MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

COUNTY OF HAWAII

Office Of Environmental Quality Control
Office Of The Governor
550 Halekauwila Street
Tani Office Building, Third Floor
Honolulu, Hawaii 96813

REVISED

ENVIRONMENTAL IMPACT STATEMENT

PREPARED FOR THE

COUNTY OF HAWAII

DEPARTMENT OF PUBLIC WORKS

HILO, HAWAII

NOVEMBER 1976

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BY

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

ENGINEERS * SURVEYORS

HONOLULU, HAWAII

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COUNTY OF HAWAII

HAWAII

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Mountain View Drainage Improvements

Mountain View, County of Hawaii

II. PROPOSING AGENCY

Department of Public Works

County of Hawaii

III. AGENCIES AND ORGANIZATIONS CONSULTED

Federal

USDA, Soil Conservation Service

State

Department of Land and Natural Resources

Department of Transportation

County

Department of Planning

Department of Research and Development

IV. PROPOSED ACTION

The proposed actions discussed herein are the ultimate drainage systems for the Mountain View Area as described in "Mountain View Drainage Study and Master Plan for the County of Hawaii, Department

of Public Works, Hilo, Hawaii", and the proposed interim drainage improvements recommended for immediate implementation by the County of Hawaii.

The proposed project calls for the ultimate construction of 3 separate, but inter-related, flood control systems as follows:

1. Pszyk Road Drainage System consists of retention basins located at depressed (low) areas in the existing sugar cane lands, dry wells (sumps) within the basins, and the construction of reinforced concrete channels to convey the basin releases to a natural watercourse (stream) to the southeast of Mountain View. Two localized subsystems are also proposed to convey storm waters discharged by existing highway culverts that meander through anthurium farms and residences in the area.

2. Kulani Road Drainage System consists of two retention basins located at depressed areas of the cane lands, dry wells within the basins, and a reinforced concrete channel leading to the stream to the southeast of Mountain View.

3. Kukui Camp Road Drainage System consists of two retention basins, dry wells within the basins, a reinforced concrete channel, equalizer pipe culverts at Kukui Camp Road, and the raising of the road grade at the existing sag on Kukui Camp Road.

The ultimate drainage systems are designed to provide flood protection for a 100-year return storm. The retention basins are intended to impound surface runoff and to release the impounded water after the

water surface in the basin reservoir reaches a pre-determined elevation. In the Kulani Road and the Pszyk Road drainage systems, the waters released from the basins are conveyed to a natural stream to the southeast of Mountain View via concrete lined channels. The water impounded in the lower Kukui Camp Road drainage system reservoir is disposed of by means of the dry wells. Stored water in each basin below the elevation of the outlet works will be disposed of by means of the dry wells.

Approximately 34.5 acres of cultivated land will be required for the construction of the basins and concrete channels. However, planting will be permitted on the basin embankments and in reservoir areas, thereby reducing the land area removed from sugar cane cultivation to approximately 6.5 acres.

The County of Hawaii has strongly indicated that the ultimate flood control system, as described in the masterplan report, will, in all probability, not be implemented in the next 15 to 20 years. It is anticipated that the Mountain View area will remain in agriculture for some time to come. An interim flood control system is proposed to provide immediate flood protection for the Mountain View area from low intensity storms. Such interim improvements will be compatible with the ultimate drainage scheme proposed. Generally, the interim improvements propose unlined interceptor channels and concrete culverts at road crossings. Where there is no easy access to a natural watercourse for the disposal of storm waters, retention basins with dry wells are proposed.

V. SUMMARY OF IMPACTS

The major beneficial impact of the project is the reduction of flooding and associated damage to private and public properties in the Mountain View area. No significant impact is anticipated by the proposed project on the flora, fauna, historical and archaeological aspects of the area. Implementation of the project will have a long-term positive effect on the quality of the surface runoff in the area.

Short-term adverse effect on the air, noise and water quality can be expected during the construction phase of the project. The loss of approximately 6.5 acres of productive sugar cane lands is one of the major adverse effects of the proposed project.

VI. ALTERNATIVES

The following alternatives to the proposed action were considered:

1. No action
2. Interceptor channels only without retention basins
3. Disposal of storm waters by lava tube
4. Reduction in the level of flood protection

VII. MITIGATING MEASURES

The following mitigating measures to reduce the adverse unavoidable effects of the project are proposed:

1. Land exchange for cultivated sugar cane land required to construct the project.
2. Conformance to County Grading Ordinance to reduce the pollution of natural waters by soil erosion.

VIII. LIST OF AGENCIES FROM WHICH COMMENTS ARE REQUESTED

1. U.S. Department of Agriculture, Soil Conservation Service.
2. State of Hawaii, Department of Land and Natural Resources.
3. State of Hawaii, Department of Transportation.
4. County of Hawaii, Department of Planning.
5. County of Hawaii, Department of Research and Development.

ENVIRONMENTAL IMPACT STATEMENT

MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

I. INTRODUCTION

The purpose of this Environmental Impact Statement is to discuss the possible impact on man and his environment of the proposed Mountain View Drainage Improvements, as described in the study report, "Mountain View Drainage Study and Master Plan for the County of Hawaii, Department of Public Works, Hilo, Hawaii", dated March 1974, in accordance with provisions of Chapter 343, Hawaii Revised Statutes.

II. PROJECT DESCRIPTION

A. Identification and Location

The proposed project is located in the community of Mountain View, which is approximately 15 miles southwest of Hilo on the Hawaii Belt Highway (Rte. 11), also known as the Volcano Road. See Exhibit No. 1. The drainage masterplan calls for the ultimate construction of 3 separate, but inter-related, flood control systems. Exhibit No. 2 shows the 3 systems as the (1) Pszyk Road Drainage System, (2) Kulani Road Drainage System, and (3) Kukui Camp Drainage System.

Generally, the ultimate drainage systems call for the construction of retention basins at existing low areas of the sugar cane fields with associated drainage channels and dry wells (sumps) for disposal of storm waters.

However, the County of Hawaii has strongly indicated that the ultimate flood control systems, as described in the masterplan

report and shown in Exhibit No. 2, will, in all probability, not be constructed in the next 15 to 20 years. It is anticipated that the Mountain View area will remain in agriculture for some time to come. Rather, an interim flood control scheme is proposed to provide for immediate flood protection for the residents of Mountain View from low intensity storms. Exhibit No. 3 shows the location and the extent of the proposed interim drainage improvements for the Mountain View area.

B. Objective

County of Hawaii road maintenance records indicate that flooding in the Mountain View area occurs on the average of 2 times a year. These floods are generally the result of low intensity storms. Interviews with old-time residents of Mountain View indicate that the flood of record in the Mountain View area occurred in the late 1930's, when the Old Volcano Road was under several feet of water.

Exhibit No. 4 identifies the flood problem areas of the Mountain View community. The objective of the proposed project is to protect the community of Mountain View from recurrent flooding, and to reduce the resultant damage to property and the inconvenience to the people of the area.

The ultimate drainage systems offer flood protection from storms of 100 year return interval. The interim drainage improvements offer relief from flooding caused by storms of 2 or 3 year return intervals. (A 100-year return interval has a 1% chance of occurring; a 2 year return interval has a 50% chance of recurring.)

C. Proposed Action

1. Technical Characteristics

a. Ultimate Drainage Systems

The ultimate drainage systems, as shown on Exhibit No. 2, were designed using the U.S. Soil Conservation Service hydrology method and flood routing program.

Pszyk Road Drainage System consists of 2 flood water retention basins, dry wells within the basins, and approximately 6500 linear feet of 10 foot wide rectangular concrete channel; 2200 linear feet of 6 foot wide rectangular concrete channel, and associated culverts at road crossings. In addition, 2 smaller drainage channels are proposed to intercept storm waters now flowing across a strip of Olaa Forest Reserve adjacent to the Volcano Road and south of Pszyk Road. The concrete channels will direct the flow of storm waters released from the basins to the existing watercourse to the east of Mountain View, identified as Stream "A" on the exhibits and in the masterplan report.

Kulani Road Drainage System consists of 2 flood water retention basins, dry wells within the basins, and approximately 4400 linear feet of 10 foot wide rectangular concrete channel and associated culverts at road crossings. The concrete channel directs storm waters released from the basins to Stream "A".

Kukui Camp Road Drainage System consists of 2 retention basins, approximately 250 feet of 6 foot wide rectangular concrete channel, some grading work in sugar cane area to direct the basin release from basin 5 to basin 7, a series of dry wells, 5 equalizer culvert pipes under Kukui Camp Road, and the raising of the profile grade of Kukui Camp Road at the present sag location in the road. All impounded water will be disposed of by the dry wells within basins 5 and 7.

The proposed retention basins are located at existing depressed locations in areas presently cultivated in sugar cane. The basin embankment is proposed to be constructed to permit the planting of sugar cane, where possible. No excavation is proposed within the basin floor, except for the excavation of dry wells.

The basins are designed for a 100 year storm with the impounded storm waters being released only after the water level in the basin exceeds a pre-fixed elevation. The quantity of released storm water will, therefore, be far less than under a condition of no retention, resulting in smaller drainage channel requirements downstream. Where waters are directed to Stream "A", the basin releases would reduce the flow rate into the stream, as compared to no retention of the flood waters. In addition to reducing the quantity of storm waters concentrating at any particular point

downstream of the retention basin, the basin also serves as a desilting basin, such that the released water carries less sediment and thereby causes less siltation in the downstream watercourse. The anticipated sediment cleanout of the basins is every 5 years.

The details of the proposed ultimate drainage systems, along with the hydrology data and flood routing data, are included in Appendix "A" at the end of this EIS.

b. Interim Drainage Improvements

The proposed interim drainage improvements provide immediate relief from "run of the mill" storms that have inconvenienced the residents of Mountain View on a recurring basis. Generally, the interim improvements propose unlined interceptor channels and culverts at road crossings to intercept surface flows that flood cultivated and/or improved areas of Mountain View. Where there is no easy access to a natural watercourse for disposal of the storm waters, retention basins are proposed, with dry wells utilized for disposal of the impounded water. In no case is any water diverted from one watershed to another. The proposed interim drainage systems are shown on Exhibit Nos. 5, 6 and 7. Pszyk Road Interim Drainage Improvement consists of an unlined earth channel paralleling Pszyk Road mauka of Nichols Road (Old Volcano Road) for a distance of nearly 400 feet. Two new culverts are required for

this section of the drainage improvement. The existing 10'x6' reinforced concrete box culvert crossing Volcano Road will be utilized as part of the improvement. Makai or east of the Volcano Road, the existing earth channel parallel to Pszyk Road will be utilized to its confluence with Stream "A". This channel may require reshaping and slope protection in certain sections of its alignment.

Another interceptor channel is proposed on the easterly side of the Olaa Forest Reserve south of Pszyk Road. This earth channel will intercept the discharges from existing State Highway box culverts that presently meander through the Forest Reserve area and into the anthurium farms and homes in the southeast quadrant of Volcano Road and Pszyk Road. The proposed ditch parallels the Forest Reserve to a culvert under Pszyk Road and joins the existing earth ditch on the north side of Pszyk Road mentioned earlier.

This drainage improvement does not increase the discharge that presently enters Stream "A" at Pszyk Road.

No cultivated sugar cane land is required by this improvement as existing channel alignments will be utilized in the field areas. An easement along Olaa Forest Reserve will be required. The Department of Land and Natural Resources has indicated no adverse

effect is anticipated to the flora in the area as a result of the proposed channel construction.

Kulani Road Interim Drainage Improvement consists of excavation of a retention basin just south of Kulani Road at the old railroad right-of-way, approximately 400 feet mauka of Volcano Road. Outlet works include a double 24 inch pipe culvert. Disposal of impounded water is by dry wells. An area of approximately 3.7 acres is required for the retention basin, including 0.5 acre presently in sugar cane. The rest of the site is open grass land.

Storm waters in excess of the design capacity of the basin will continue to concentrate at Kulani Road as it does at the present time. No water from this improvement will be directed to Stream "A".

Kukui Camp Road Interim Drainage Improvement consists of the construction of a culvert under the old railroad right-of-way south of the Fuse house, an unlined channel to direct the discharge from the culvert and the intercepted surface flow towards Kukui Camp Road and then eastward along the south side of Kukui Camp Road to the sag in the road and to the natural depression in the ground. Three dry wells, three 48 inch pipe culverts, and the raising of the profile grade of Kukui Camp Road are proposed.

An alternative to directing the flow of storm waters eastward along Kukui Camp Road is to carry the storm waters northward, paralleling the old railroad right-of-way, to a natural depression approximately 500 feet north of Kukui Camp Road. This will be studied closely during the design of the project.

Appendix "B" includes the hydrology for the interim systems and channel detail.

2. Economic Characteristics

As the County anticipates the Mountain View area to remain primarily in agriculture for the next 10 to 20 years, there appears to be no significant effect on the economy of the area by the proposed action. The construction of the project, whether the ultimate systems or the interim improvements, will have certain secondary effects on the local community because of its effect on employment during construction; the effect on property values of added flood protection; and the possibility of additional or more intensive development or other intensive land use in the subject area; the effect on the cost of certain classes of real property insurance; and the effect on the economics of agriculture, both sugar and anthuriums.

The ultimate drainage systems require some 34.5 acres of cane land for the construction of the basin embankments and the lined concrete channels. Of the 34.5 acres, approximately 28 acres can be planted in cane after the basin

embankment work is completed. The remaining 6.5 acres are required for concrete channels and basin appurtenances. As the construction of the ultimate systems is considered to be some time in the distant future, right-of-way requirements have not been established. Consideration should also be given for exchange of sugar cane land necessary for drainage construction with other State or County lands in the area that are suitable for sugar cane cultivation.

The interim improvements will require approximately 0.5 acre of sugar cane land at Kulani Road and less than 0.5 acre at Kukui Camp Road.

The economic significance of the ultimate drainage systems, requiring approximately 6.5 acres of sugar cane lands for construction, is difficult to assess at this time because of the time consideration for construction of the systems and the distinct possibility of land exchange with the sugar planters for other nearby cultivatable land.

The Kulani Road interim improvement requires 0.5 acre of sugar cane land for the construction of the retention basin. Consideration for exchanging land presently not used for sugar cane growth at this site should be pursued to minimize the effect of removing 0.5 acre of sugar cane land from production.

3. Social Characteristics

The project is designed to confer some degree of flood protection to certain existing sections of Mountain View.

As such, there is the possibility of certain social effects in the limited geographic areas affected. This would be stimulation of community growth by increasing their desirability as residential areas, and the encouragement of capital investment in existing and new structures because of the increased security against flood damage.

The interim retention basin at Kulani Road could be utilized as a public park during dry weather periods.

No residences or businesses will be relocated by the project.

4. Environmental Characteristics

The proposed ultimate drainage systems or interim drainage improvements are not anticipated to have any significant adverse impact on the environmental characteristics of the area. The major drainage structures proposed in the ultimate drainage systems will all be constructed in lands presently used for sugar cane production. As such, there are no negative impacts with regard to the flora, fauna, or historical/archaeological characteristics of the area. All drainage channels will be constructed in sugar cane areas or along existing drainage ditches or adjacent to roadways.

Any adverse effect on the water, air and noise in the Mountain View area would be during the construction phase of the project. Once the project is completed, periodic maintenance operations may have temporary effect on the quality of the water, air and noise of the area.

No large trees are proposed to be removed by the project.

The proposed retention basins will have a positive effect on reducing the sediment load carried by the storm waters released from the basins.

D. Use of Public Funds or Lands

The ultimate drainage systems described earlier are not funded, as the County does not anticipate implementation in the foreseeable future. The estimated cost of constructing the ultimate systems, as reported in the March 1974 masterplan report, is approximately $7.4 million. This does not include the cost of acquiring rights-of-way to construct the project.

When sugar cane lands are removed from permanent production, consideration should be given to possible land exchange, using either County or State lands. This is an area which should be reviewed when and if construction of the masterplanned drainage system is imminent.

The interim drainage improvements have been funded for construction. County funds amount to $200,000 and State funds amount to $150,000. The estimated cost of constructing the interim improvements is $350,000.

Lands required for the ultimate drainage systems are owned by either Puna Sugar Company, or private individuals. Acquisition of land in fee or by easement for the retention basins and diversion channels will be dependent upon the source of funding; i.e., whether Federal funds are utilized under PL-566 or RC&D funding under the Food and Agricultural Act of 1962, or by State

and County funds only. Federal funding for the project may stipulate purchase of all land necessary for the project in fee.

The interim drainage improvements would require the acquisition of the 3.7 acre site for the retention basin at Kulani Road and the establishment of easements for earth ditches and dry wells at Kukui Camp Road.

E. Phasing and Timing of Action

There is no timetable for implementing the ultimate drainage systems. The masterplan report recommends that the Pszyk Road Drainage System be implemented as the first phase, followed by the Kulani Road Drainage System, and finally the Kukui Camp Road Drainage System.

The interim drainage improvements are programmed for construction by the County of Hawaii for the Fall of 1976.

F. Summary of Technical Data, Etc.

The masterplanned drainage systems for the Mountain View area consist of retention basins with appurtenances, concrete channels, dry wells and culverts at road crossings. Design is based on a 100-year return storm. The retention basins are intended to impound surface runoff and to release the water after the water surface in the basin reservoir reaches a predetermined elevation. The basin release is directed to concrete lined channels (except for the case of basin 4A) for safe conveyance to a natural watercourse. Impounded water within the basin reservoir below the outlet spillway elevation will be disposed of by dry wells constructed in the reservoir floor.

Cultivation of sugar cane is permitted within the basin reservoir and on the basin embankment. Approximately 6.5 acres of sugar cane land will be removed from production by the proposed ultimate drainage systems.

No historical or archaeological sites are known to be located in the areas of construction. No large trees will be removed for the construction of the system. No families or businesses will be relocated in order to implement the project.

Hydrologic data and diagrams of the proposed work are appended to this report.

III. ENVIRONMENTAL SETTING

A. Natural Environment

1. Physical

Mountain View is located approximately 15 miles southwest of Hilo at an average elevation of 1500 feet. The average annual rainfall is approximately 189 inches per year (USGS, "Preliminary Report of the Water Resources of Hilo - Puna Area, Hawaii"). The general trend indicates a wet period during March, April and May, followed by a dry period in June and another wet period in November and December.

The ground slopes in the easterly direction towards the ocean at grades ranging from 3 to 6 percent, with numerous depressions and irregularities in ground contours. The soil in the area is grouped into Akaka - Honokaa - Kaiwiki association (USDA, Soil Conservation Service, "Soil Survey, Island of Hawaii," 1973). No known mineral resources exist

in the project area (Stearns and Macdonald, 1946; Stearns, H.T., "Geology of the State of Hawaii", 1966).

2. Flora and Fauna

Virtually the whole of the study area is currently used for the cultivation of sugar cane, a mainstay of the island's economy; cane has been grown in this area for some 50 years. Areas to be employed for cane cultivation must first be stripped of all vegetation, plowed, and sometimes recontoured. Consequently, cane lands are invariably stripped of their value as habitat for native wildlife early in the preparation of the fields. For this reason, the subject cane lands are of minimal value as floral habitat. Some smaller plants and shrubs are found along the sides of cane roads and between fields, although those areas, too, are frequently disturbed.

The study area does include a small forested area adjacent to the highway. This area contributed most of the diverse plant species listed hereinafter and represents the only marginally significant habitat encountered.

a. Plants Actually Observed on the Project Site February 1976

Common Name	Scientific Name
Spiny Amaranth	Amaranthus spinosus
Boerhavia (Alena)	Boerhavia diffusa
Drymaria	Drymaria cordata
Haole Koa	Leucaena leucocephala

Common Name	Scientific Name
Common Mango	Mangiferra indica
Breadfruit	Artocarpus communis
False Kamane	Terminalia catappa
Banana	Musa sp.
Hala	Pandanus odoratissimus
Plantain Lau-kahi	Plantago major
Ti Plant	Cordyline terminalis
Alocasia	Alocasia sp.
Eucalyptus	Eucalyptus sp.
Common Guava	Psidium guajava
Mountain Apple	Eugenia malaccensis
Java Plum	Eugenia cuminii
Coconut	Cocos nucifera
California Grass	Brachiaria mutica
Large Crabgrass	Digitaria sanguinalis
Honohono	Commelina diffusa
Nettle-leaved Vervain	Stachytarpheta urticaefolia
Maile Pilau	Paederia foetida
Malayan Ground Orchid	Spathoglottis plicata
Spanish Needle	Bidens pilosa
Thimbleberry	Rubus rosaefolius
Kukui	Aleurites moluccana
Castor Bean	Ricinus communis
Hau	Hibiscus tiliaceus
Asiatic Pennywort	Centella asiatica

Common Name	Scientific Name
Blue Morning Glory	Ipomoea congesta
White Ginger	Hedychium coronarium
Yellow Ginger	Hedychium flavesceus
Shell Ginger	Alpina speciosa
False Staghorn Fern	Dicranopteris linearis
Club Moss	Lycopodium cernuum
Blechnum	Blechnum occidentale
Sword Fern	Nephrolepsis exalta
Lace Fern	Sphenomeris chusana
Oak Fern	Dyropteris dentata
Fishtail Fern	Nephrolepsis biserrata
Laua'e	Microsorium scolopendria

The site is characterized by the typically restricted vertebrate fauna common to this general habitat type on Hawaii. The Hawaiian Islands are poor in native terrestrial vertebrates except for the varied and abundant birdlife which existed formerly. Hawaii's native upland birds are now reduced to a remnant of their former abundance, both in terms of total numbers and in terms of indigenous species which have escaped extinction.

Cane lands are poor as habitat for most wildlife. Aside from introduced species associated with human habitation, few animals were observed. No native birds were observed during a field survey in February 1976. The only birds observed were a species of dove, English sparrows, and the common mynah.

Although no terrestrial mammals were encountered, the site is likely inhabited by several species of rats, mice, mongooses, feral dogs, and cats. These species together probably constitute the great majority of non-insectivorous fauna inhabiting the project site. The following is a list of species presumed to inhabit the project site.

b. Fauna Typical of the Project Site

Mammals	Scientific Name
Indian Mongoose	Herpestes auropunctatus
Feral dog	Canis familiaris
Feral cat	Felis catus
Black Rat	Rattus rattus
Brown Rat	R. norvegicus
Polynesian Rat	R. exulans hawaiiensis
House Mouse	Mus musculus
Birds	**Scientific Name**
Barred Dove	Geopelia striata
Lace-Necked Dove	Streptopelia chinensis
Common Mynah	Acridotheres tristis tristis
Japanese White-Eye	Zosterops japonica japonica
English Sparrow	Passer domesticus
Kentucky Cardinal	Richmondena cardinelis
Apapane	Himatione sanguinea
Iiwi	Vestaria coccinea
Hawaii Thrush	Phaeornis obscurus
Hawaiian Hawk	Buteo solitaris

Birds	Scientific Name
Elepaio	Chasiempis sandwichensis
Amakihi	Loxops virens
Akepa	Loxops coccinea
Other Vertebrates	
Gecko	
Common Toad	
Invertebrates	
African Snail	
Numerous Insect Species	

Because of the proximity of the site to areas of prime forest bird habitat, some native bird species probably transit the area occasionally, although it is doubtful that the small area of non-native forest adjacent to the highway actually supports a resident population of any common or endangered native species.

3. Air, Noise and Water

The major source of air pollution in the Mountain View area is from open burning, spraying of agricultural chemicals, and by vehicles. Volcanic ash is also a source of air pollution in this area.

Surface water pollution is primarily caused by soil erosion, especially after the sugar cane crop has been harvested and the land denuded.

Primary sources of noise pollution are trucks, buses, and cars in the area and, during the harvesting of sugar cane, by heavy cranes and haul-cane trucks.

B. Man-Made Environment

1. Historic and Archaeological

The General Plan, County of Hawaii does not list any historic or archaeological resources in the project area. The Department of Land and Natural Resources further confirms, by letter of April 27, 1976 (appended to this Statement) that the project "will have no effect upon any known historic or archaeological site on or likely to be on, the Hawaii and National Registers of Historic Places."

An archaeological survey walk through the project area was conducted by the Bishop Museum in February 1976. No archaeological features were discovered and no evidence of any prehistoric exploitation of the area was found. The report is included in Appendix "C".

A historical research of the area was conducted by Anne H. Takemoto Historical Research; a copy of the historical/cultural essay report is also included in Appendix "C".

2. Socio-Economic Characteristics

Mountain View's population has steadily declined from 955 in 1940 to 419 in 1970. See Table 1. While no reliable

TABLE 1

POPULATION OF MOUNTAIN VIEW, HAWAII
1940 TO 1970

YEAR	POPULATION	PERCENT CHANGE FROM PREVIOUS CENSUS
1940	955	------
1950	747	-21.8%
1960	566	-24.2%
1970	419	-26.0%

Source: State of Hawaii. Department of Planning and Economic Development. Community Profile, 1970 Census. Unpublished tabulation for Mountain View, Hawaii. Honolulu, Hawaii.

estimate of Mountain View's population is available for 1975, available data suggests that the number of residents has stabilized since the 1970 Census. Unfortunately, most data sources combine Mountain View with adjoining areas. Building permits for new houses in Kurtistown and portions of Mountain View since 1970 were issued at the same average rate during the previous decade. See Table 2. School enrollment for Mountain View and Volcano has been stable since 1970. See Table 3. The birth rate in the census tract which includes Keaau and Mountain View has been stable since 1970. See Table 4.

