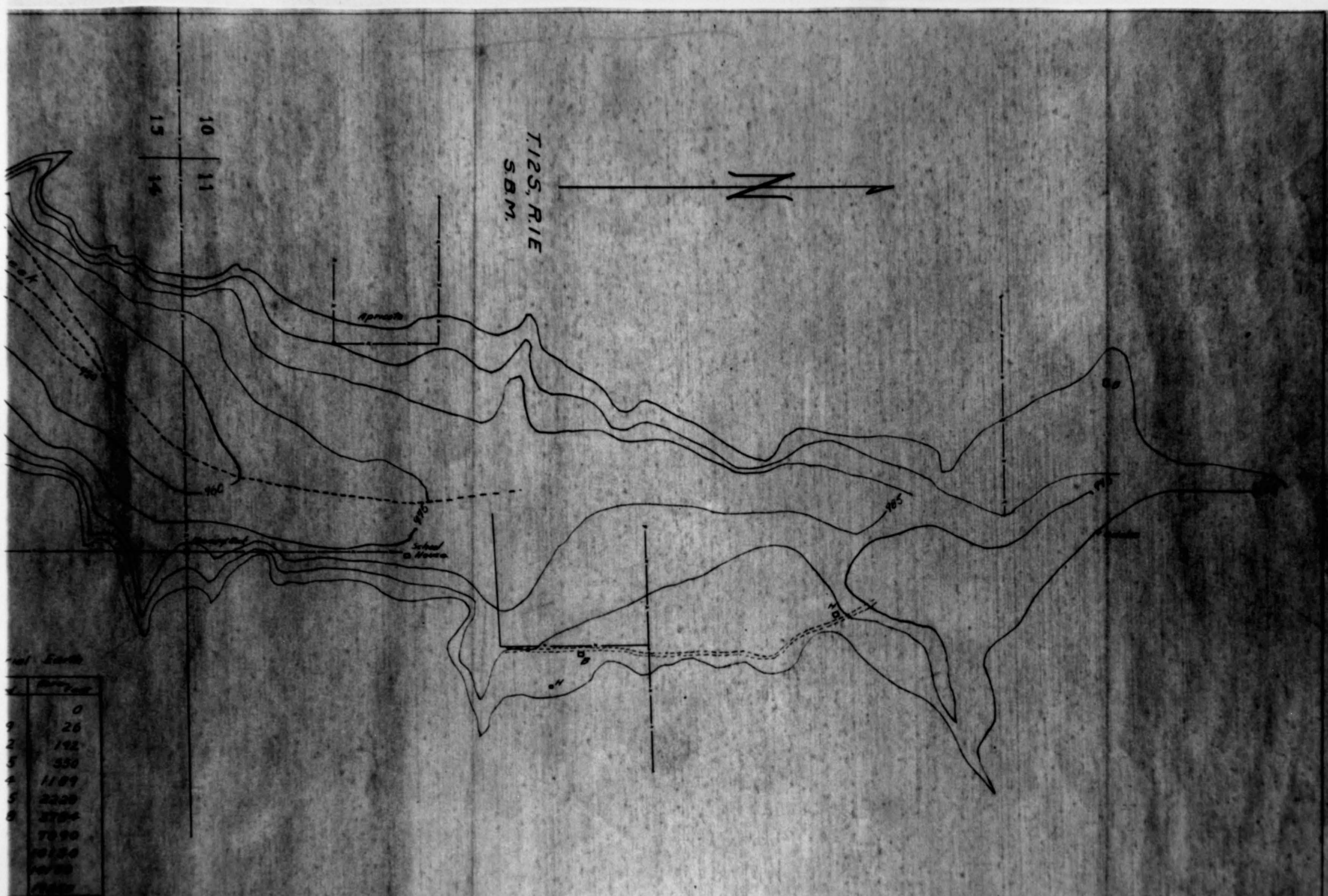


Total Earth

Feet	Area
0	
26	
192	
350	
1109	
2220	
3794	
7090	
10130	
14700	
19800	

Capacity 1000 ac-ft

VOLCAN LAND & WATER CO
Panic System
PANIC RESERVOIR D
Above Panic Tunnel Cr.
Scale 1" = 500'
June 1918
W.S. Peet, Engr. 1.016