TABLE 2

NUMBER OF HOUSES BUILT
PUNA DISTRICT BY TAX MAP KEY SECTION
HAWAII - 1960-1975

TAX MAP KEY SECTION	PERIOD 1961 to 1970	PERIOD 1971 to March 31, 1975
1 - 1	16	31
1 - 2	19	14
1 - 3	6	24
1 - 4	65	116
1 - 5	124	628
1 - 6	64	125
1 - 7	66	33
1 - 8	33	34
1 - 9	39	24
TOTAL ZONE 1	432	1,029

NOTE: Section 1-7 includes Kurtistown and portions of Mountain View up to Kulani Road (15-3/4 Mile Road). Section 1-8 extends from Kulani Road past Glenwood towards Volcano National Park. Puna District's population increased by 124 between the 1960 and 1970 Census. Mountain View's population declined by 147.

Source: County of Hawaii. Planning Department. Land Use Inventory. Unpublished tabulation of constructed housing for Puna District, Hawaii. Hilo, Hawaii, March 31, 1975.

TABLE 3

SCHOOL ENROLLMENT
MOUNTAIN VIEW AND VOLCANO, HAWAII
SEPTEMBER 1960 - 1975

	SCHOOL		
YEAR	MOUNTAIN VIEW[a]	KEAKEALANI[b]	TOTAL
1960	245	55	300
1961	242	49	291
1962	242	46	288
1963	244	61	305
1964	228	63	291
1965	240	55	295
1966	218	72	290
1967	214	68	282
1968	213	69	282
1969	204	65	269
1970	198	74	272
1971	227	65	292
1972	218	57	275
1973	225	37	262
1974	263[c]	[c]	263
1975	273[c]	[c]	273

[a]Served kindergarten and grades 7 to 9 for both Mountain View and Volcano along with grades 1 to 6 for Mountain View.

[b]Served grades 1 to 6 for Volcano, through June 1974.

[c]Keakealani closed in June 1974 and all students from Volcano went to Mountain View in September 1974.

Source: State of Hawaii. Department of Education. Facilities Branch. Unpublished enrollment statistics for Hawaii County. Honolulu, Hawaii.

TABLE 4

BIRTHS IN SELECTED CENSUS TRACTS
HAWAII COUNTY, 1960 - 1974

	(CENSUS TRACT) AND REGION		
YEAR	(210) INCLUDES KEAAU AND MT. VIEW	(211) INCLUDES PAHOA AND KALAPANA	(210-211) PUNA DISTRICT
1960	56	23	79
1961	48	18	66
1962	62	19	81
1963	55	16	71
1964	45	19	64
1965	48	14	62
1966	40	16	56
1967	62	12	74
1968	52	25	77
1969	65	13	78
1970	78	31	109
1971	81	36	117
1972	64	59	123
1973	72	83	155
1974	78	96	174

Source: State of Hawaii. Department of Health. Research and Statistics Office. Unpublished birth statistics for Hawaii County. Honolulu, Hawaii.

Full count 1970 Census data for Mountain View is only available for socio-economic characteristics such as age, sex, and housing units. Census data for characteristics such as employment and income are based on a sample. Mountain View's population cannot be distinguished from the rest of the census tract for these kinds of data. In 1970, half of Mountain View's population was male. See Table 5.

TABLE 5

SEX OF RESIDENTS
MOUNTAIN VIEW, HAWAII, 1970

SEX	NUMBER
MALE	213
FEMALE	206

Source: State of Hawaii. Department of Planning and Economic Development. Community Profile, 1970 Census. Unpublished tabulation for Mountain View, Hawaii. Honolulu, Hawaii.

Over three-fourths of Mountain View's population was 18 years of age or older in 1970. See Table 6. Over three-fourths of Mountain View's 120 housing units were occupied by owners in 1970. See Table 7. Almost no one lived in group quarters. See Table 8. In 1970, the median value of owner-occupied housing was between $10,000 and $14,999 and the median monthly rent for renters was between $40 and $59. See Table 9. The median income in the census tract including Keaau and Mountain View was $8,370 in 1970. Of the 914 families in this census tract, 9.2% were below the poverty line. See Table 10.

Because of its location, Mountain View is isolated from trends affecting the rest of Hawaii County. Between 1960 and 1970, Mountain View's population decreased from

TABLE 6

AGE OF RESIDENTS, MOUNTAIN VIEW
HAWAII, 1970

AGE IN YEARS	NUMBER	PERCENT
Under 5	18	4.3
5-13	55	13.1
14-17	42	10.0
18-64	240	57.3
65 and over	69	15.3
TOTAL	419	100.0

Source: State of Hawaii. Department of Planning and Economic Development. Community Profile, 1970 Census. Unpublished tabulation for Mountain View, Hawaii. Honolulu, Hawaii.

TABLE 7

NUMBER OF HOUSING UNITS
MOUNTAIN VIEW, HAWAII, 1970

TYPE	NUMBER
Owner Occupied	94
Renter Occupied	20
Unoccupied	6
TOTAL	120

Source: State of Hawaii. Department of Planning and Economic Development. Community Profile, 1970 Census. Unpublished tabulation for Mountain View, Hawaii. Honolulu, Hawaii.

TABLE 8

LIVING ACCOMMODATIONS
MOUNTAIN VIEW, HAWAII
1970

TYPE OF UNIT	NUMBER HOUSED
House	413
Group Quarters	6

Source: State of Hawaii. Department of Planning and Economic Development. Community Profile, 1970 Census. Unpublished tabulation for Mountain View, Hawaii. Honolulu, Hawaii.

TABLE 9

HOUSING PRICES
MOUNTAIN VIEW, HAWAII, 1970

TYPE	PRICES
Owner Occupied	Median Value = $10,000 - $14,999
Renter Occupied	Median Rent = $40 - $59

Source: State of Hawaii. Department of Planning and Economic Development. Community Profile, 1970 Census. Unpublished tabulation for Mountain View, Hawaii. Honolulu, Hawaii.

TABLE 10

INCOME
HAWAII COUNTY AND SELECTED CENSUS TRACTS
1969

(Census Tract) Region	Median Family Income	Total Number of Families	Percent Below Poverty Level
(201-221) Hawaii County	$9,750.00	14,464	9.9
(210-211) Puna District	8,011.00	1,222	10.0
(210) Includes Keaau and Mt. View	8,370.00	941	9.2
(211) Includes Pahoa and Kalapana	7,603.00	281	12.1

Source: State of Hawaii. Department of Labor and Industrial Relations. Selected Manpower Indicators for the County of Hawaii. Honolulu, Hawaii, August, 1972, pp. 27 and 37.

566 to 419. During the same period, the Puna District's population increased from 5,030 to 5,154. See Table 11. Population projections for Puna are not available from the State Department of Planning and Economic Development. The Hawaii Water Resources Regional Study has produced the only recent public projection of population for Hawaii County. See Table 12. Given Hawaii County's 1975 unemployment rate of 9.1%, it does not seem reasonable to anticipate that Hawaii County's 1970 population of 63,468 will increase by over 50% by 1985 as projected by the Water Resources Regional Study.

TABLE 11

POPULATION
HAWAII COUNTY AND PUNA DISTRICT
1960 - 1974

AREA	YEAR				
	1960[a]	1970[a]	1971[b]	1973[b]	1974[b]
Hawaii County	61,332	63,468	66,078	70,200	72,200
Puna District	5,030	5,154	5,362	6,188	6,800
Keaau	1,334	951			
Mountain View	566	419			
Pahoa	1,046	924			
Other	2,084	2,860			

[a]As of April 1. Census.

[b]As of July 1. Estimated.

Source: County of Hawaii. Department of Research and Development. County of Hawaii Data Book, 1975. Hilo, Hawaii, July, 1975, pp. 3 and 7.

TABLE 12

PROJECTED POPULATION
HAWAII COUNTY
1960 - 2020

YEAR	POPULATION
1960[a]	61,332
1970[a]	63,468
1974	72,200
1980	83,800
1985	97,700
1990	113,400
1995	130,000
2000	146,900
2005	164,400
2010	185,700
2015	211,200
2020	240,700

[a]As of April 1. Census. All other figures estimated as of July 1.

Source: State of Hawaii. Water Resources Regional Study. Study Element 1.1, Social Base. Preliminary draft limited circulation. Honolulu, Hawaii, April 1975, p. 13.

The State Department of Labor and Industrial Relations (DLIR) only gathers labor force data for Hawaii County as a whole, rather than for districts. See Table 13. Because of definitions used, and because of sample size, DLIR data on county unemployment is more reliable than Census data. However, 1970 Census data does allow rough comparison of unemployment rates in different areas of each county. In April 1970, in the census tract which includes Keaau and

TABLE 13

RESIDENTS IN CIVILIAN LABOR FORCE
HAWAII COUNTY AND SELECTED CENSUS TRACTS
1970 - 1975

(Census Tract) Region	Labor Force	April 1970	Calendar Year Average 1970	1971	1972	1973	1974	1975
(201-221) Hawaii County	Number	25,065	27,400	29,200	29,900	31,000	31,900	32,800
	% Unemployed	2.8%	4.0%	6.3%	6.9%	7.8%	9.2%	9.1%
(210-211) Puna District	Number	2,103						
	% Unemployed	4.3%						
(210) Includes Keaau & Mt. View	Number	1,684						
	% Unemployed	4.6%						
(211) Includes Pahoa & Kalapana	Number	419						
	% Unemployed	2.9%						

Sources: State of Hawaii. Department of Labor and Industrial Relations. Selected Manpower Indicators for the County of Hawaii. Honolulu, Hawaii, August 1972, pp. 26 and 36.

State of Hawaii. Department of Labor and Industrial Relations. Unpublished Statistical Tables on Labor Force, Hawaii County. Honolulu, Hawaii.

Mountain View. 4.6% of the 1,684 persons in the labor force were unemployed as compared to 2.8% for Hawaii County as a whole. See Table 13.

According to the County of Hawaii Data Book 1975, no new hotel rooms are anticipated at any time in the future in the Volcano, Hawaii. (p. 62.) Proposed hotels in Hilo and Kalapana are unlikely to generate population growth in Mountain View. Past hotel developments in Hilo have not kept Mountain View's population from declining. In fact, families may have moved out of Mountain View because of better job opportunities in Hilo.

Mountain View's population seems to be most directly affected by employment by Puna Sugar Co., Ltd. Employees of Puna Sugar Co. report to work at Keaau, Hawaii. Between 1940 and 1970, employment at Puna Sugar Co. fell from 1,950 to 448. See Table 14. Puna Sugar employed 428 persons in 1975 and plans to employ 445 persons in 1980. Barring unforeseen developments, Mountain View's population in 1980 will probably be about the same as in 1970.

According to the County of Hawaii General Plan, Pahoa and Mountain View are the primary areas for flower cultivation in the Puna district (p. 83). State Department of Agriculture data on agricultural production does not allow a meaningful assessment of how many Mountain View residents are employed in flower cultivation.

TABLE 14

EMPLOYMENT AT PUNA SUGAR CO., LTD.
KEAAU, HAWAII
1940 - 1980

YEAR	NUMBER OF EMPLOYEES
1940	1950
1950	1140
1960	537
1970	448
1975	428
1980[a]	445

Note: The large reduction in employees from 1950 to 1960 was due to mechanization.

[a]Estimate.

Source: Puna Sugar Co., Ltd. Letter from President T.J. O'Brien on plantation employment. March 4, 1976.

Traffic data is not available for Volcano Road near Mountain View. Traffic count data at Keaau is only available through 1972. Hours for peak morning traffic in 1970 and 1972 are not comparable. Regardless, at Keaau, the Volcano Road is nowhere near its capacity during peak morning traffic. See Table 15. Although traffic going through Keaau towards Hilo has increased since 1960, it is unclear to what extent Mountain View residents are responsible.

TABLE 15

PEAK MORNING TRAFFIC, VOLCANO ROAD
BETWEEN OLAA AND KURTISTOWN (KEAAU)
1960, 1970, AND 1972

DIRECTION (TOWARDS)	YEAR	TIME (a.m.)	NUMBER OF VEHICLES		
			CARS	PICKUP TRUCKS	ALL VEHICLES[a]
Hilo	1960[b]	6:30 - 7:30	78	18	99
Hilo	1970[c]	6:30 - 7:30	214	50	274
Hilo	1972[d]	7:00 - 8:00	134	29	169
Volcano	1960[b]	6:30 - 7:30	47	21	73
Volcano	1970[c]	6:30 - 7:30	49	26	79
Volcano	1972[d]	7:00 - 8:00	58	38	113

Note: A highway such as Volcano Road can accommodate 700-800 cars/hour in each direction.

[a]All Vehicles includes semi-trailers and buses.

[b]Data taken October 17-18, 1960.

[c]Data taken September 21-22, 1970.

[d]Data taken July 24-25, 1972.

Sources: State of Hawaii. Department of Transportation. Annual Traffic Summary Island of Hawaii. Unpublished. Honolulu, Hawaii.

Highway Research Board. Highway Capacity Manual. Washington, D.C., 1966, pp. 299-317.

C. Flood Problem Areas

Three specific problem areas were identified by the County of Hawaii and later verified at a public meeting of the residents of Mountain View on May 24, 1973. The three flood prone areas are shown on Exhibit No. 4. Flood Problem Area 1 is by far the worst of the three areas. This area encompasses most of the built-up area on the mauka (northwest) side of Volcano Road between Pszyk Road and a point near the Mountain View cemetery, and also includes several residences and anthurium farms on the makai (southeast) side of the Volcano Road and Pszyk Road intersection. Flooding on the mauka side of the Volcano Road generally occurs when the existing 7' x 5' box culvert at Pszyk Road and Nichols Road is incapable of handling the storm runoff, causing the storm waters to overtop the approach ditch. Flood waters then flow eastward along Nichols Road. Some flood water also "leaks" over Pszyk Road at the old railroad bed and travels northeastward, inundating the area between Nichols Road and the railroad bed. Reports indicate flood waters have flowed from 1 to 2 feet in depth in this area. Flooding on the makai side of Volcano Road and south of Pszyk Road is caused by lack of adequate outlet channels for the existing 10' x 4' and 5' x 3' drainage culverts crossing the Volcano Road. The flood waters from these culverts cross a heavily wooded strip (Olaa Forest Reserve) between private properties and the State highway right-of-way before meandering through the anthurium farms and homes in the area.

Flood Problem Area 2 is on the mauka side of Volcano Road between a point just southwest of Kulani Road (Fifteen and Three-Quarters Mile Road) and a point approximately 700 feet south of Enos Road. The flooding in this area is caused by storm runoff generated southwest of Kulani Road. The capacity of the existing sumps near Kulani Road is exceeded by the runoff, resulting in flood waters crossing Kulani Road and inundating the area northeast of Kulani Road along the old railroad bed. Flood waters have rendered Kulani Road impassable for short periods of time.

Flood Problem Area 3 is located on both sides of Kukui Camp Road from near Nakamura Store in Kukui Camp to a point approximately 1,000 feet mauka of Volcano Road. The flooding in this area is caused by storm runoff generated southwest of Kukui Camp Road, and overtops the old railroad bed and flows along the railroad bed to Kukui Camp Road. Flood waters have, on occasions, washed out the asphaltic pavement of Kukui Camp Road at this location. The Kukui Camp Road profile dips or "sags" at about 1,200 feet mauka of Volcano Road, and this stretch of roadway is often flooded during storms. There are no culverts under the road at this location.

In all of the cases of flooding and flood damage reported, there have been no known fatalities resulting from storm waters. The County of Hawaii estimates that the total annual cost of road repairs due to flood damage in the Mountain View area amounts to $9,600.

IV. THE RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

The County of Hawaii General Plan was adopted as County Ordinance No. 439 in 1971 by the Hawaii County Council. The General Plan documents the intent of the Council to deal with flooding in Mountain View with a diversion channel to intercept sheet flows of flood water. The rationale given is that since drainageways are not well defined in the Puna District, surface sheet flows are likely to occur anywhere when heavy storms strike. The General Plan indicates that flood hazard areas are difficult to delineate and that the approach to be taken concerning urbanization is to implement "the drainage systems designed for the existing village areas ....." (p. 19). Except for this, the proposed flood control project will not affect the implementation of the County of Hawaii General Plan.

At this time, a Puna CDP is being undertaken by the Hawaii County Planning Department. County zoning would not hinder the proposed project. It seems unlikely that the proposed project would make Mountain View sufficiently attractive to residential development that changes would be needed in County zoning or in the County General Plan.

In summary, the proposed project conforms to land use plans, policies, and controls for the community of Mountain View.

V. THE PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. Flooding

The major impact of the project is to reduce flood damage in the Mountain View area and inconvenience from flood waters for the residents of Mountain View. The degree of protection provided the residents of Mountain View varies from protection

for a 100-year return storm to protection from flood damage resulting from runoff generated by a 2 or 3 year return storm, depending upon whether the masterplanned systems are considered or the interim improvements are considered.

Flooding in the problem areas described in Section III. C. will continue to occur during storms exceeding the 2-3 year design storm flood level after the interim drainage improvements are implemented.

It has been reported by the County of Hawaii that Stream "A", the presently unnamed stream that flows through the Hawaiian Acres Subdivision makai of Mountain View, is subject to flooding in the subdivision area. An estimated 32,000 cubic feet per second (cfs) of water flows in the stream at South Kulani Road during a 100 year storm. The proposed ultimate drainage systems will discharge into Stream "A" approximately 2000 cfs at Pszyk Road and approximately 1600 cfs at South Kulani Road. There is no discharge from the Kukui Camp Road system.

While the discharge of approximately 3600 cfs into Stream "A" by the proposed ultimate drainage systems appears to compound the flood problem in the Hawaiian Acres Subdivision, this flow is about 11% of the total anticipated 100 year storm flow in Stream "A". Further, the proposed retention basins on the Kulani Road drainage system and on the Pszyk Road drainage system would permit the peak flow in Stream "A" to flow past the Mountain View area before the maximum release from the retention basins enters Stream "A". It is beyond the scope of this project to determine

the deficiency of Stream "A" through the Hawaiian Acres Subdivision, and on downstream.

The interim drainage improvements will discharge approximately 150 cfs into Stream "A" at Pszyk Road. No discharges into Stream "A" are planned from the Kulani Road or the Kukui Camp Road interim drainage improvements.

B. Flora and Fauna

Construction activities will involve earthwork over several acres for the emplacement of drainage improvements; virtually all of this land is currently in sugar cane. Since cane land is of minimal value as habitat for desirable species, no significant impact on flora and fauna is expected.

C. Historical and Archaeological

The proposed project will not have an impact on any known historical or archaeological sites. Should any artifacts or other items of historical or archaeological significance be uncovered during construction, the Bishop Museum and the State Department of Land and Natural Resources will be notified before construction continues.

D. Air, Noise, Water

There will be a definite short-term adverse effect on the quality of the air, water and noise in the area during the construction of the project. Dust resulting from construction activity and exhaust from construction equipment will be present during the construction period. The potential for soil erosion will be present when the construction areas for retention basins

and channel work are cleared. Design considerations and construction specifications will contain detailed requirements to minimize soil erosion and water and air pollution. Following construction, all denuded areas will be revegetated. The quality of the runoff water will be enhanced where retention basins are proposed.

There will not be any effect on the potable water supply of the area as the result of this project.

E. Socio-Economic

The immediate benefit resulting from the project's implementation will be reduction in damages due to storm runoff, higher net return on family anthurium farms, and possible employment of Mountain View residents during the construction phase.

The proposed project would not necessarily make Mountain View more attractive to new industry or to more development. However, the security against flood damage will contribute towards an increase in property values for those properties presently within the flood problem areas.

An estimated 25 homes and 4 anthurium farms located in the flood problem areas will benefit directly from the project. Nichols Road, Kulani Road and Kukui Camp Road will have reduced levels of flooding and flood damage, directly affecting maintenance costs and accessibility for public use.

The adverse impact of implementing the project would be the value from lost production of approximately 6.5 acres of sugar

cane land for the ultimate drainage systems, and approximately 0.5 acre for the interim drainage improvements.

VI. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The loss of approximately 6.5 acres of productive sugar cane lands for the construction of the masterplanned system cannot be avoided. Temporary noise, air and water pollution will be created by construction activities. Inconvenience to motorists will also be created when construction activity is close to or infringes on existing roadways. Approximately 0.5 acre of productive cane land will be required for the construction of the Kulani Road interim drainage improvement.

VII. ALTERNATIVES TO THE PROPOSED ACTION

The following alternatives were considered along with the masterplanned drainage system and the interim drainage improvements.

A. No Action

This alternative would continue to leave the residential, the anthurium farm areas of Mountain View, and two major roadways in the Mountain View area vulnerable to flood damage and also with the potential for loss of human life. While the interim drainage improvements will not be capable of handling major storms, they do afford relief from the "run of the mill" storm.

"No action" would be unacceptable to the people of Mountain View because they have had to endure recurrent flooding over the years and have received the promise and hope of "something will be done soon".

B. Interceptor Channels

This alternate would place interceptor channels parallel to Pszyk Road and to Kulani Road for discharge into Stream "A". However, without retention basins upstream of these channels, estimated discharges into Stream "A" for 100-year storm protection are approximately 5060 cfs at Pszyk Road and 9625 cfs at South Kulani Road. These figures are more than double the discharge at Pszyk Road and more than five times the discharge at South Kulani Road when compared to the ultimate drainage systems' discharges at the same locations. The nearly 15,000 cfs discharge will certainly aggravate the flood problems in the Hawaiian Acres Subdivision. This alternative does not reduce the sediment load of the storm runoff as compared to discharges from the retention basins.

C. Disposal by Lava Tubes

This alternative would require extensive geological testing of the Mountain View area to locate lava tubes. There are no known lava tubes within the project study area. Old-time natives of Mountain View, and the Puna Sugar Company's field foreman for this area, cannot recall any lava tubes in the project study area. No cost figures are available for this alternative.

The outlet of the lava tube should be determined before using the tube for disposal of storm waters to preclude flooding downstream properties at the outlet of the tube.

D. Reduction in the Level of Protection

This alternative reviewed the possibility of providing some level of protection and relief from flooding to the residents of

the area, which would be less than the 100-year storm level. The masterplanned systems utilized USDA Soil Conservation Service design criteria in order to qualify for Federal Construction Funds administered by SCS in the future.

VIII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed project would marginally reduce productive sugar cane acreage in order to reduce flooding of part of Mountain View. The project otherwise would not foreclose future options, narrow the range of beneficial uses of the environment, or pose long-term risks to health or safety.

The interim drainage improvements are compatible with the proposed ultimate drainage systems should the ultimate drainage systems be implemented.

IX. MITIGATION MEASURES PROPOSED TO MINIMIZE IMPACT

The loss of productive sugar cane lands required for the construction of the retention basin berms will be minimized by permitting the cultivation of sugar cane thereon. Land exchange for cultivated land required for construction of the project will also reduce the loss of sugar production resulting from the construction of this project.

X. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irreversible and irretrievable commitment of resources would be the funds for planning and construction of the proposed project and the land area needed for earth berms and diversion channels required for the life of the project.

XI. AN INDICATION OF WHAT OTHER INTERESTS AND CONSIDERATIONS OF GOVERNMENTAL POLICIES ARE THOUGHT TO OFFSET THE ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

The General Plan, County of Hawaii, recognizes the drainage problems in the Puna District, of which Mountain View is a part, and recommends the following course of action: "as urbanization increases within the District, the drainage systems designed for the existing village areas shall be implemented. These systems are designed to collect and transport surface runoff through the communities."

XII. ORGANIZATIONS AND PERSONS CONSULTED

Early in the Mountain View Drainage Study phase, a public meeting was held in Mountain View to inform the people of the area about the drainage study, and to offer the people an opportunity to express their views about the flood problem in Mountain View. On January 13, 1975, another public meeting was held in Mountain View to apprise the residents of the study's findings and recommendations. The response to the interim drainage improvements was favorable.

The following were consulted in preparing this Statement:

1. U.S. Department of Agriculture, Soil Conservation Service.
2. State of Hawaii, Department of Land and Natural Resources.
3. State of Hawaii, Department of Transportation.
4. County of Hawaii, Department of Planning.
5. County of Hawaii, Department of Research and Development.
6. Puna Sugar Company, Limited.

The comments of the above agencies and organizations and the responses to these agencies, where required, are appended to this Statement.

Ms. Mae E. Mull, Hawaii Audubon Society, requested, and was sent, information describing the proposed project.

This Environmental Impact Statement was prepared for the County of Hawaii, Department of Public Works by Austin, Tsutsumi & Associates, Inc. with specialty assistance from:

URS Research Company - Hawaii

Anne H. Takemoto - Historical Research

XIII. LIST OF NECESSARY APPROVALS

The following agencies should review and approve the project:

1. State of Hawaii, Department of Health, for conformance to Chapter 37-A.
2. State of Hawaii, Department of Land and Natural Resources, for construction in Olaa Forest Reserve land.
3. County of Hawaii, Department of Planning, for conformance to County General Plan.
4. County of Hawaii, Department of Water Supply, for conformance to water system plans for the project area.
5. County of Hawaii, Department of Public Works, for conformance to Grading Ordinance.

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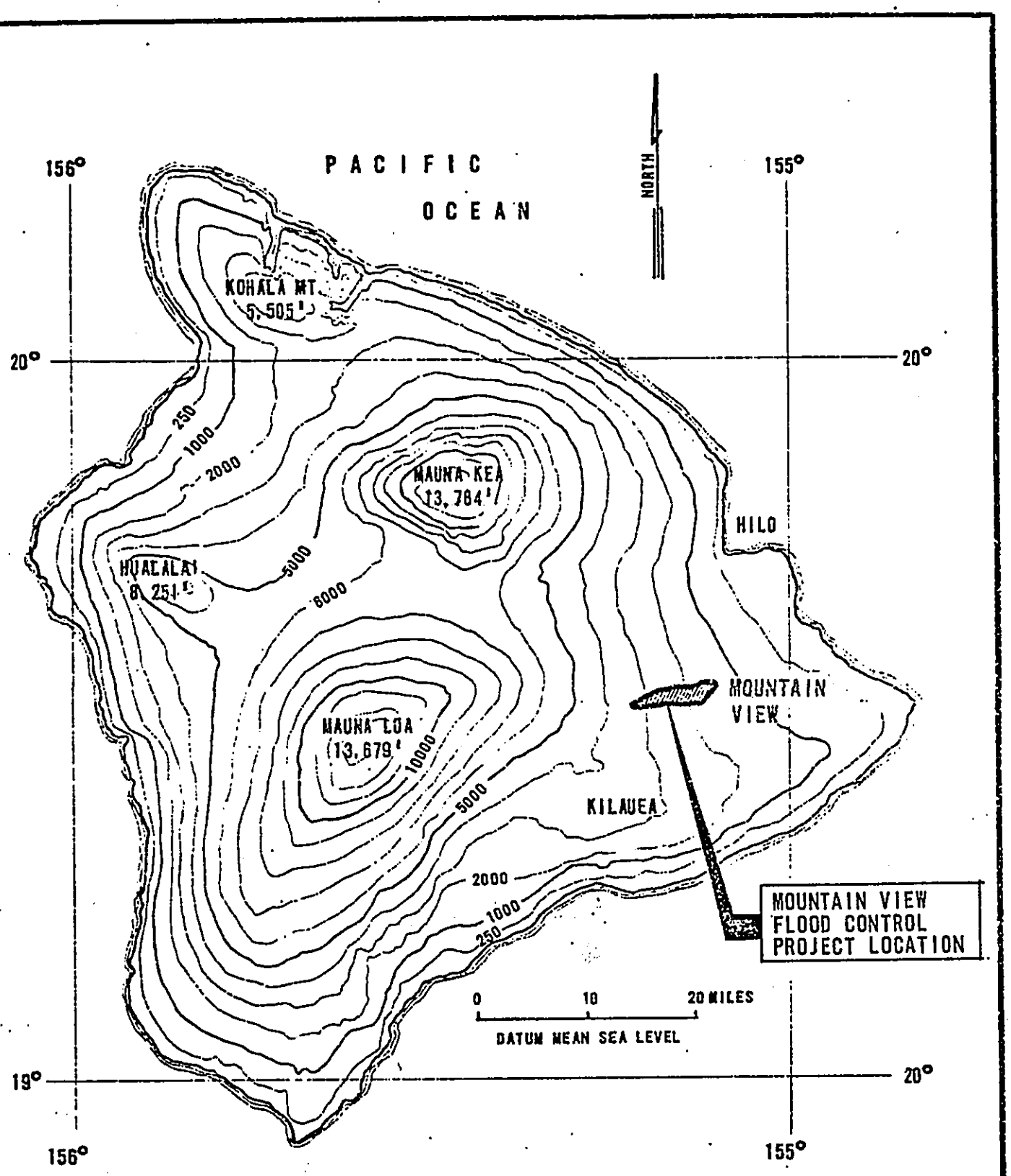
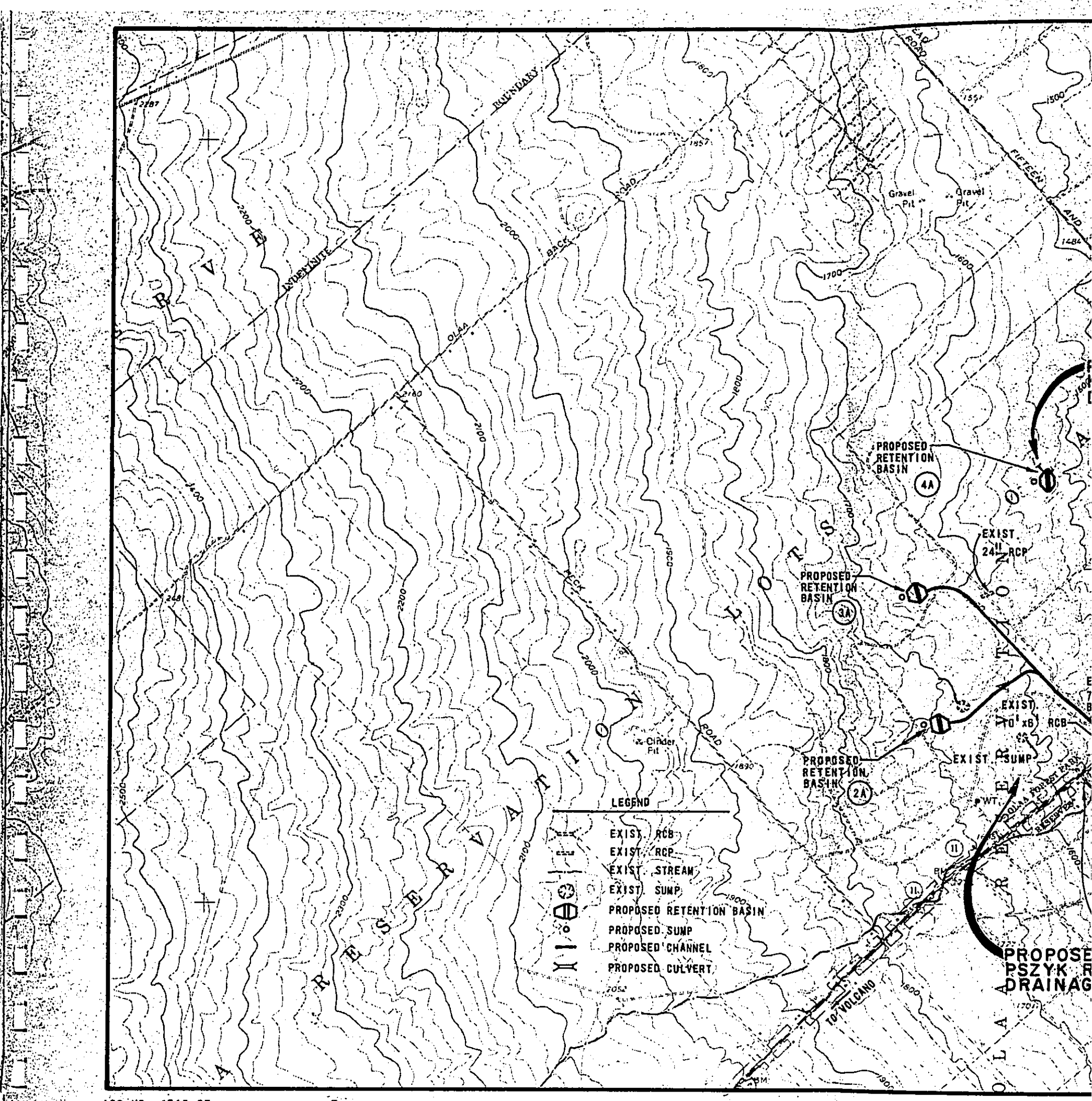
EXHIBITS



LOCATION MAP

MOUNTAIN VIEW FLOOD CONTROL PROJECT MOUNTAIN VIEW, HAWAII LOCATION MAP	EXHIBIT 1



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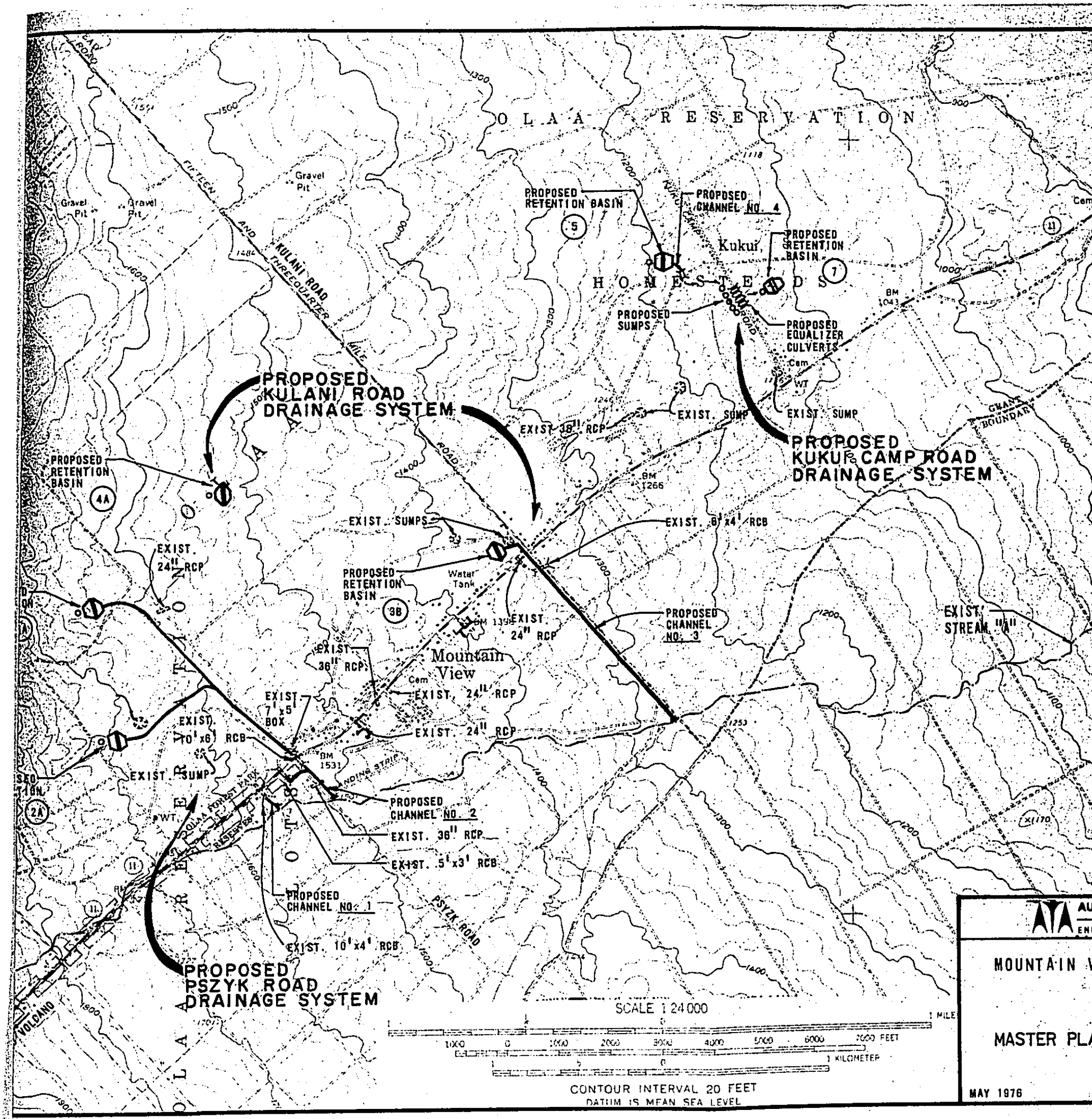
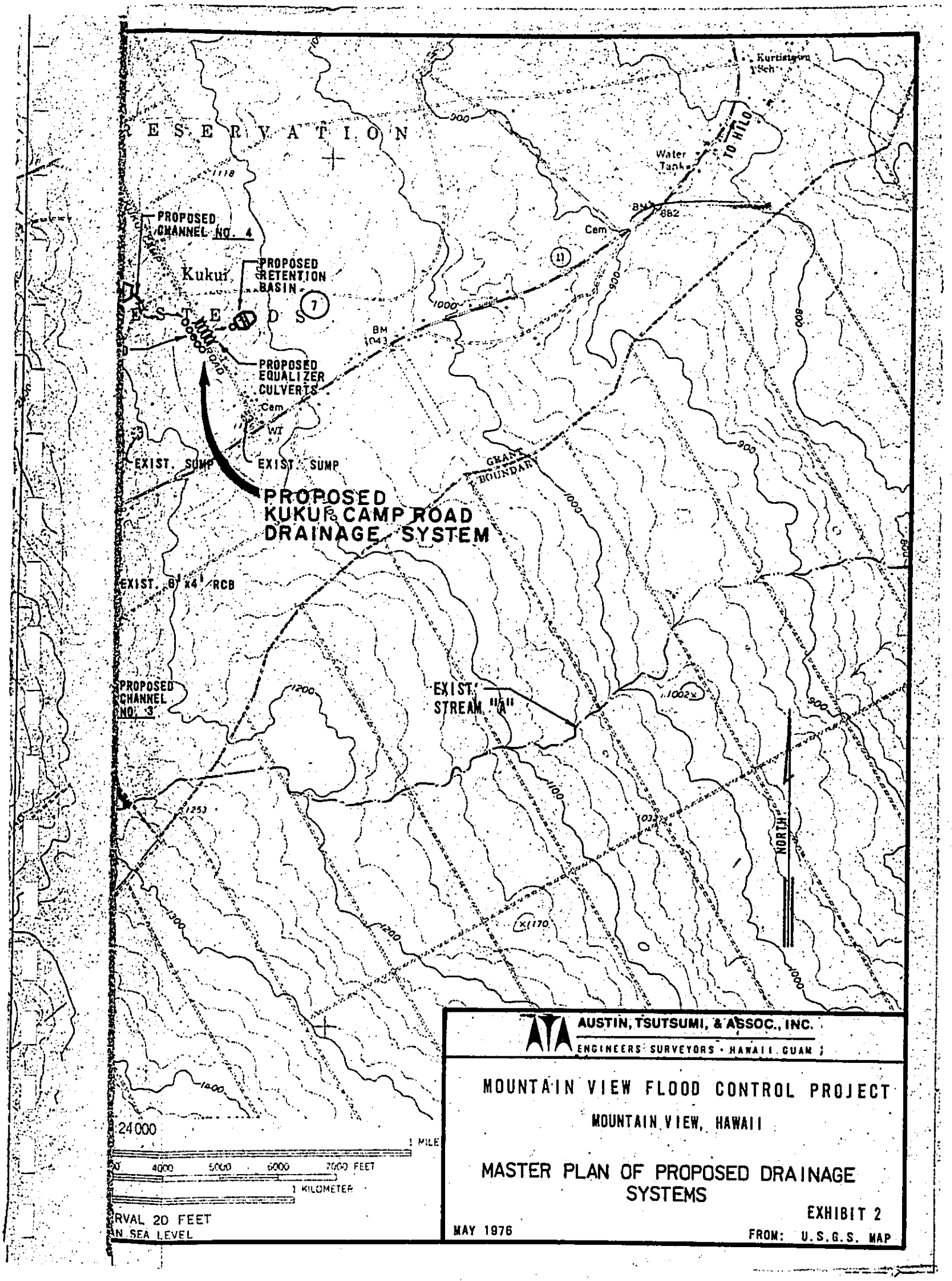


MOUNTAIN VI

MASTER PLAN

MAY 1976



AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS · SURVEYORS · HAWAII · GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT

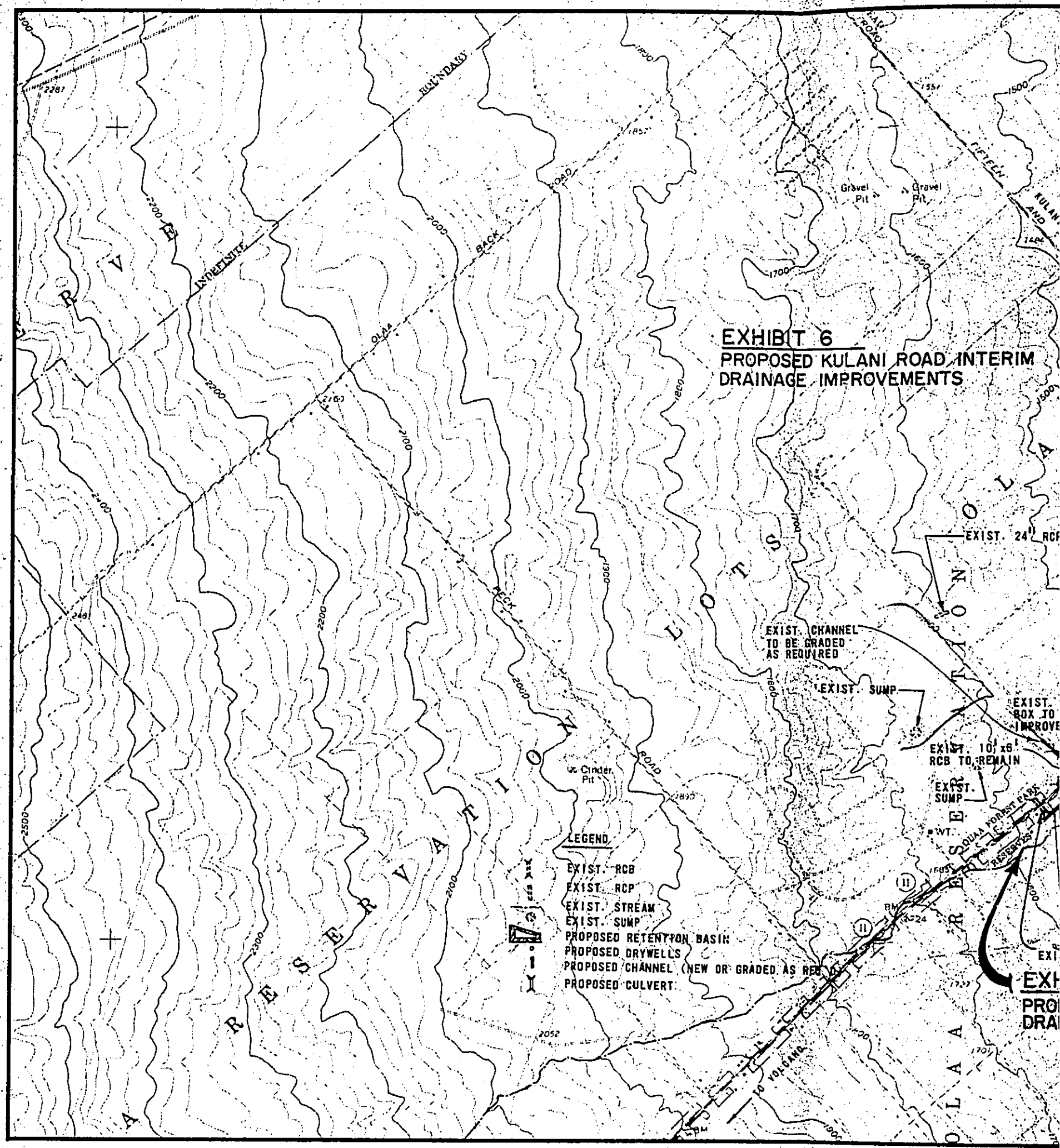
MOUNTAIN VIEW, HAWAII

MASTER PLAN OF PROPOSED DRAINAGE SYSTEMS

EXHIBIT 2

MAY 1976

FROM: U.S.G.S. MAP



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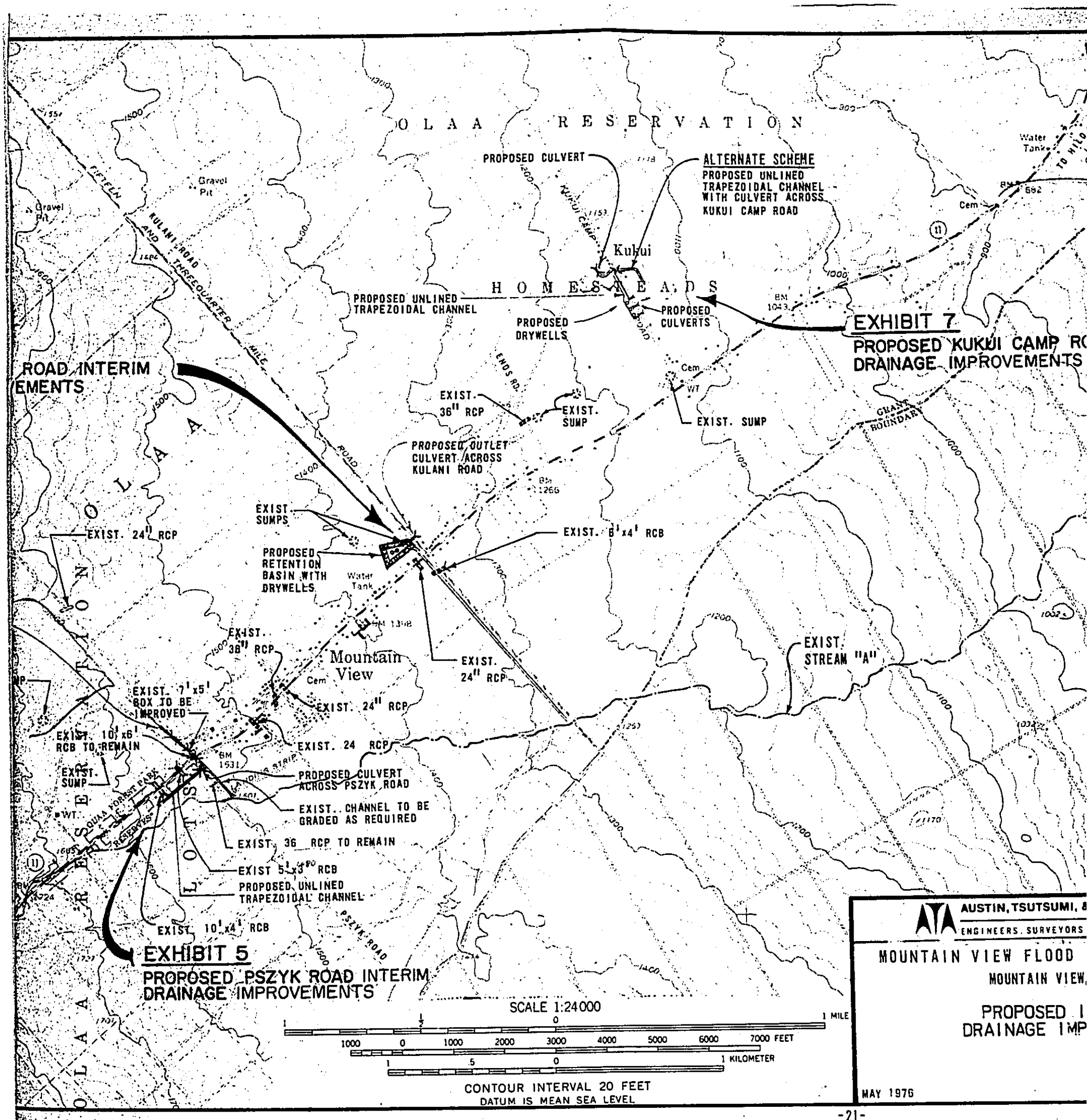
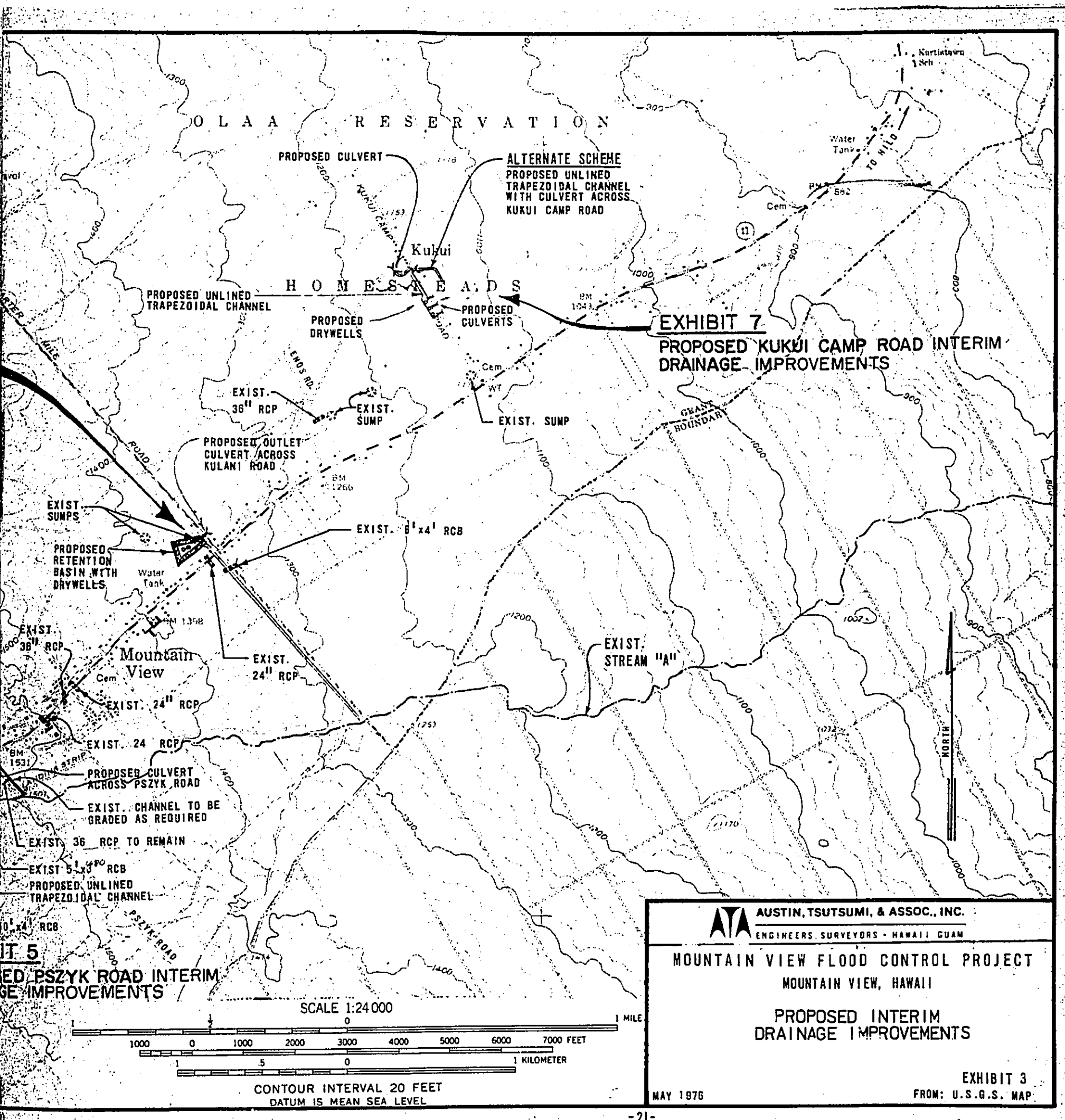