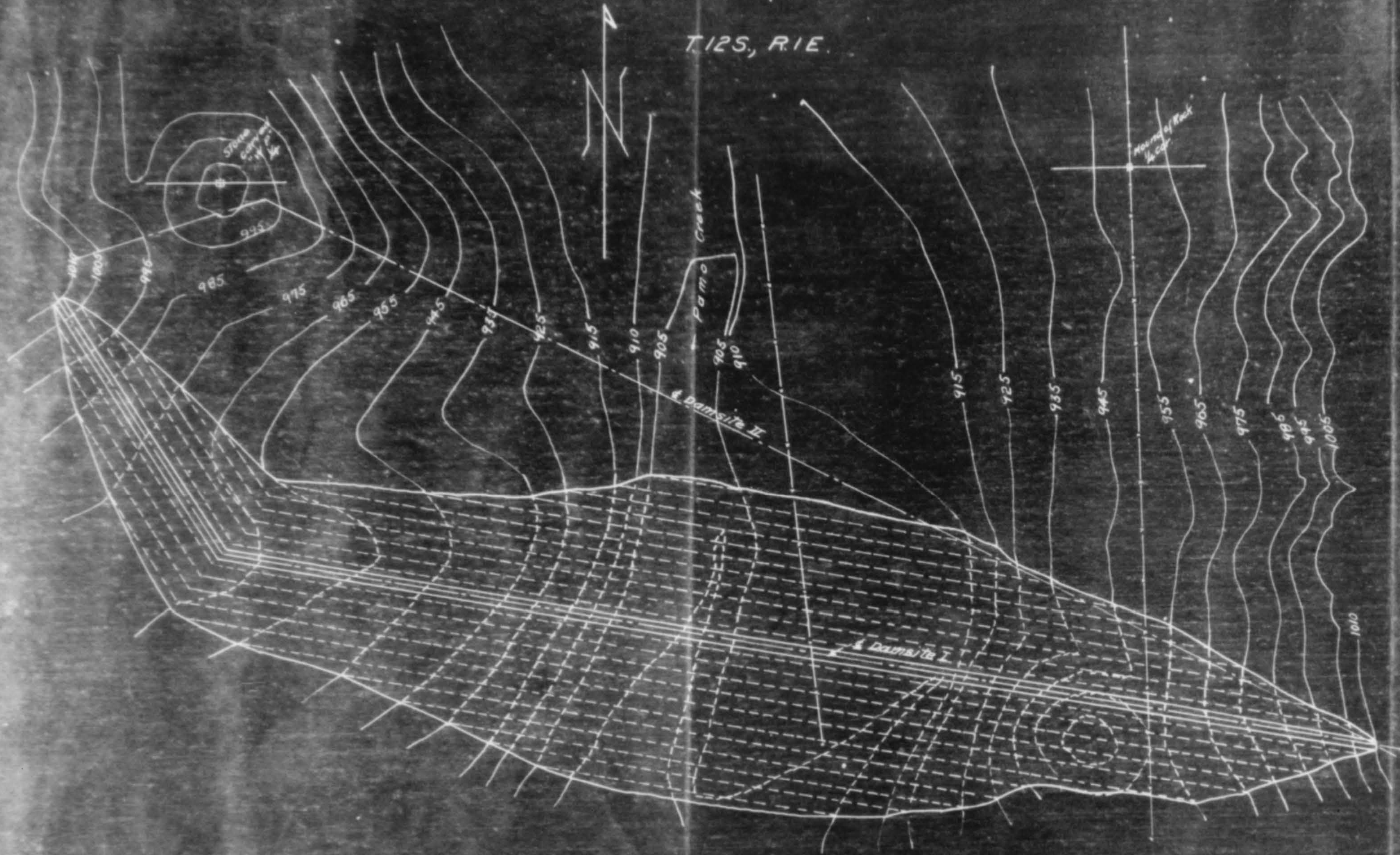


Vertical Scale

Feet	Scale
0	
26	
192	
330	
1189	
2320	
3704	
7090	
10130	
14000	
17000	

VOLCAN LAND & WATER CO
 Pano System
 PANO RESERVOIR
 above Pano Valley Cr.
 Scale 1" = 500'
 June 1916
 W.S. Post Engr. 1.016