O L A A R E S E R V A T I O N
PROPOSED CULVERT
ALTERNATE SCHEME
PROPOSED UNLINED TRAPEZOIDAL CHANNEL WITH CULVERT ACROSS KUKUI CAMP ROAD
Kukui
H O M E S T E A D S
PROPOSED UNLINED TRAPEZOIDAL CHANNEL
PROPOSED DRYWELLS
PROPOSED CULVERTS
EXHIBIT 7
PROPOSED KUKUI CAMP RO
DRAINAGE IMPROVEMENTS
ROAD INTERIM
EMENTS
EXIST. 36" RCP
EXIST. SUMP
EXIST. SUMP
PROPOSED OUTLET CULVERT ACROSS KULANI ROAD
EXIST. SUMPS
EXIST. 24" RCP
EXIST. 8'x4' RCB
PROPOSED RETENTION BASIN WITH DRYWELLS
Water Tank
Mountain View
EXIST. 36" RCP
EXIST. 24" RCP
EXIST. 24" RCP
EXIST. STREAM "A"
EXIST. 7'x5' BOX TO BE IMPROVED
EXIST. 10'x6' RCB TO REMAIN
EXIST. SUMP
EXIST. 24 RCP
PROPOSED CULVERT ACROSS PSZYK ROAD
EXIST. CHANNEL TO BE GRADED AS REQUIRED
EXIST. 36 RCP TO REMAIN
EXIST 5'x3' RCB
PROPOSED UNLINED TRAPEZOIDAL CHANNEL
EXIST. 10'x4' RCB
EXHIBIT 5
PROPOSED PSZYK ROAD INTERIM DRAINAGE IMPROVEMENTS
SCALE 1:24000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
AUSTIN, TSUTSUMI, &
ENGINEERS. SURVEYORS
MOUNTAIN VIEW FLOOD
MOUNTAIN VIEW,
PROPOSED I
DRAINAGE IMP
MAY 1976



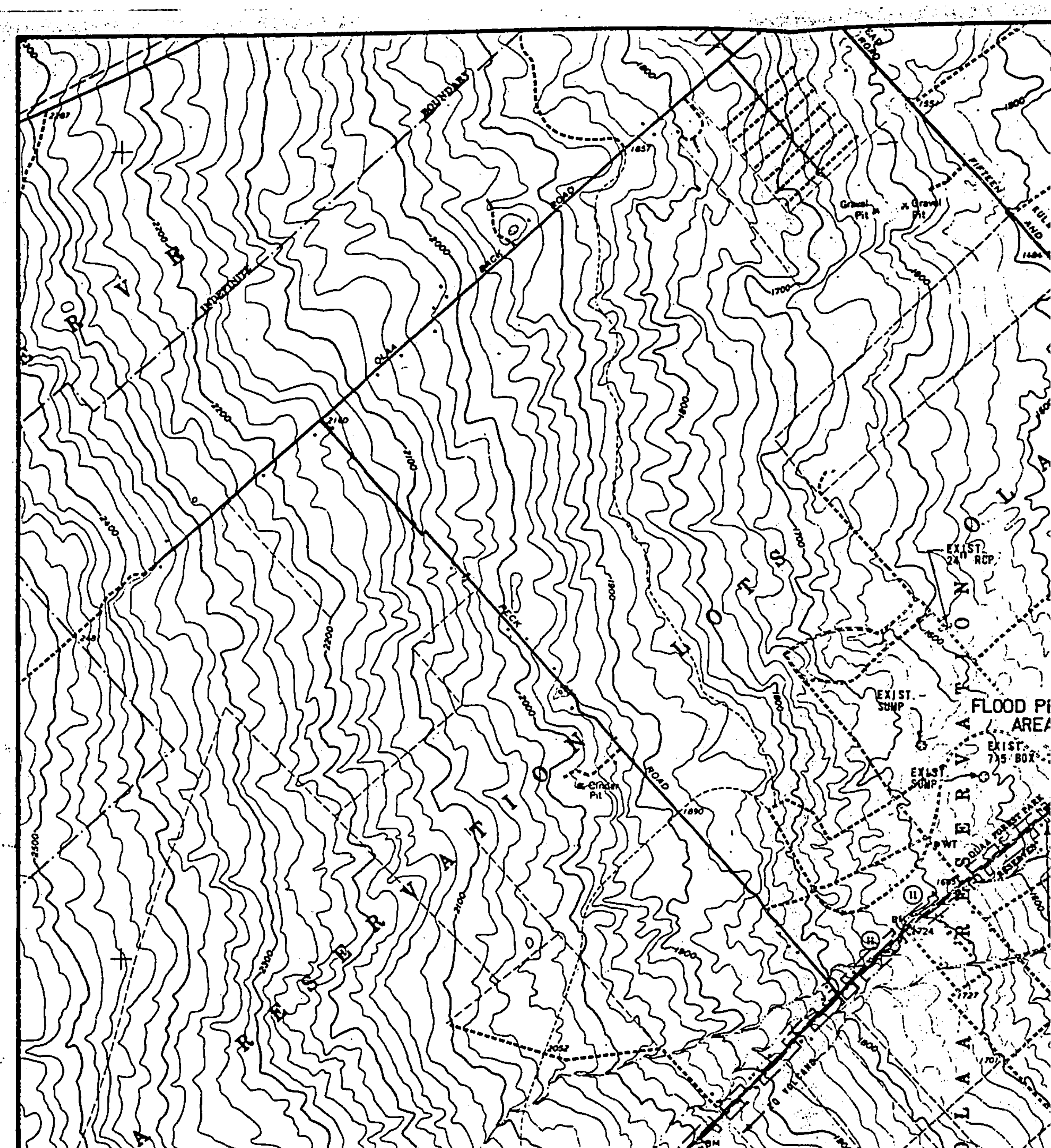
AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS. SURVEYORS • HAWAII GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT
MOUNTAIN VIEW, HAWAII

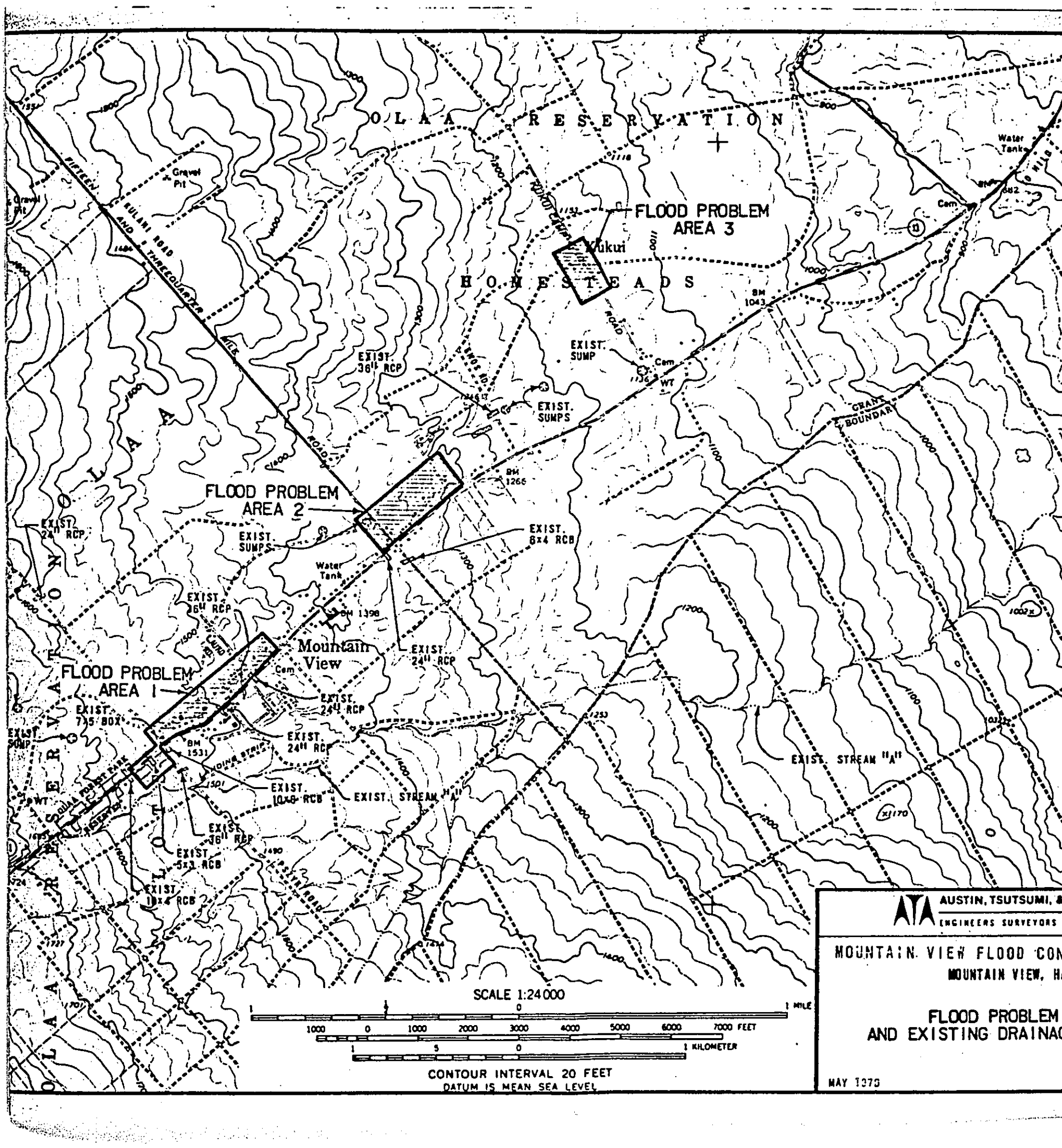
PROPOSED INTERIM
DRAINAGE IMPROVEMENTS

EXHIBIT 3
FROM: U.S.G.S. MAP

MAY 1976



JOB NO. 1713.2E



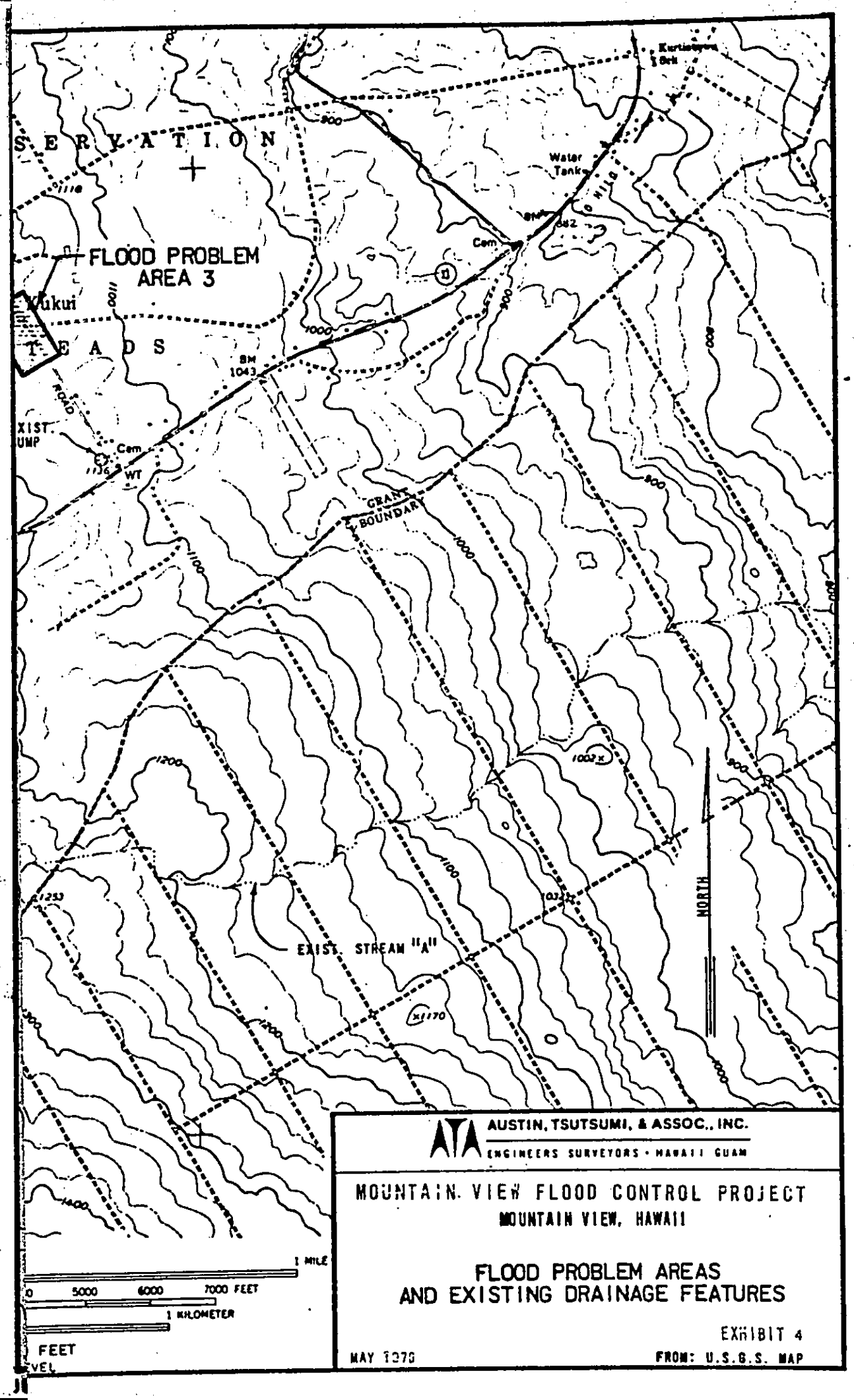
AUSTIN, TSUTSUMI, & A
ENGINEERS SURVEYORS - H

MOUNTAIN VIEW FLOOD CONT
MOUNTAIN VIEW, HAW

FLOOD PROBLEM A
AND EXISTING DRAINAGE

MAY 1973

F



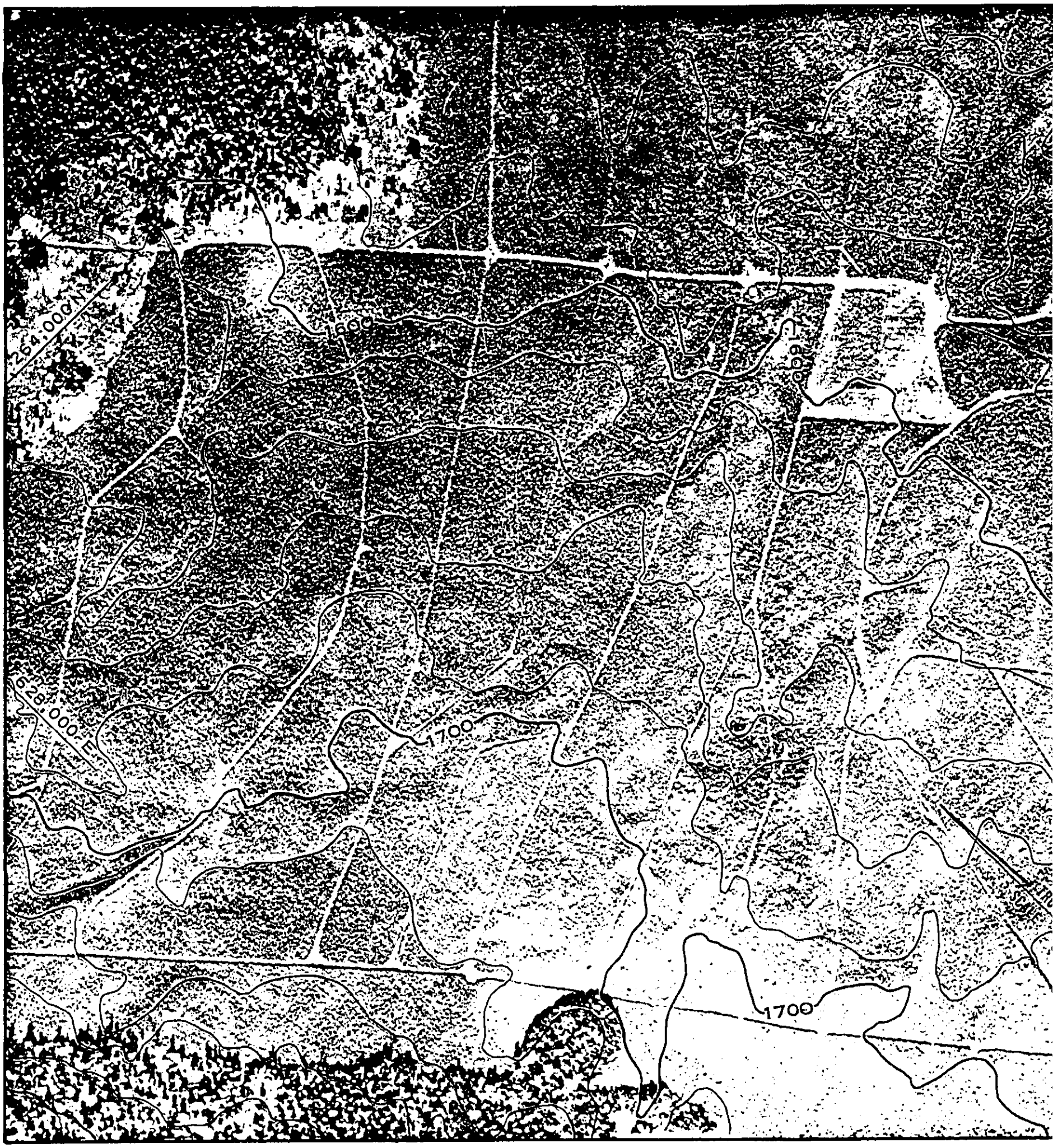
AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS SURVEYORS • HAWAII GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT
MOUNTAIN VIEW, HAWAII

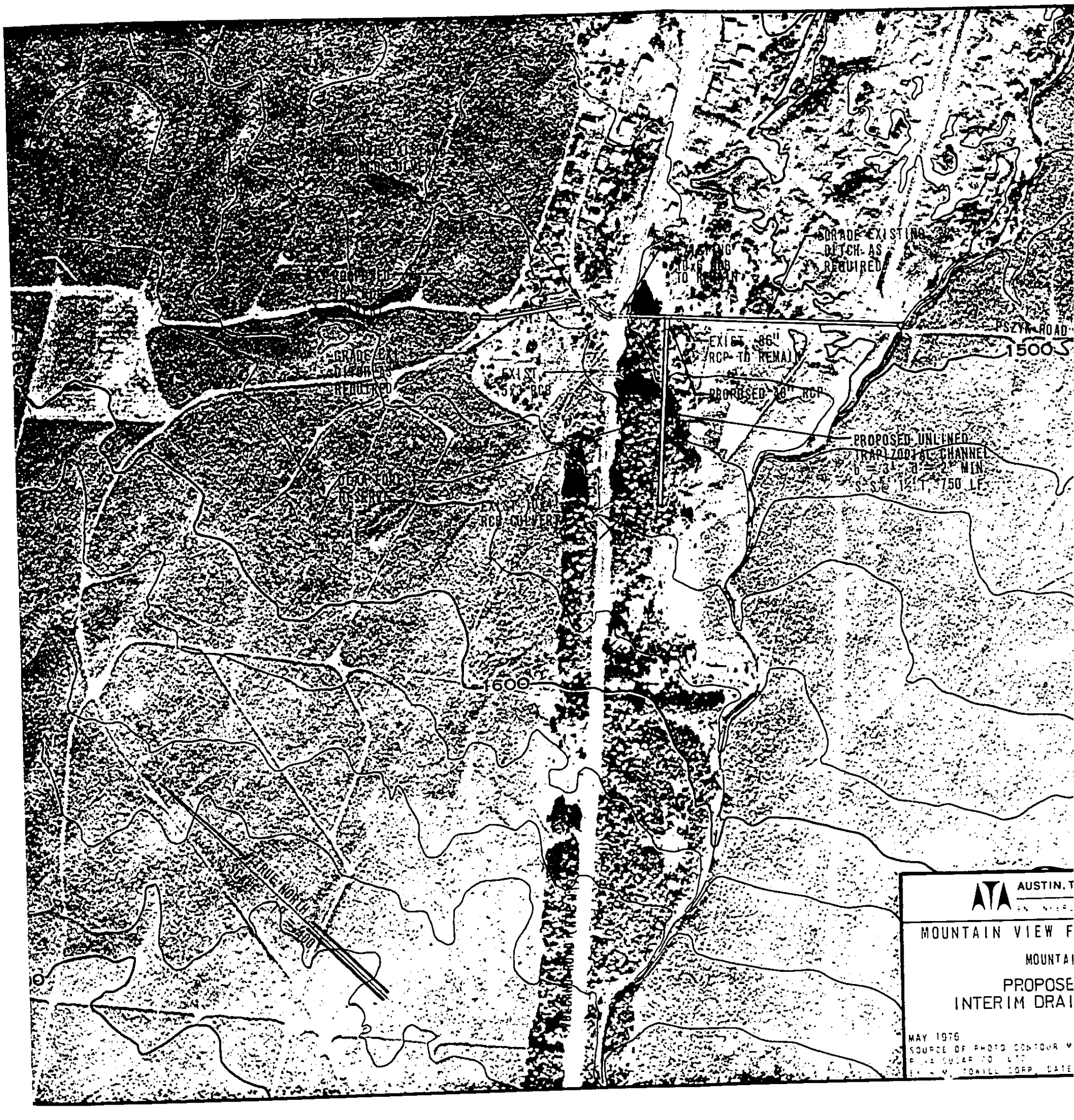
FLOOD PROBLEM AREAS AND EXISTING DRAINAGE FEATURES

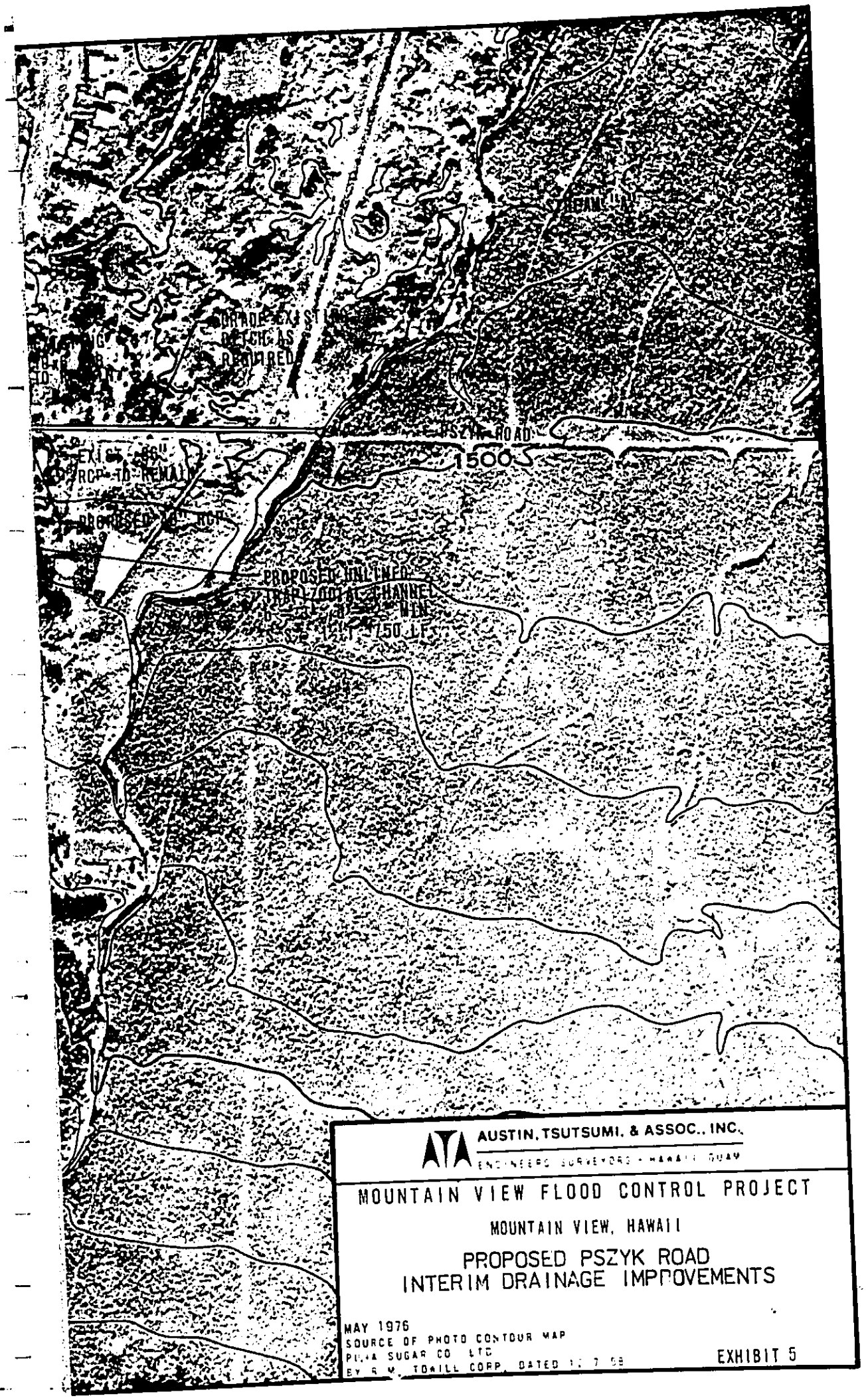
EXHIBIT 4

MAY 1978 FROM: U.S.G.S. MAP



JOB NO 1713 2E


EXIST. 86" RCP TO REMAIN
PROPOSED 30" RCP
PROPOSED UNLINED TRAPEZOIDAL CHANNEL
b = 3' d = 2' MIN.
S = 5% L = 750 LF
1500
1600
TRUE NORTH
SCALE: 1" = 400'
AUSTIN,
MOUNTAIN VIEW F
MOUNTAI
PROPOSE
INTERIM DRAI
MAY 1976



AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS SURVEYORS • HAWAII GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT

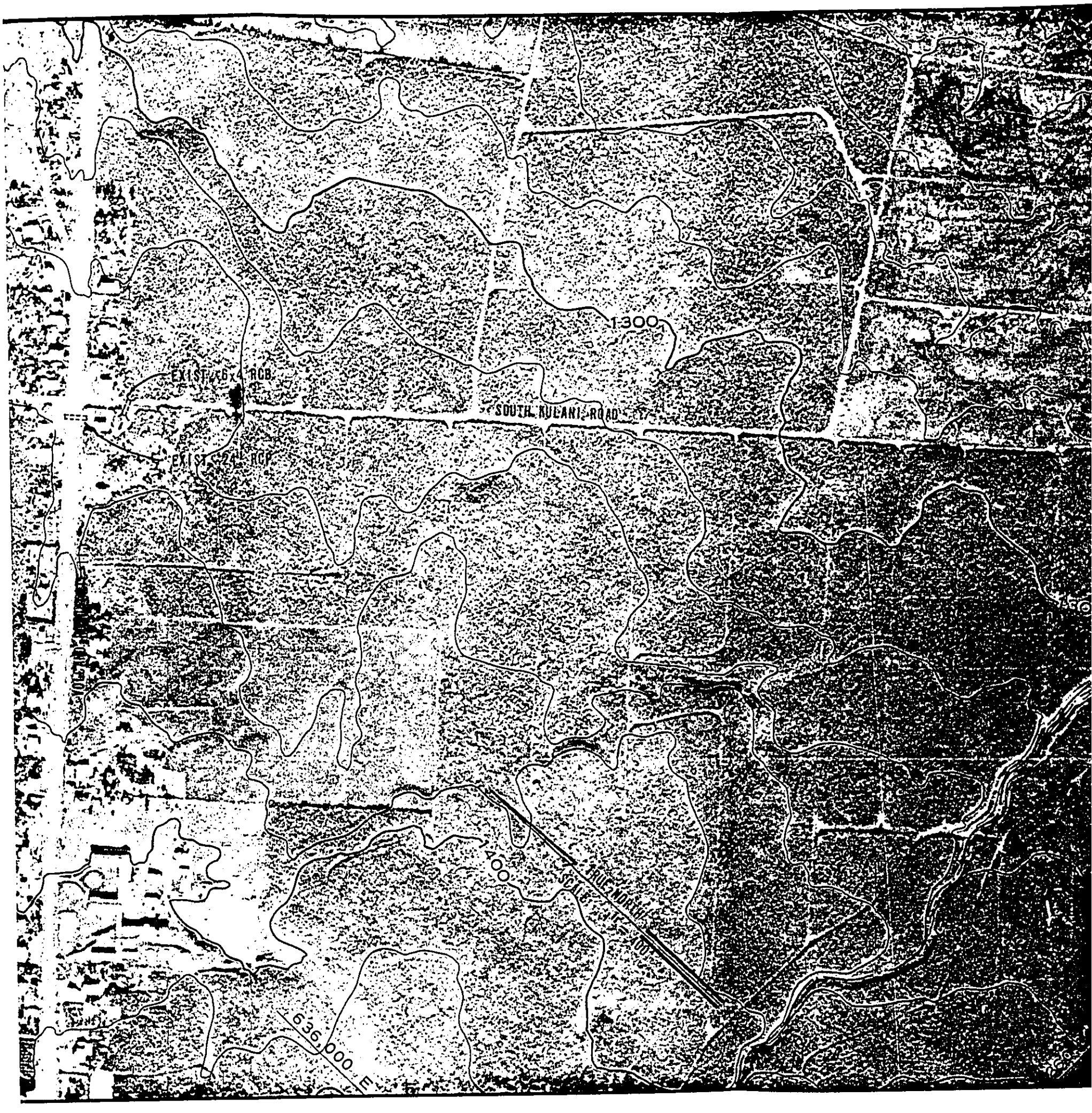
MOUNTAIN VIEW, HAWAII

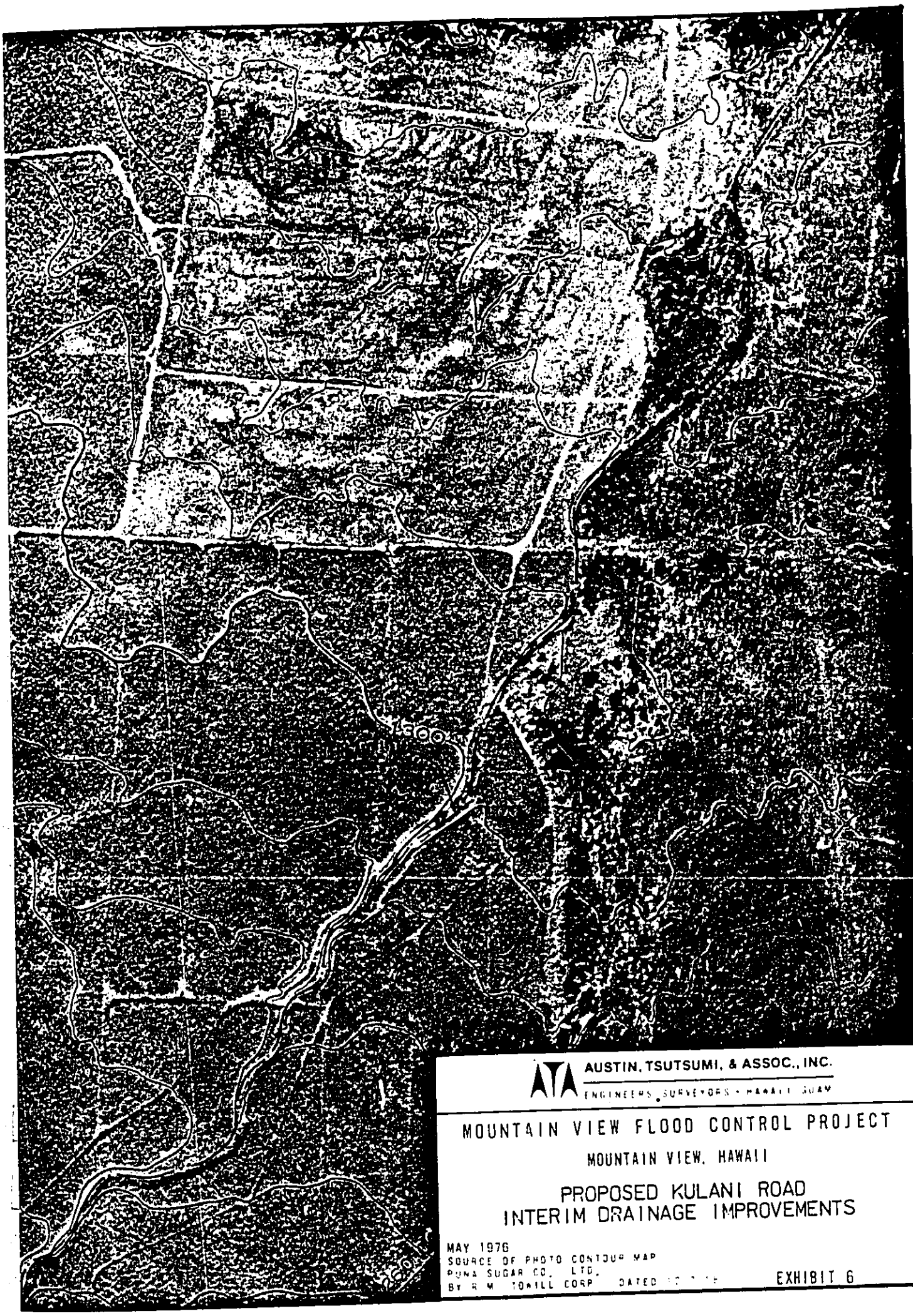
PROPOSED PSZYK ROAD INTERIM DRAINAGE IMPROVEMENTS

MAY 1976
SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO LTD
BY R M TOWILL CORP, DATED 1: 7 68

EXHIBIT 5

JOB NO. 1713.2E


1300
EXIST. 6'x4' RCB.
SOUTH KULANI ROAD
EXIST. 24" RCP
400
SCALE 1" = 400'
TRUE NORTH
636,000 E



AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS • SURVEYORS • HAWAII GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT

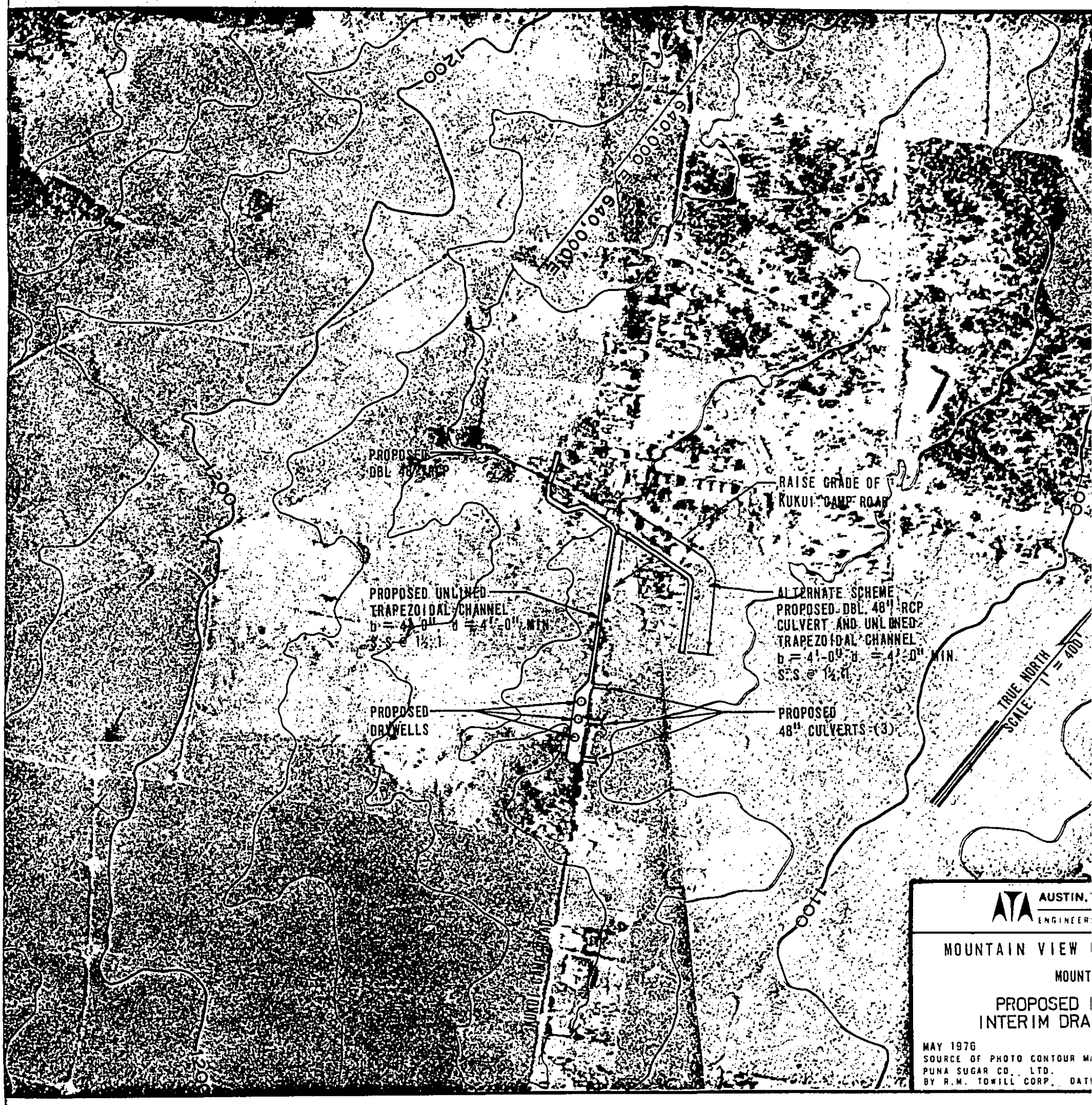
MOUNTAIN VIEW, HAWAII

PROPOSED KULANI ROAD INTERIM DRAINAGE IMPROVEMENTS

MAY 1976
SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO., LTD.
BY R. M. TOWILL CORP. DATED [illegible]

EXHIBIT 6

JOB NO. 1713.2E


1200'
640,000E
PROPOSED
DBL 48" RCP
RAISE GRADE OF
KUKUI CAMP ROAD
PROPOSED UNLINED
TRAPEZOIDAL CHANNEL
b = 4'-0" d = 4'-0" MIN
S:S @ 1½:1
ALTERNATE SCHEME
PROPOSED DBL. 48" RCP
CULVERT AND UNLINED
TRAPEZOIDAL CHANNEL
b = 4'-0" d = 4'-0" MIN
S:S @ 1½:1
PROPOSED
DRYWELLS
PROPOSED
48" CULVERTS (3)
TRUE NORTH
SCALE: 1" = 400'
AUSTIN,
ENGINEER
MOUNTAIN VIEW
MOUNT
PROPOSED
INTERIM DRA
MAY 1976
SOURCE OF PHOTO CONTOUR M
PUNA SUGAR CO., LTD.
BY R.M. TOWILL CORP. DAT

RECEIVED AS FOLLOWS

AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS SURVEYORS • HAWAII GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT

MOUNTAIN VIEW, HAWAII

PROPOSED KUKUI CAMP ROAD INTERIM DRAINAGE IMPROVEMENTS

MAY 1976
SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO., LTD.
BY R.M. TOWILL CORP., DATED 12/7/58

EXHIBIT 7

A P P E N D I C E S

APPENDIX "A"

ULTIMATE DRAINAGE SYSTEMS - CALCULATIONS AND DETAILS

APPENDIX "B"

INTERIM DRAINAGE IMPROVEMENTS - CALCULATIONS AND DETAILS

APPENDIX "C"

HISTORICAL AND ARCHAEOLOGICAL REPORTS

APPENDIX "D"

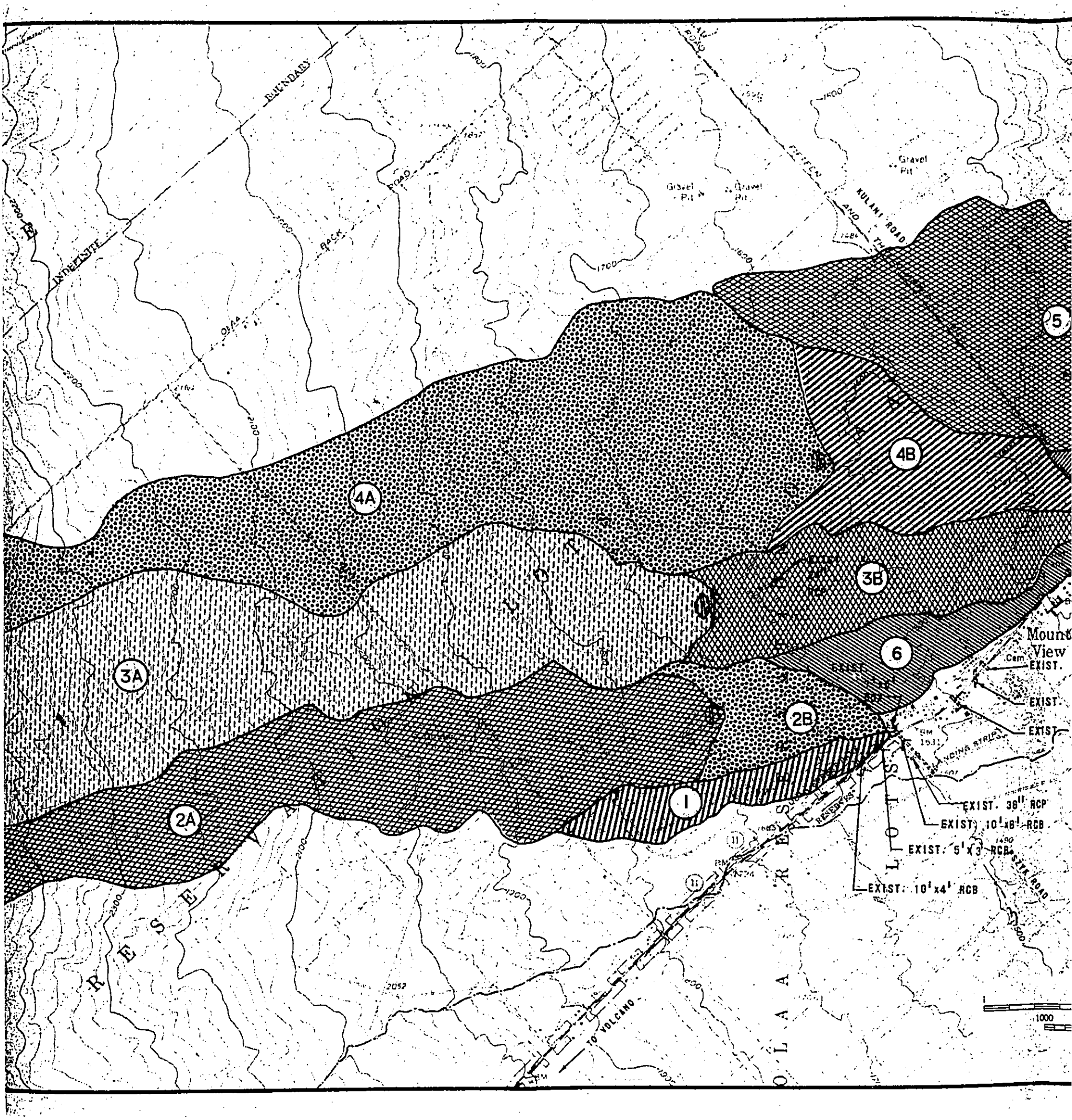
COMMENTS AND RESPONSES

APPENDIX "A"

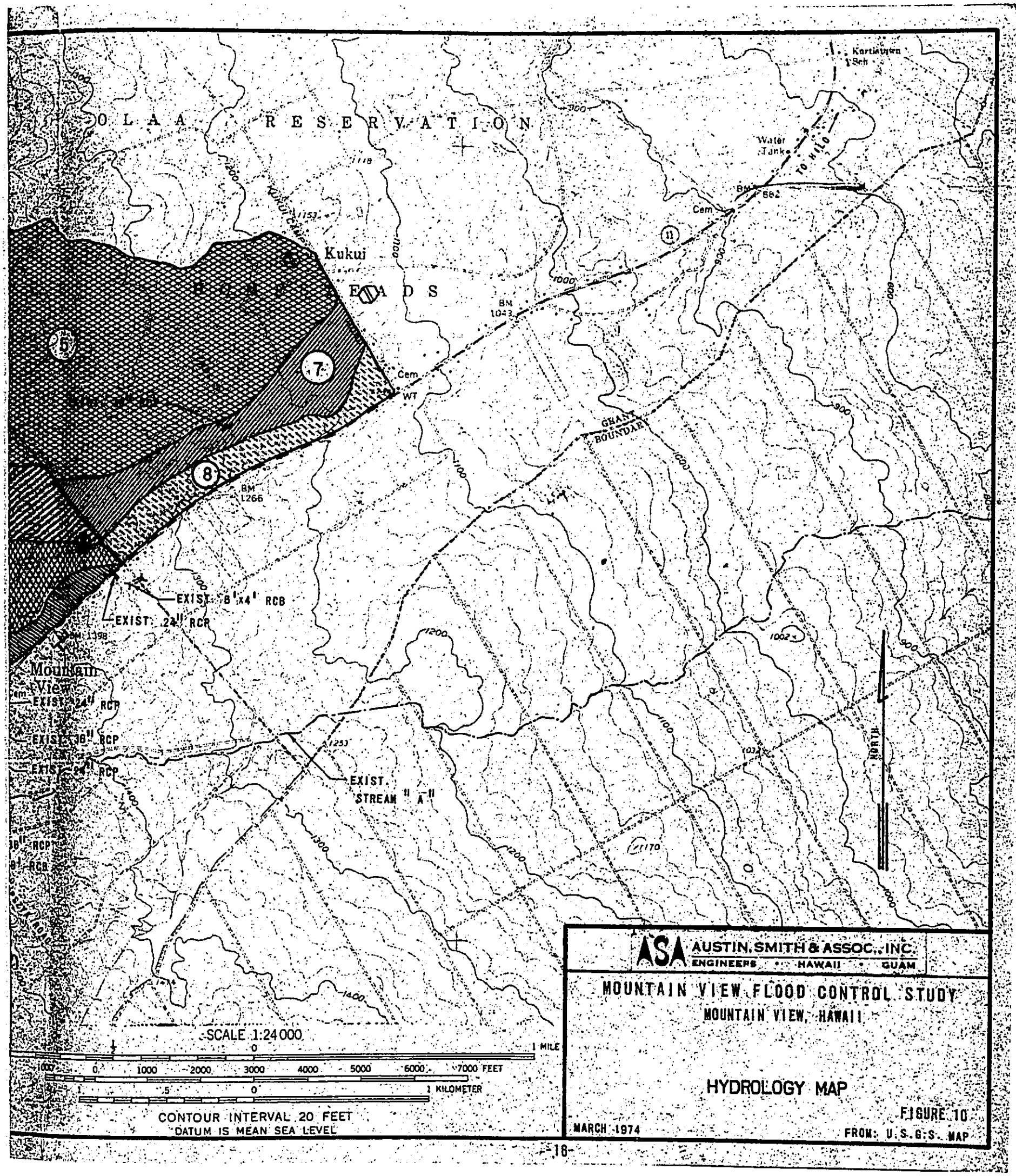
ULTIMATE DRAINAGE SYSTEMS - CALCULATIONS AND DETAILS