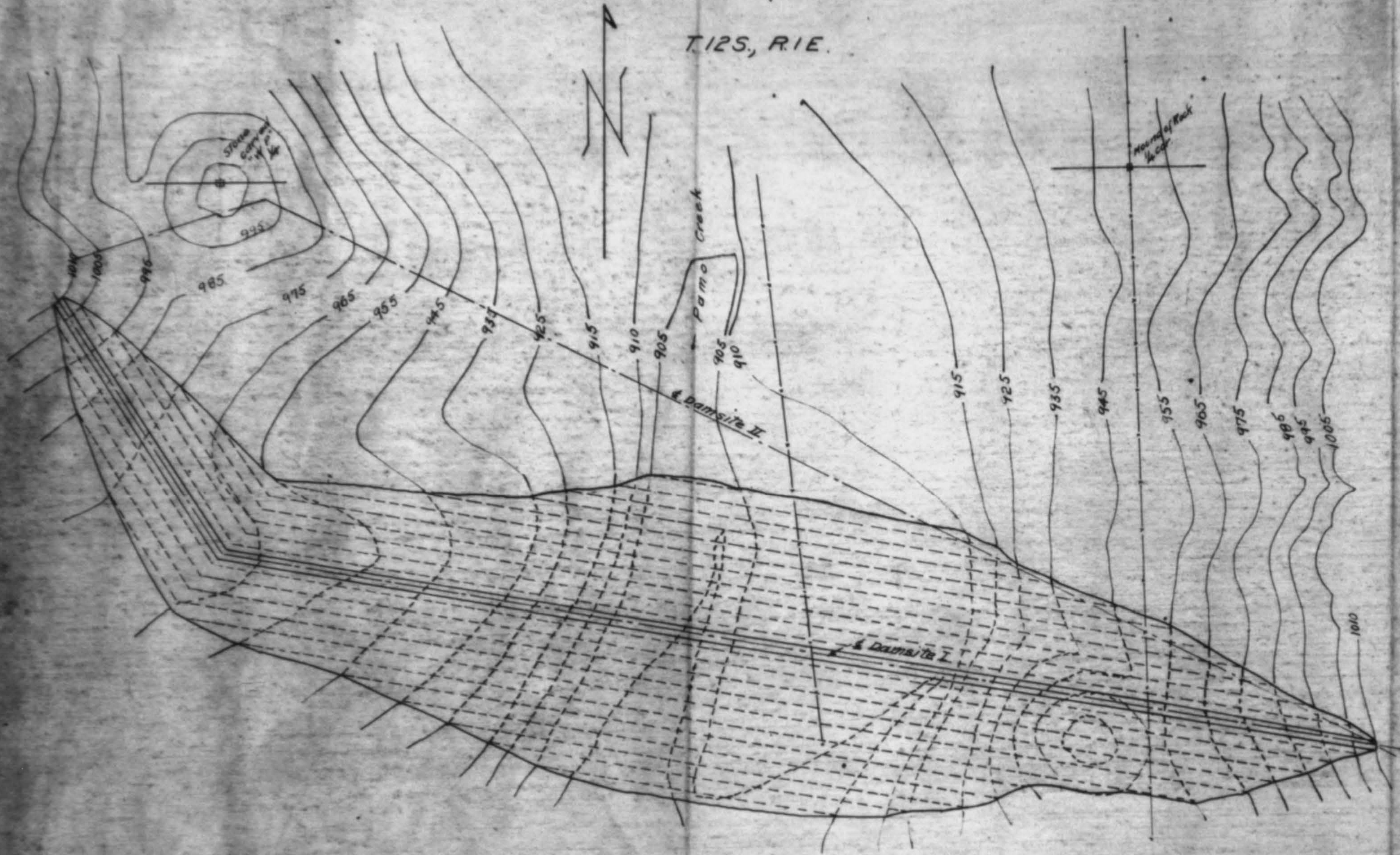
T.125, R.1E.



	Material	Earth
Dam Site	I	II
Crest	20'	20'
Length	2700'	2630'
Max Ht	110'	107'
Side Slopes	2 1/2:1	2 1/2:1
Yardage	1,404,000	1,381,000
Excess	50000	-
Reservoir	19250	18150
Excess	1100	-

VOLCAN LAND & WATER CO.
Pamo System
PAMO DAMSITE "D"
Scale: 1" = 200'
JUNE 1918
W.S. Post, Engr. 1.017

T. 12S., R. 1E.



	Material	Earth
Dam Site	I	II
Crest	20'	20'
Length	2700'	2630'
Max Ht	110'	107'
Side Slopes	2 1/2:1	2 1/2:1
Yardage	1,404,000	1,389,000
Excess	50,000	-
Reservoir	4250	4850
Excess	1100	-

VOLCAN LAND & WATER CO.
 Pamo System
PAMO DAMSITE
 above Barto Tract of
 Scale: 1" = 200'
 June 1916
 W. S. Post, Engr.

1017

Ed Fletcher Papers

1870-1955

MSS.81

Box: 40 Folder: 12

**Business Records - Reports - Post, W.S - "Pamo
Damsite and Suggestions for future work"**



Copyright: UC Regents

Use: This work is available from the UC San Diego Libraries. This digital copy of the work is intended to support research, teaching, and private study.

Constraints: This work is protected by the U.S. Copyright Law (Title 17, U.S.C.). Use of this work beyond that allowed by "fair use" requires written permission of the UC Regents. Permission may be obtained from the UC San Diego Libraries department having custody of the work (<http://libraries.ucsd.edu/collections/mscl/>). Responsibility for obtaining permissions and any use and distribution of this work rests exclusively with the user and not the UC San Diego Libraries.