RECEIVED AS FOLLOWS

RECEIVED AS FOLLOWS



RECEIVED AS FOLLOWS



AUSTIN, SMITH & ASSOCIATES, INC. — ENGINEERS • 745 FORT STREET, HONOLULU, HAWAII 96813 • P.O. BOX 87, AIEA, OAHU 96701

PROJECT: MOUNTAIN VIEW FLOOD CONTROL STUDY

SUMMARY OF PEAK RUNOFF

JOB NO. 17135

BY KKK DATE 2/13/74

CHKD TSK DATE 2-27-74

SHT. NO. 1 OF 1

SUMMARY OF PEAK RUNOFF

AREA NO.	AREA ACRES	AREA SQ. MI.	L FT.	H FT.	SLOPE FT./FT.	AVE. VEL. FT./SEC.	Tc HR.	CN	Q IN.	q CSM/IN.	Qp CFS
1	110	0.17	6800	360	0.053	2	0.94	49	13.96	170	400
2A	862	1.35	19200	980	0.051	2	2.67	46	13.17	100	1780
2B	98	0.15	5500	260	0.047	4	0.38	39	11.12	250	420
3A	1900	2.97	28800	1420	0.049	2	4.00	37	10.48	78	2460
3B	316	0.49	8000	280	0.035	4	0.56	49	13.97	220	1510
4A	1513	2.36	28800	1460	0.051	2	4.00	55	15.46	79	2680
4B	267	0.42	6500	220	0.034	4	0.45	39	11.12	230	1070
5	805	1.26	12800	520	0.041	4	0.89	62	17.00	162	3470
6	146	0.23	7700	300	0.039	4	0.53	53	14.97	222	760
7	135	0.21	6300	220	0.035	4	0.44	63	17.20	240	870
8	100	0.14	6000	220	0.037	4	0.42	53	14.97	242	510

REFERENCE:

1. HYDROLOGY, SECTION 4, PART I, WATERSHED PLANNING
   SOIL CONSERVATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE

2. STORM DRAINAGE STANDARD
   DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII OCTOBER 1970

FIGURE 11

ASA
AUSTIN, SMITH & ASSOCIATES, INC. — ENGINEERS • 745 FORT STREET HONOLULU, HAWAII 96813 • P.O. BOX 117 AGANA, GUAM 96910

PROJECT: MOUNTAIN VIEW FLOOD CONTROL STUDY
PROPOSED ROUTING FOR PSZYK ROAD DRAINAGE SYSTEM

JOB NO. 1713E
BY KKK DATE 2/13/74
CHKD. TSL DATE 2-28-74
SHT. NO. 1 OF 11

PROPOSED CHANNEL NO. 2

AREA NO.	Q CFS	STORAGE CFS	RELEASE CFS	TOTAL DISCH. CFS	CHANNEL NO.	COMMENTS
(3A)	2460	1610	850	850	2E	DISCHARGE RELEASED FROM RETENTION BASIN (3A)
(2A)	1780	1385	395	395	2D	DISCHARGE RELEASED FROM RETENTION BASIN (2A)
(2B)	420	NONE	420	1665	2C	COMBINED DISCHARGES OF CHAN. 2E , 2D AND RUNOFF FROM AREA (2B)
PORTION (1)	150	NONE	150	150	2B	PORTION OF AREA (1) RUNOFF. CAPACITY OF EXIST. CULVERT @ VOLCANO ROAD
				1815	2A	TOTAL DISCHARGE OF CHANNEL NO. 2 TO STREAM "A"

PROPOSED CHANNEL NO. 1

AREA NO.	Q CFS	STORAGE CFS	RELEASE CFS	TOTAL DISCH. CFS	CHANNEL NO.	COMMENTS
PORTION (1)	250	NONE	250	250	1	PORTION OF AREA (1) RUNOFF. CAPACITY OF EXIST. CULVERT @ VOLCANO ROAD. TOTAL DISCH. OF CHANNEL NO. 1 TO STREAM "A"

PROPOSED ROUTING FOR PSZYK ROAD DRAINAGE SYSTEM

PROPOSED CHANNEL NO. 3

AREA NO.	Q CFS	STORAGE CFS	RELEASE CFS	TOTAL DISCH. CFS	CHANNEL NO.	COMMENTS
(4A)	2880	2055	825	825	OVERLAND	DISCHARGE RELEASED FROM RETENTION BASIN (4A). OVERLAND FLOW TO RETENTION BASIN (3B)
(4B)	1070	NONE	1070	1895	OVERLAND	COMBINED RUNOFF AREAS (4B), (3B) AND RELEASE DISCHARGE OF RETENTION BASIN (4A) TO STORE @ RETENTION BASIN (3B)
(3B)	1510	NONE	1510	3405	OVERLAND	
(4A)+(4B)+(3B)	3405	2573	832	832	3	DISCHARGE RELEASED FROM RETENTION BASIN (3B)
(6)	760	NONE	760	1592	3	COMBINED DISCHARGE OF CHAN. 3 AND RUNOFF FROM AREA (6) TOTAL DISCHARGE OF CHANNEL NO. 3 TO STREAM "A"

PROPOSED ROUTING FOR KULANI ROAD DRAINAGE SYSTEM

ASA

AUSTIN, SMITH & ASSOCIATES, INC. — ENGINEERS • 745 FORT STREET HONOLULU, HAWAII 96813 • P.O. BOX 157 AGANA, GUAM 96910

PROJECT: MOUNTAIN VIEW FLOOD CONTROL STUDY

PROPOSED ROUTING FOR KULANI ROAD DRAINAGE SYSTEM

JOB NO. 1713E

BY KKK DATE 2/13/74

CHKD TSK DATE 2-20-74

SHT. NO. 2 OF 11

AUSTIN, SMITH & ASSOCIATES, INC. — ENGINEERS • 745 FORT STREET HONOLULU, HAWAII 96813 • P.O. BOX 81 AGANA, GUAM 96910

PROJECT: MOUNTAIN VIEW FLOOD CONTROL STUDY
PROPOSED KUKUI CAMP ROAD DRAINAGE SYSTEM

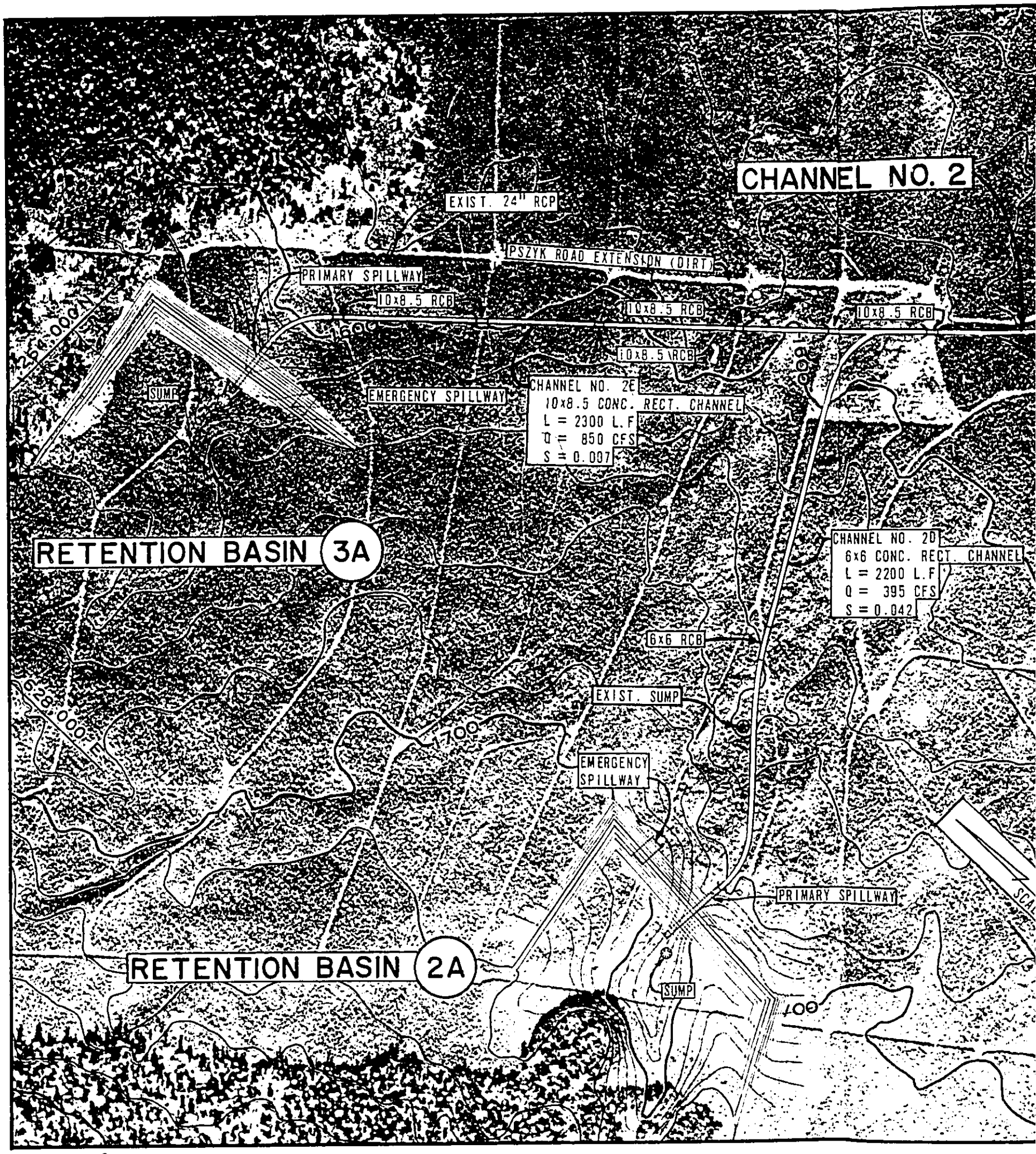
JOB NO. 1713E

BY KKK DATE 2/13/74
CHKD [illegible] DATE 2/22/74
SHT. NO 9 OF 11

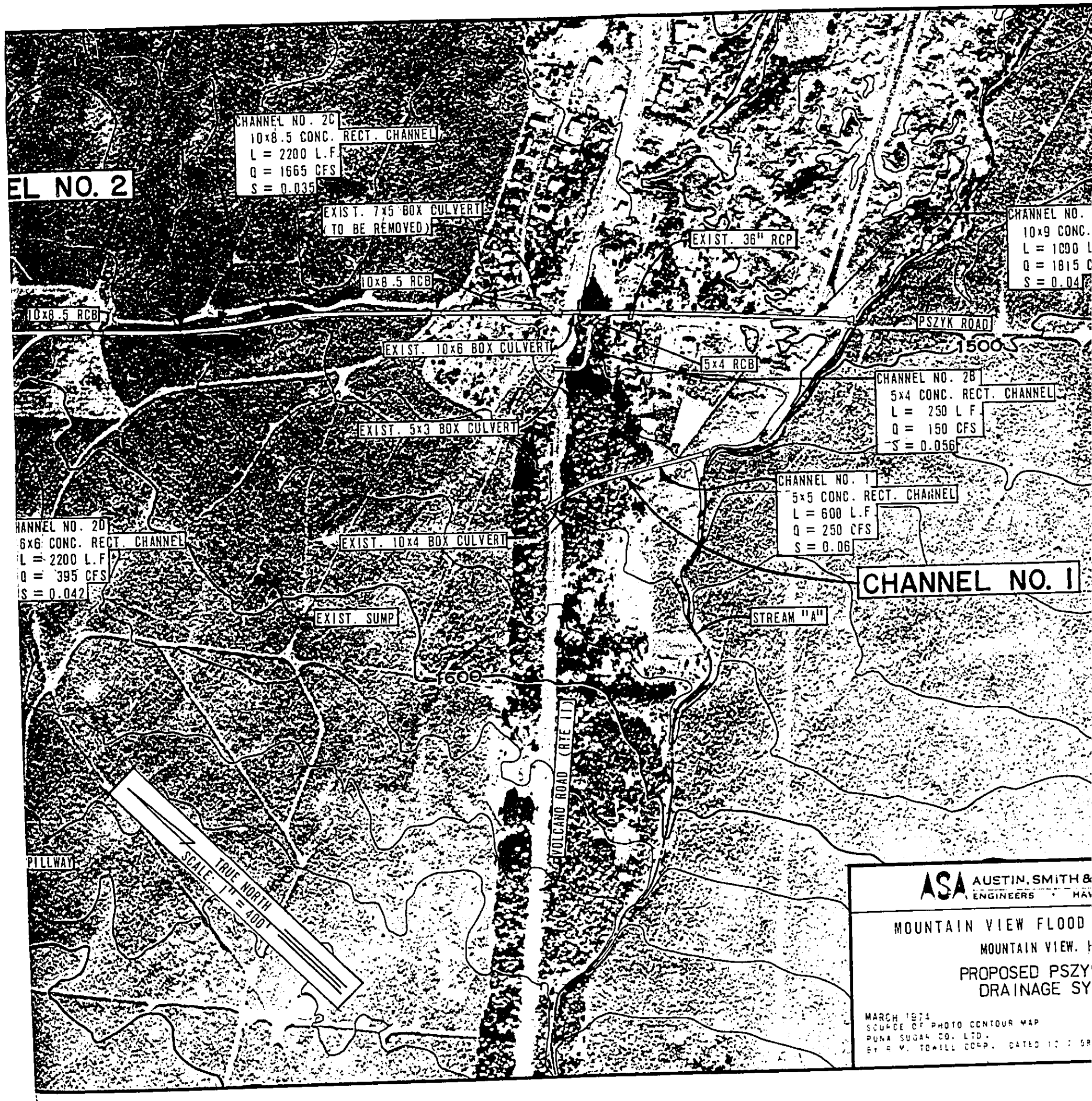
PROPOSED CHANNEL NO. 4

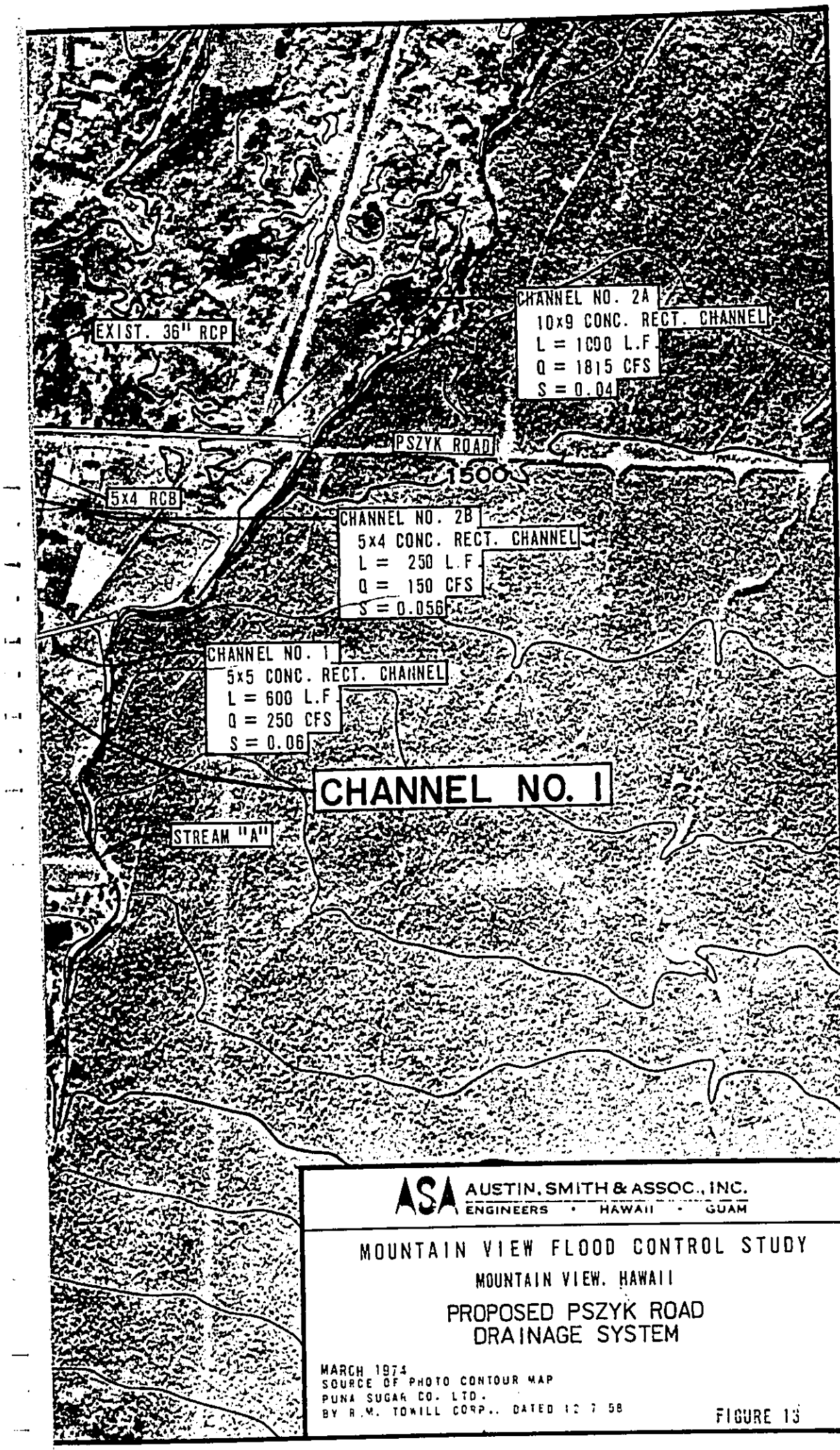
AREA NO.	Q CFS	STORAGE CFS	RELEASE CFS	TOTAL DISCH. CFS	CHANNEL NO.	COMMENTS
⑤	3470	3140	330	330	4	DISCHARGE RELEASED FROM RETENTION BASIN ⑤
⑦	870	NONE	870	1200	OVERLAND	RUNOFF OF AREA ⑦ TO SUMPS AND RETENTION BASIN ⑦
⑧	510	NONE	510	1710	OVERLAND	RUNOFF OF AREA ⑦ , ⑧ AND DISCHARGE RELEASED FROM RETENTION BASIN ⑤ . TO BE STORED @ RETENTION BASIN ⑦ AND SUMPS @ KUKUI CAMP ROAD.

PROPOSED KUKUI CAMP ROAD DRAINAGE SYSTEM


CHANNEL NO. 2
EXIST. 24" RCP
PSZYK ROAD EXTENSION (DIRT)
PRIMARY SPILLWAY
10x8.5 RCB
10x8.5 RCB
10x8.5 RCB
10x8.5 RCB
SUMP
EMERGENCY SPILLWAY
CHANNEL NO. 2E
10x8.5 CONC. RECT. CHANNEL
L = 2300 L.F
Q = 850 CFS
S = 0.007
CHANNEL NO. 2D
6x6 CONC. RECT. CHANNEL
L = 2200 L.F
Q = 395 CFS
S = 0.042
RETENTION BASIN 3A
6x6 RCB
EXIST. SUMP
EMERGENCY SPILLWAY
PRIMARY SPILLWAY
RETENTION BASIN 2A
SUMP
2500.000N
6280.000E
1700
1600

JOB NO. 1713E


EL NO. 2
CHANNEL NO. 2C
10x8.5 CONC. RECT. CHANNEL
L = 2200 L.F.
Q = 1665 CFS
S = 0.035
EXIST. 7x5 BOX CULVERT
(TO BE REMOVED)
EXIST. 36" RCP
10x8.5 RCB
10x8.5 RCB
EXIST. 10x6 BOX CULVERT
5x4 RCB
PSZYK ROAD
1500
CHANNEL NO. 2B
5x4 CONC. RECT. CHANNEL
L = 250 L.F.
Q = 150 CFS
S = 0.056
EXIST. 5x3 BOX CULVERT
CHANNEL NO. 1
5x5 CONC. RECT. CHANNEL
L = 600 L.F.
Q = 250 CFS
S = 0.06
CHANNEL NO. 1
HANNEL NO. 2D
6x6 CONC. RECT. CHANNEL
L = 2200 L.F.
Q = 395 CFS
S = 0.042
EXIST. 10x4 BOX CULVERT
EXIST. SUMP
STREAM "A"
1600
VOLCANO ROAD (RTE 11)
PILLWAY
SCALE: 1" = 400'
TRUE NORTH
ASA AUSTIN, SMITH &
ENGINEERS
MOUNTAIN VIEW FLOOD
MOUNTAIN VIEW, H
PROPOSED PSZY
DRAINAGE SY
MARCH 1974
SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO. LTD.
BY R. M. TOAILL CORP. DATED 12 : 9



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ENGINEERS • HAWAII • GUAM

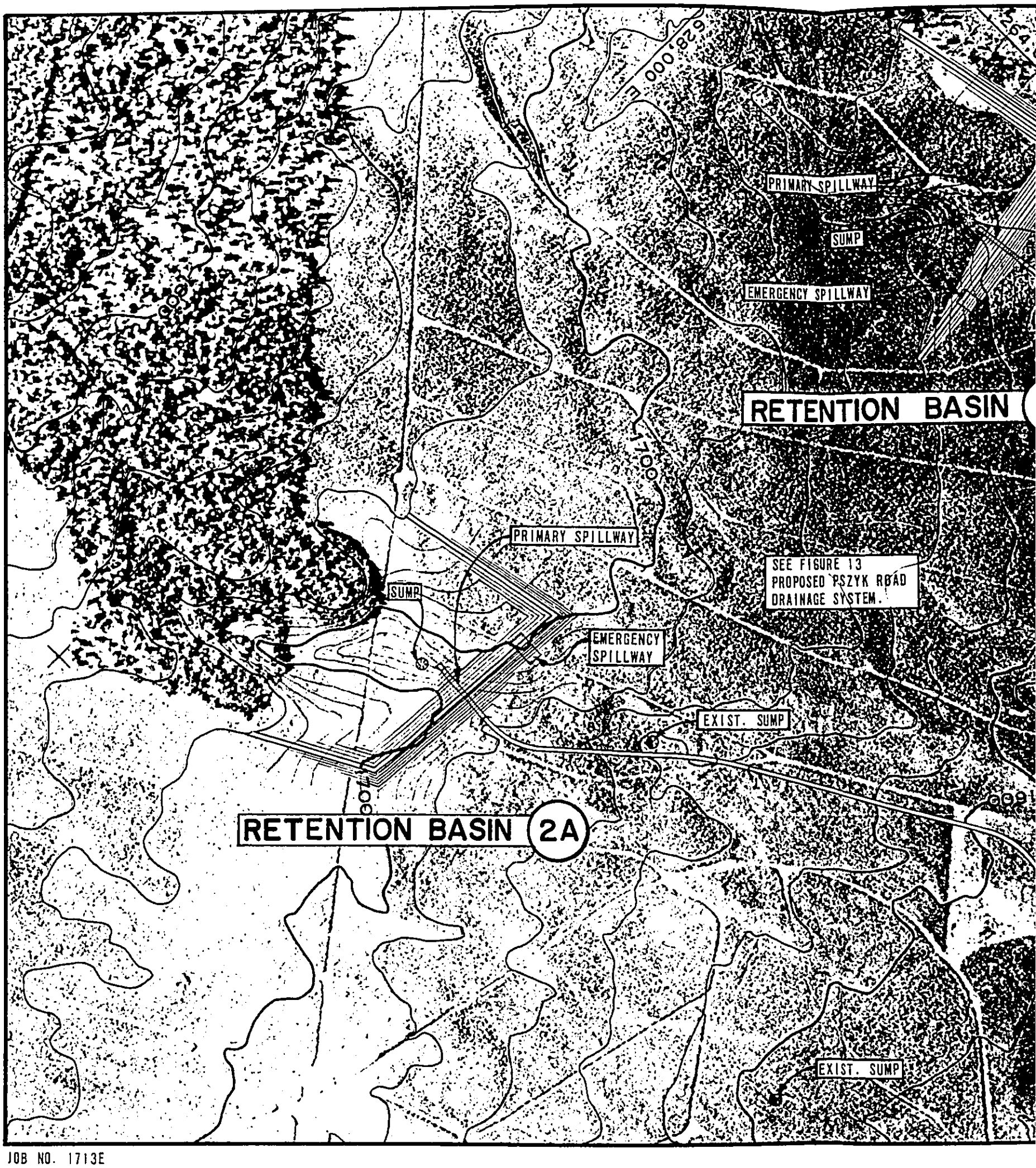
MOUNTAIN VIEW FLOOD CONTROL STUDY

MOUNTAIN VIEW, HAWAII

PROPOSED PSZYK ROAD DRAINAGE SYSTEM

MARCH 1974
SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO. LTD.
BY R.M. TOWILL CORP., DATED 12 7 58

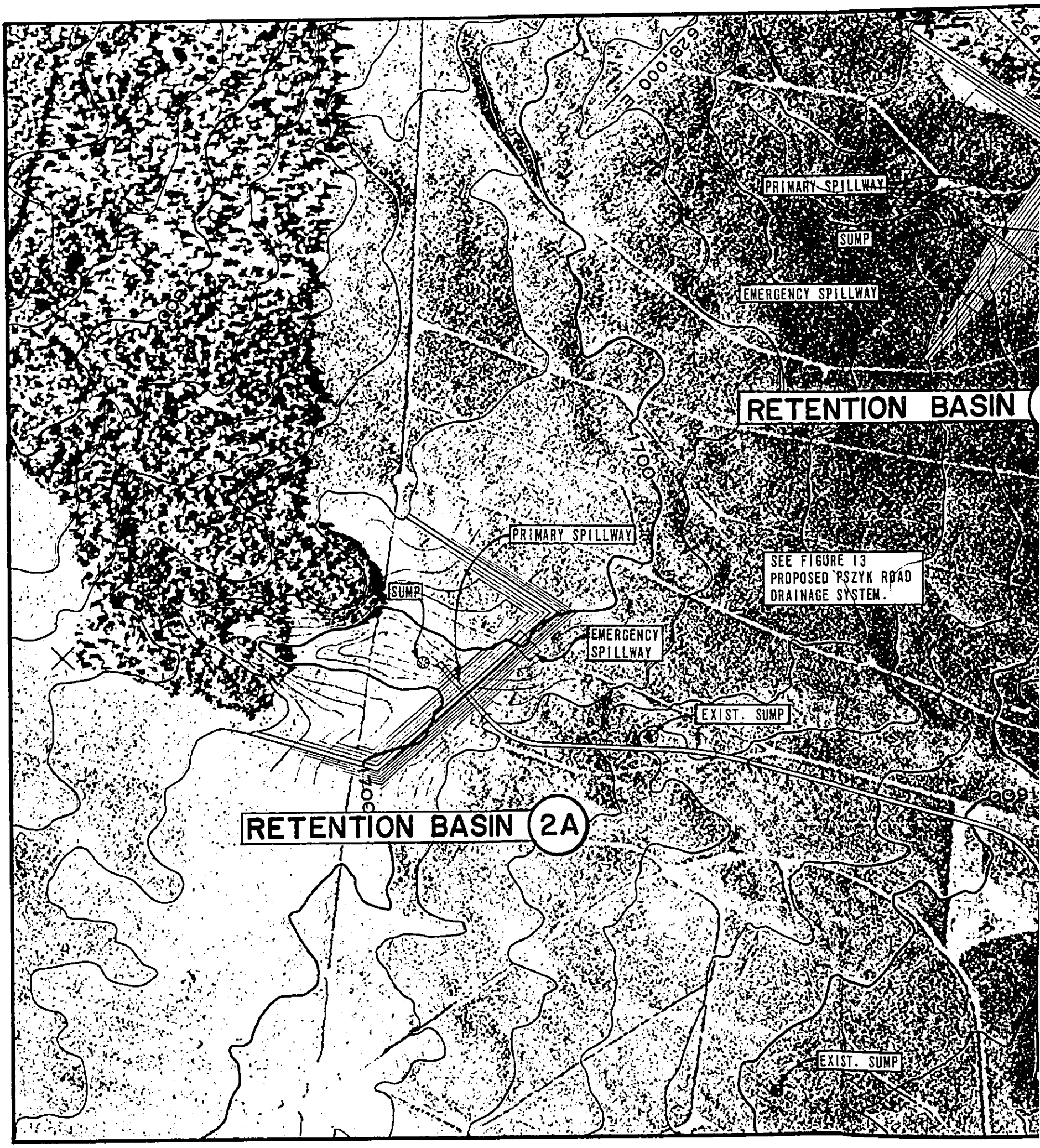
FIGURE 13


628.00 E
PRIMARY SPILLWAY
SUMP
EMERGENCY SPILLWAY
RETENTION BASIN
1700
PRIMARY SPILLWAY
SEE FIGURE 13
PROPOSED PSZYK ROAD
DRAINAGE SYSTEM.
SUMP
EMERGENCY
SPILLWAY
EXIST. SUMP
1700
RETENTION BASIN 2A
EXIST. SUMP

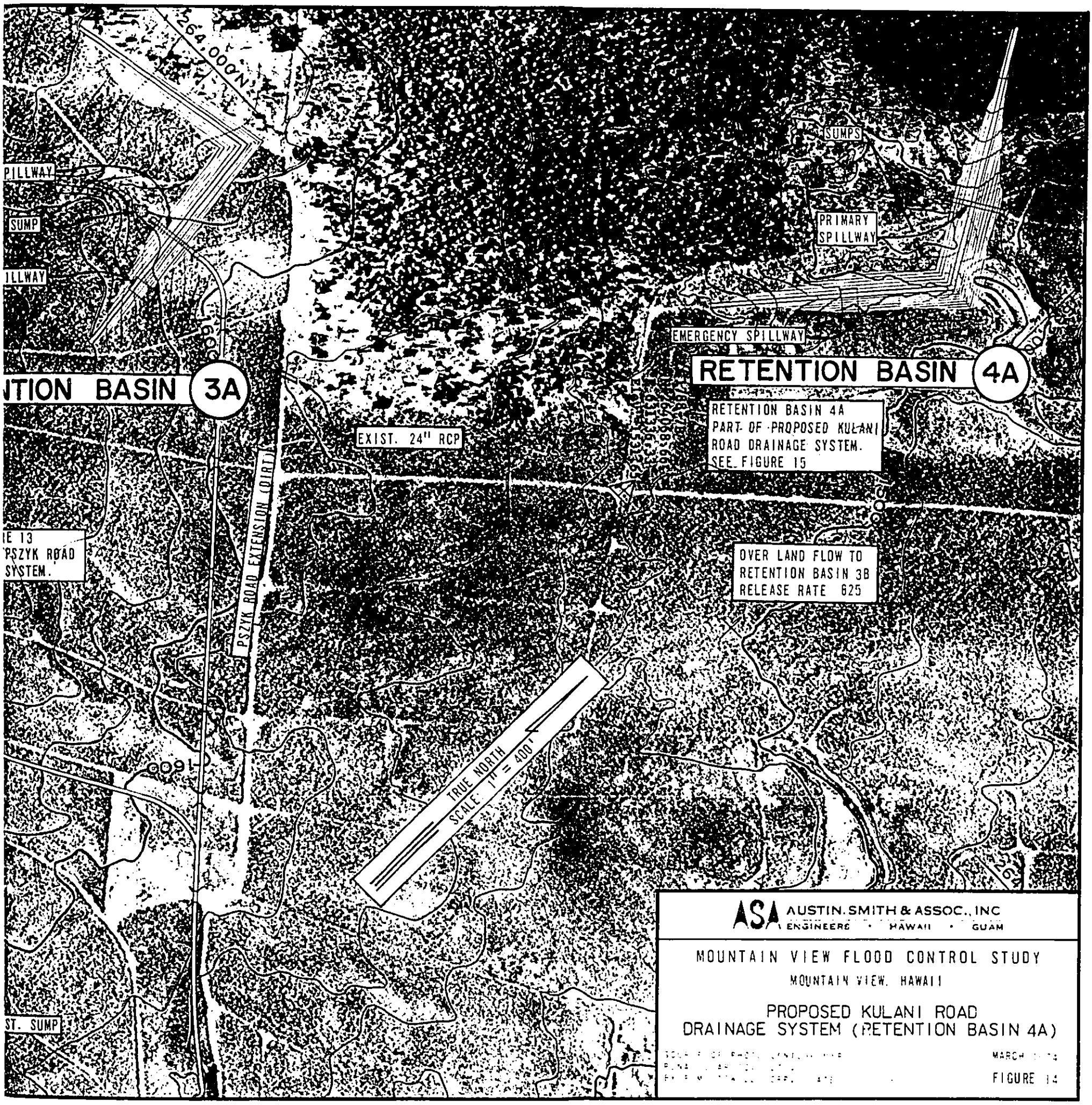
JOB NO. 1713E

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING


628,000 E
PRIMARY SPILLWAY
SUMP
EMERGENCY SPILLWAY
RETENTION BASIN
1700
PRIMARY SPILLWAY
SEE FIGURE 13
PROPOSED PSZYK ROAD
DRAINAGE SYSTEM.
SUMP
EMERGENCY
SPILLWAY
EXIST. SUMP
RETENTION BASIN 2A
EXIST. SUMP

JOB NO. 1713E



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ENGINEERS • HAWAII • GUAM

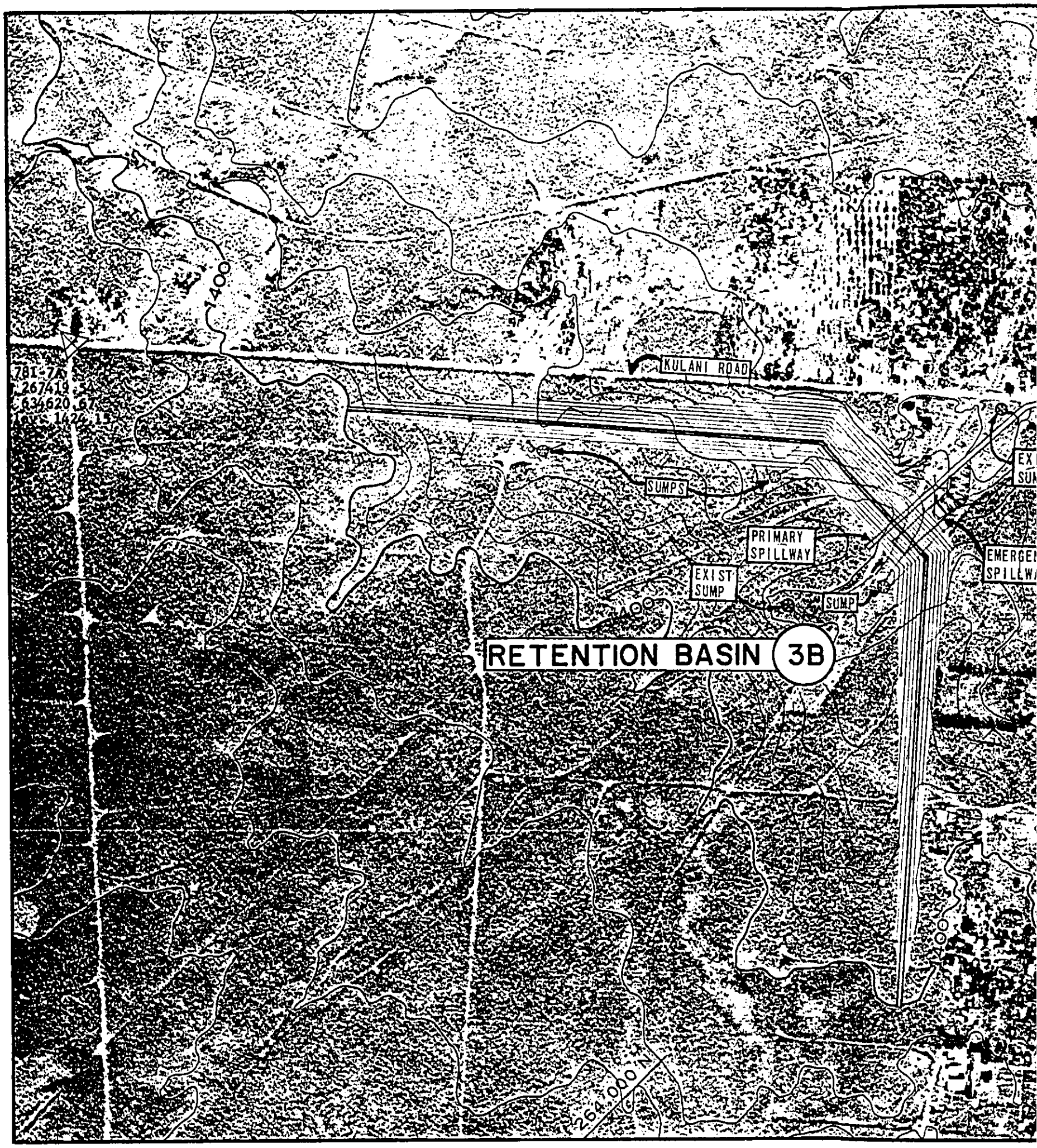
MOUNTAIN VIEW FLOOD CONTROL STUDY

MOUNTAIN VIEW, HAWAII

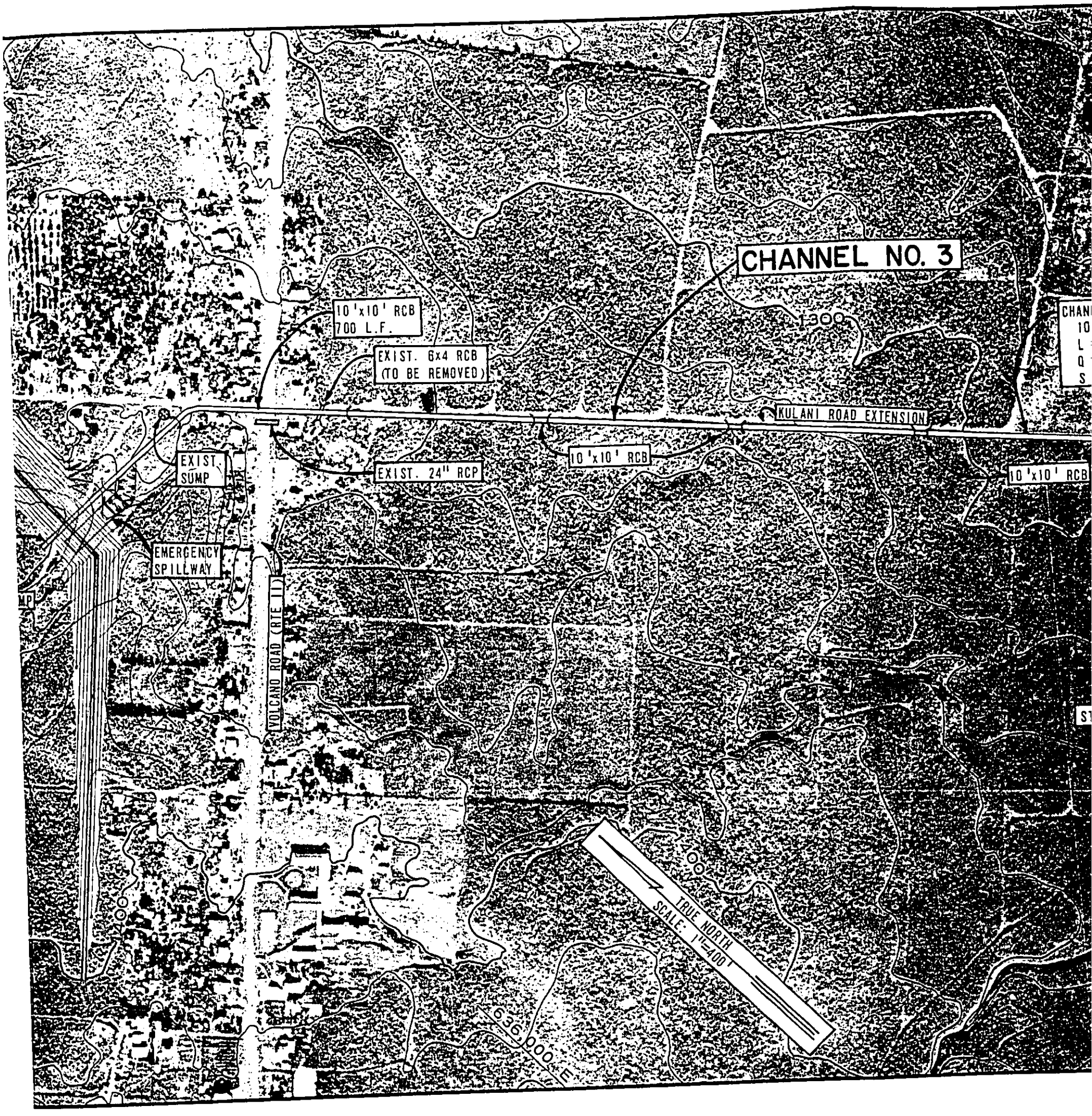
PROPOSED KULANI ROAD
DRAINAGE SYSTEM (RETENTION BASIN 4A)

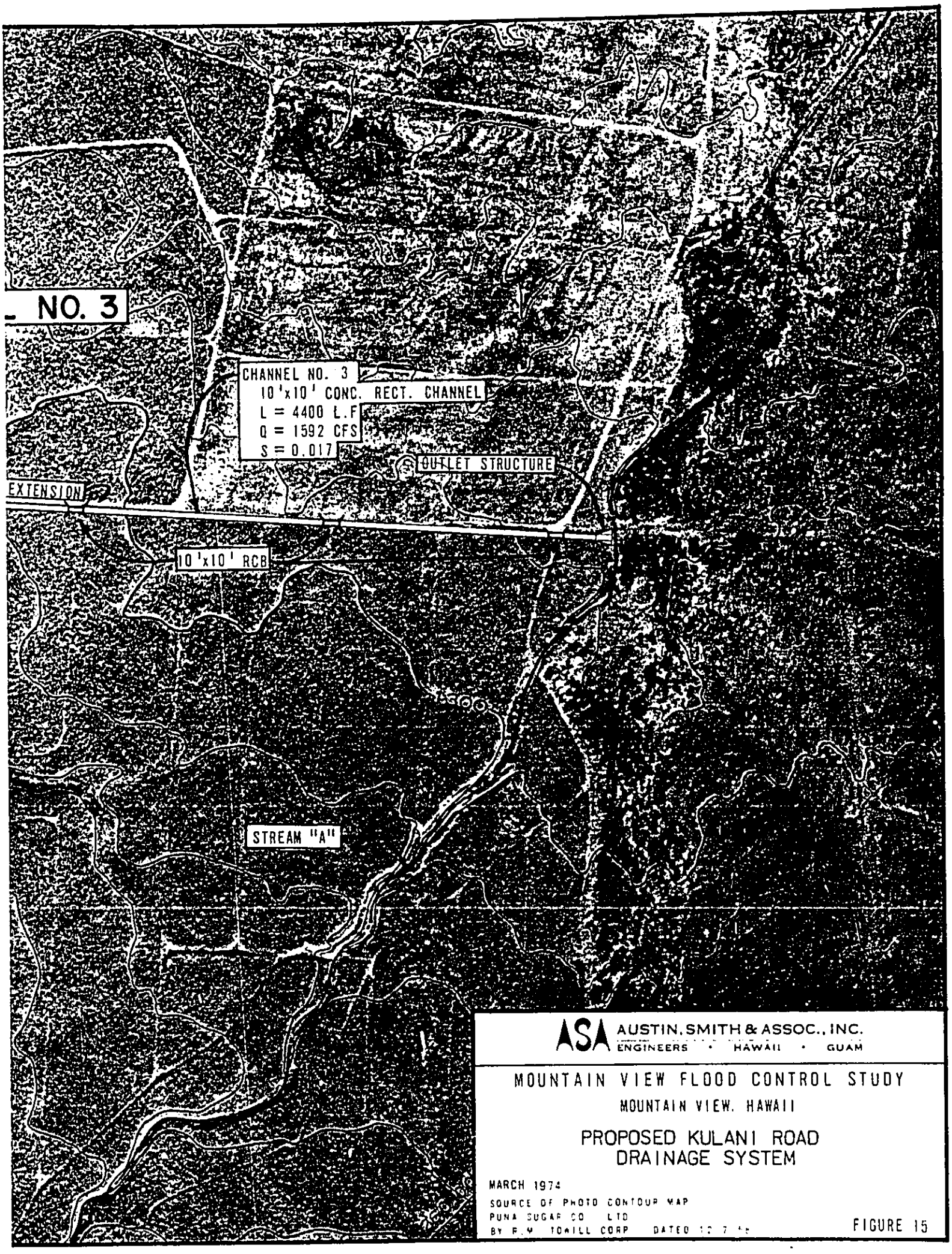
MARCH

FIGURE 14


781-7A
267419
634620.67
Elev: 1424.15
1400
KULANI ROAD
SUMPS
PRIMARY SPILLWAY
EXIST SUMP
SUMP
1400
RETENTION BASIN 3B
264,000 N

JOB NO. 1713E


CHANNEL NO. 3
1300
10 'x10' RCB
700 L.F.
EXIST. 6x4 RCB
(TO BE REMOVED)
KULANI ROAD EXTENSION
10 'x10' RCB
EXIST. 24" RCP
10 'x10' RCB
EXIST.
SUMP
EMERGENCY
SPILLWAY
VOLCANO ROAD (RTE 11)
1400'
SCALE: 1"=400'
TRUE NORTH
636,000 E



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MOUNTAIN VIEW FLOOD CONTROL STUDY

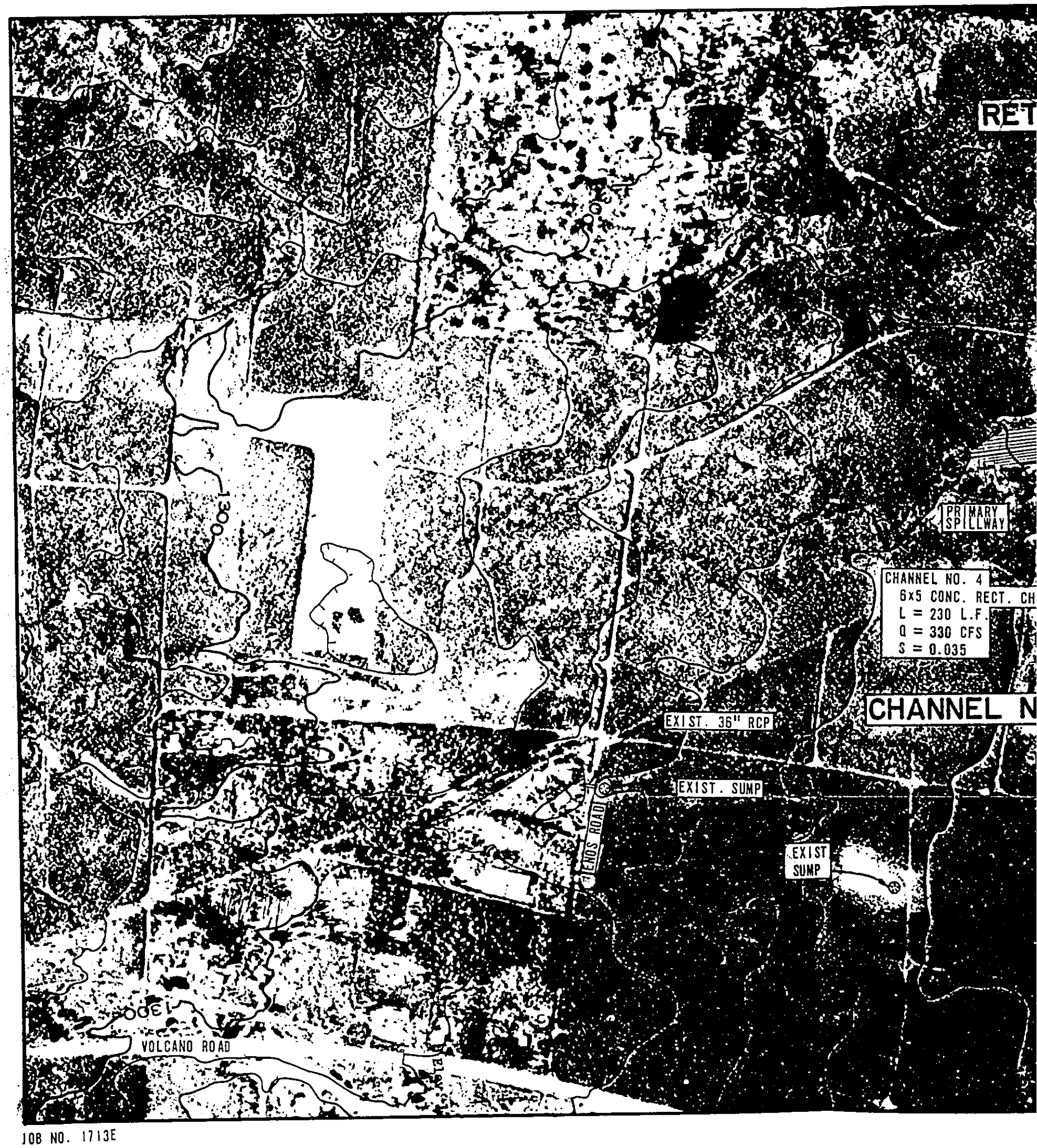
MOUNTAIN VIEW, HAWAII

PROPOSED KULANI ROAD
DRAINAGE SYSTEM

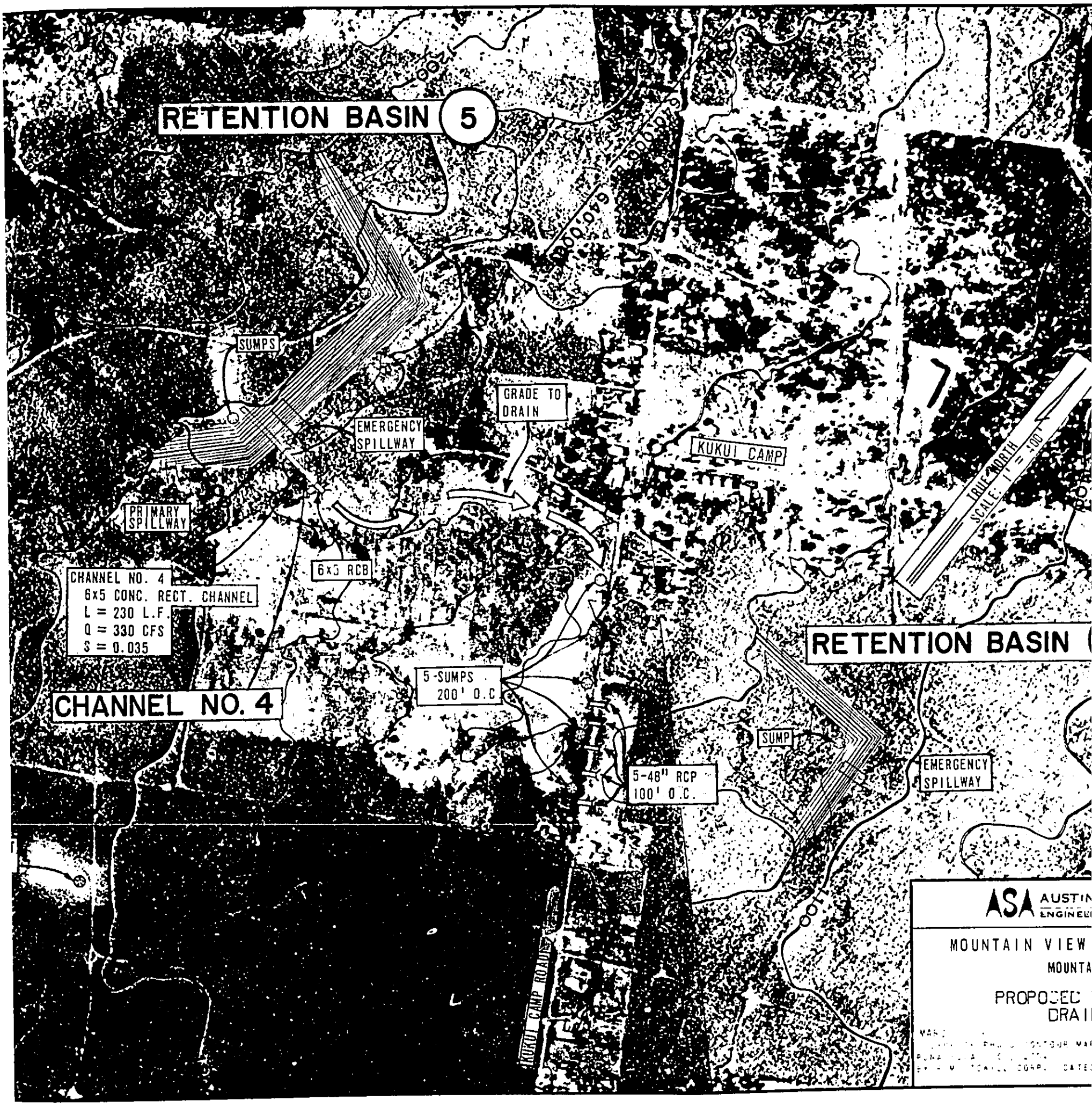
MARCH 1974

SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO LTD
BY R.M TOWILL CORP DATED 12 7 73

FIGURE 15


RET
PRIMARY SPILLWAY
CHANNEL NO. 4
6x5 CONC. RECT. CH
L = 230 L.F.
Q = 330 CFS
S = 0.035
CHANNEL N
EXIST. 36" RCP
EXIST. SUMP
EXIST SUMP
LENOS ROAD
1300
1300
VOLCANO ROAD

JOB NO. 1713E


RETENTION BASIN 5
SUMPS
EMERGENCY SPILLWAY
GRADE TO DRAIN
KUKUI CAMP
PRIMARY SPILLWAY
6x5 RCB
CHANNEL NO. 4
6x5 CONC. RECT. CHANNEL
L = 230 L.F.
Q = 330 CFS
S = 0.035
5-SUMPS 200' O.C
5-48" RCP 100' O.C.
SUMP
EMERGENCY SPILLWAY
KUKUI CAMP ROAD
TRUE NORTH
SCALE: 1" = 100'
RETENTION BASIN
ASA AUSTIN
ENGINEE
MOUNTAIN VIEW
MOUNTA
PROPOSED
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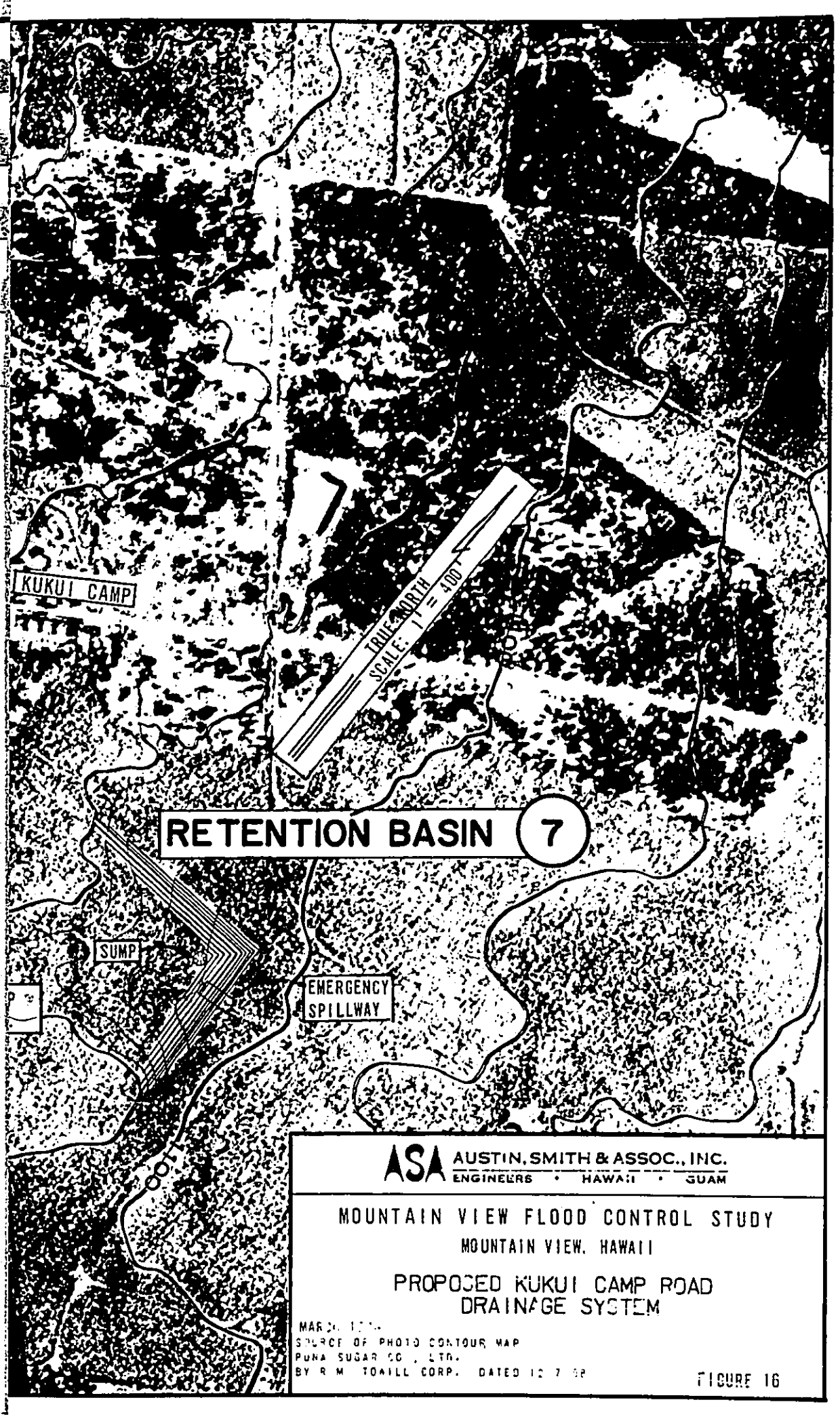


ASA AUSTIN, SMITH & ASSOC., INC.
ENGINEERS • HAWAII • GUAM

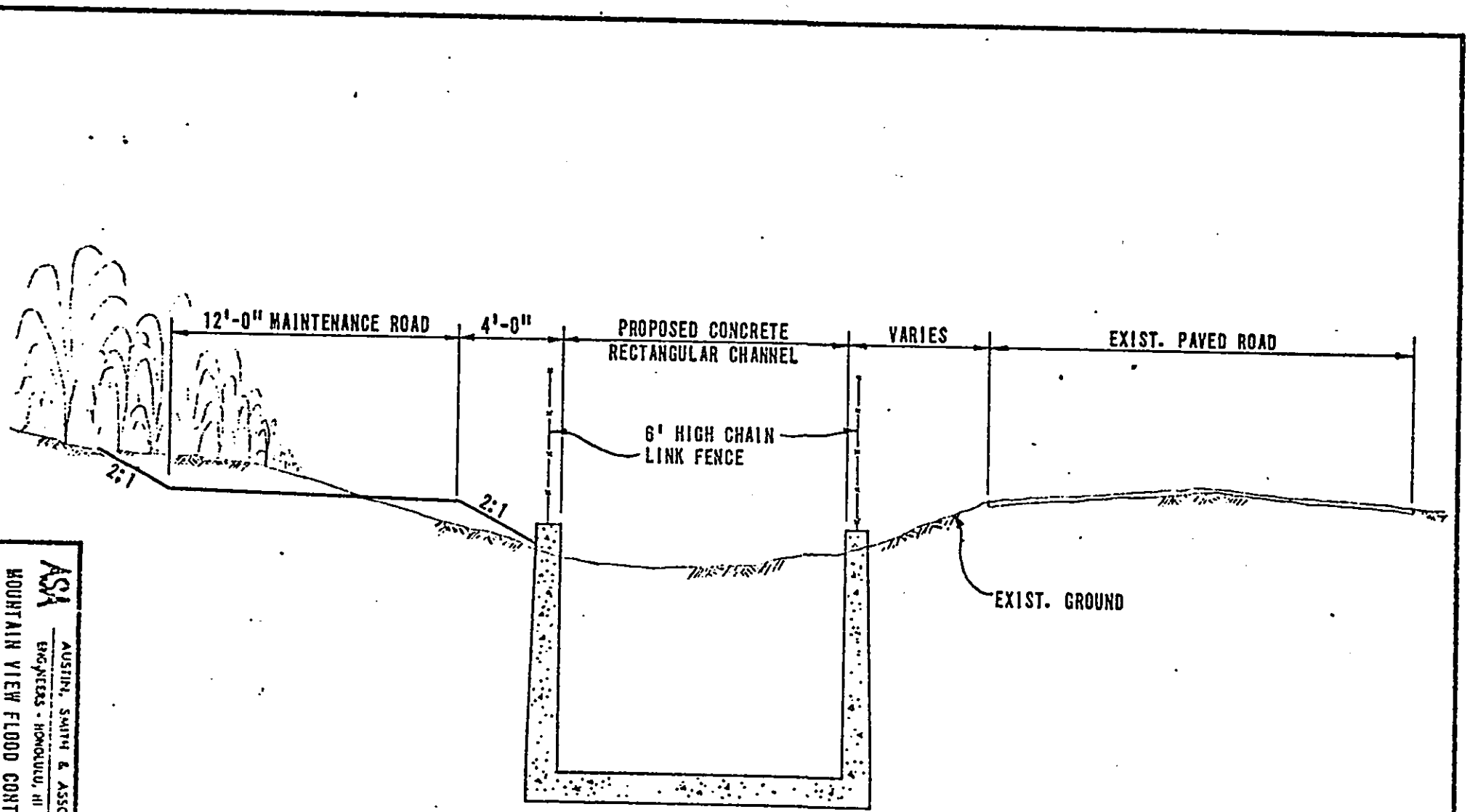
MOUNTAIN VIEW FLOOD CONTROL STUDY

MOUNTAIN VIEW, HAWAII

PROPOSED KUKUI CAMP ROAD
DRAINAGE SYSTEM

MARCH 1974
SOURCE OF PHOTO CONTOUR MAP
PUNA SUGAR CO., LTD.
BY R. M. TOAILL CORP. DATED 12-7-68

FIGURE 16



TYPICAL SECTION
PROPOSED RECTANGULAR CHANNEL
NOT TO SCALE

ASA
AUSTIN, SMITH & ASSOCIATES, INC.
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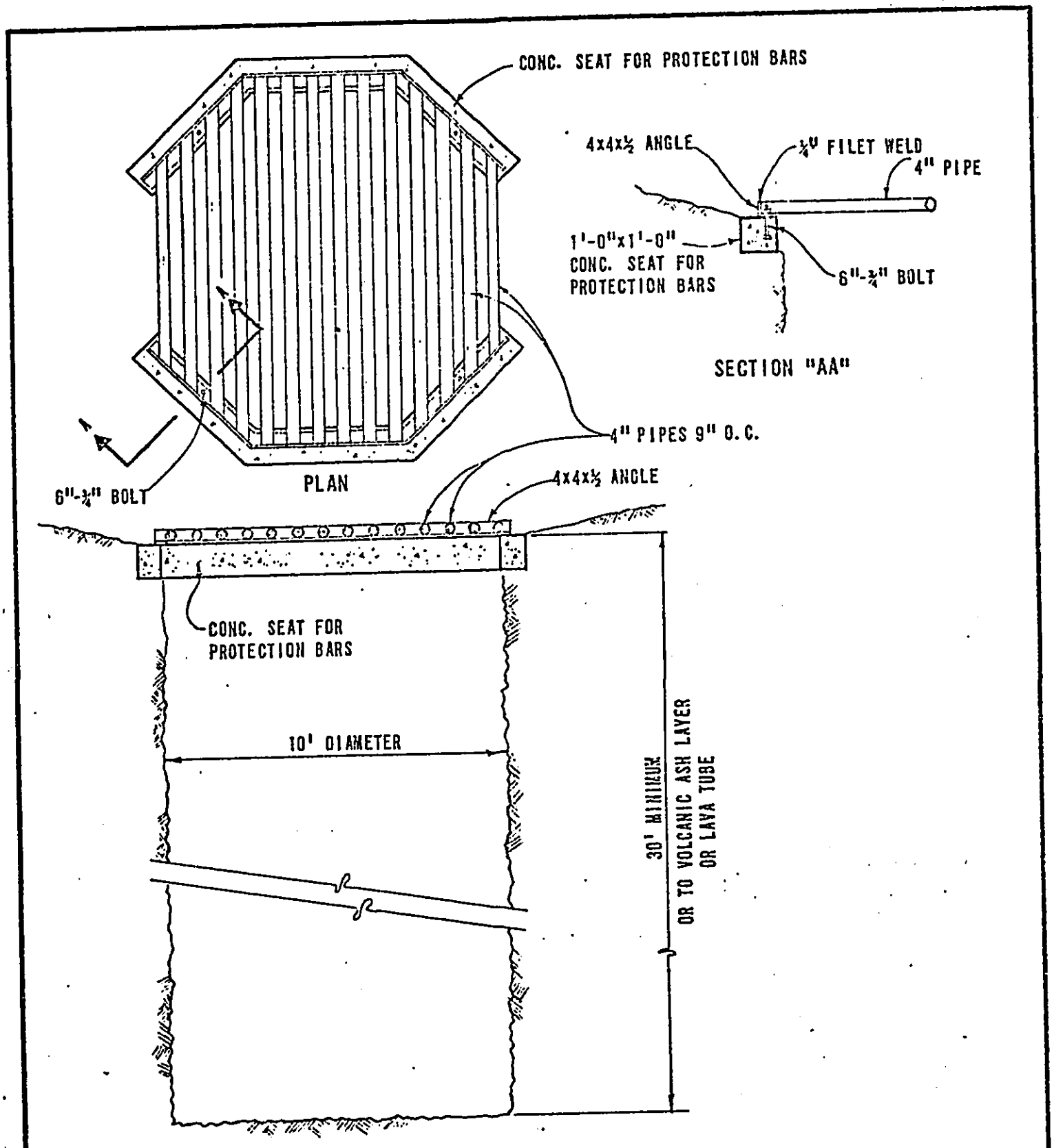
MOUNTAIN VIEW FLOOD CONTROL STUDY

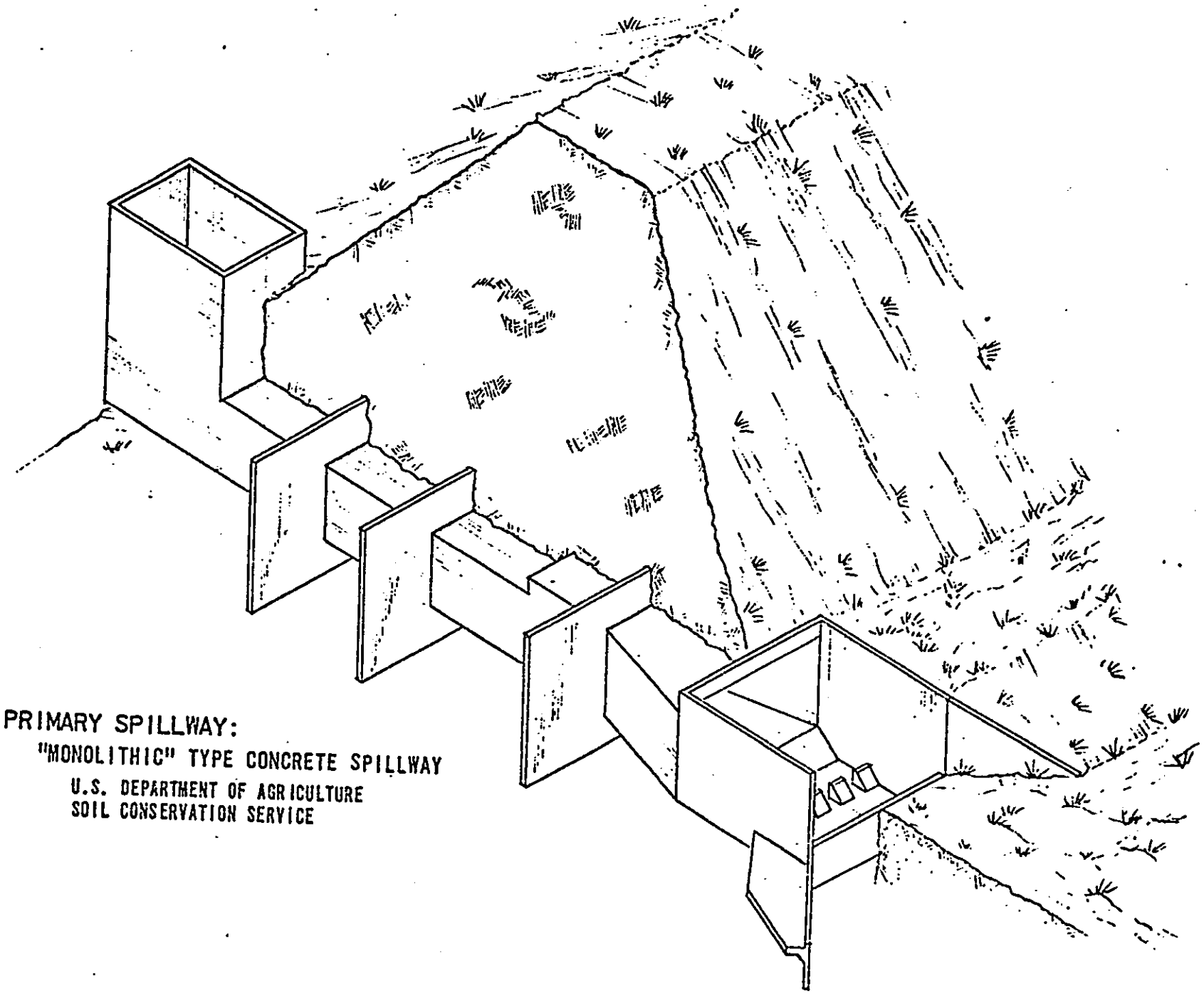
FEB. 1974

1 OF 6



PROPOSED SUMP DETAIL
NOT TO SCALE

ASA	AUSTIN, SMITH & ASSOCIATES, INC. ENGINEERS - HONOLULU, HI - AGANA, GUAM MOUNTAIN VIEW FLOOD CONTROL STUDY FEB. 1974	2 OF 6



PRIMARY SPILLWAY:

"MONOLITHIC" TYPE CONCRETE SPILLWAY

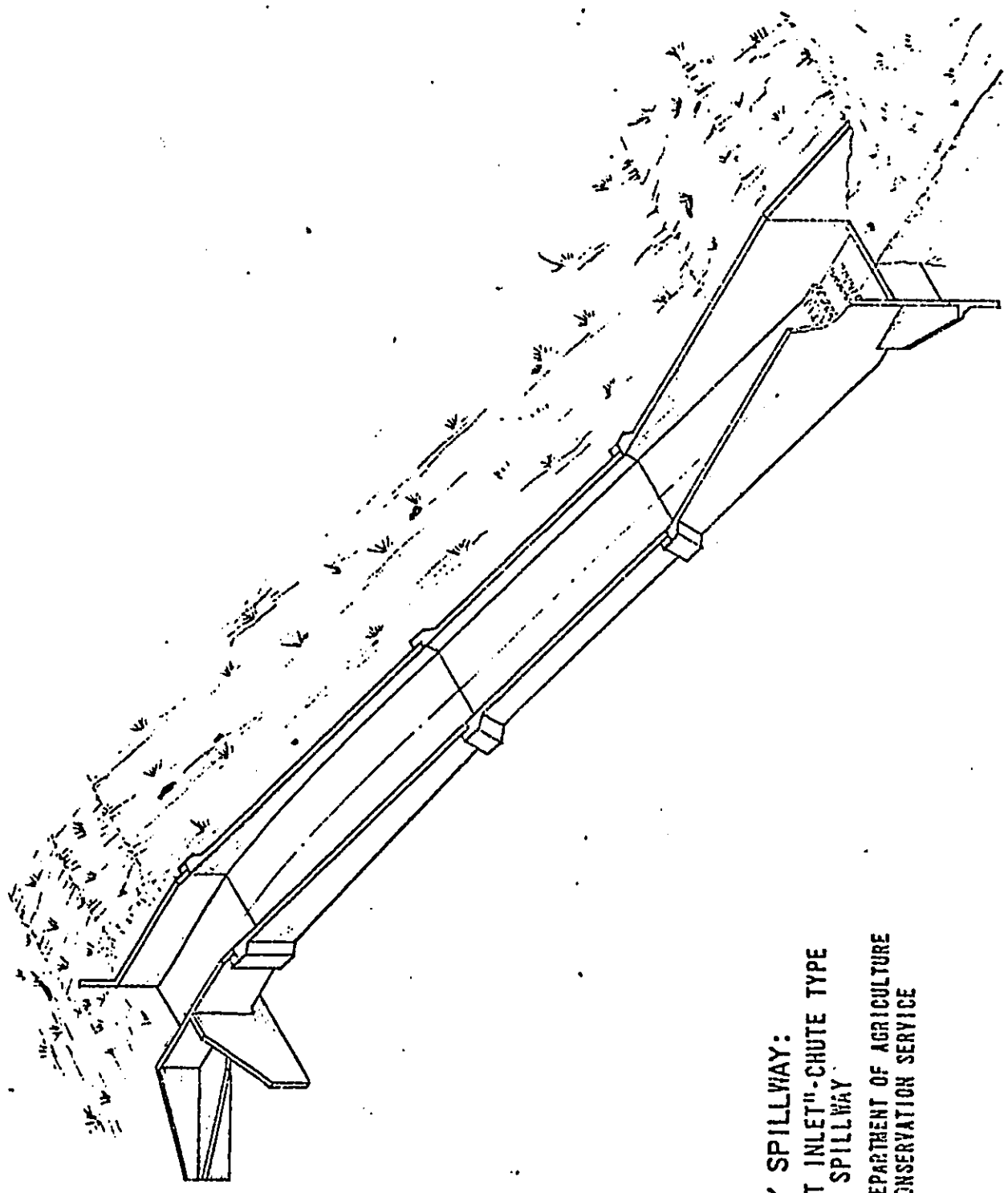
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ASI — ENGINEERS - HONOLULU, HI - AGANA, GUAM

MOUNTAIN VIEW FLOOD CONTROL STUDY

FEB. 1974

3 OF 6



EMERGENCY SPILLWAY:
"STRAIGHT INLET"-CHUTE TYPE
CONCRETE SPILLWAY

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ASM AUSTIN, SMITH & ASSOCIATES, INC.
ENGINEERS - HONOLULU, HI - AGANA, GUAM

MOUNTAIN VIEW FLOOD CONTROL STUDY

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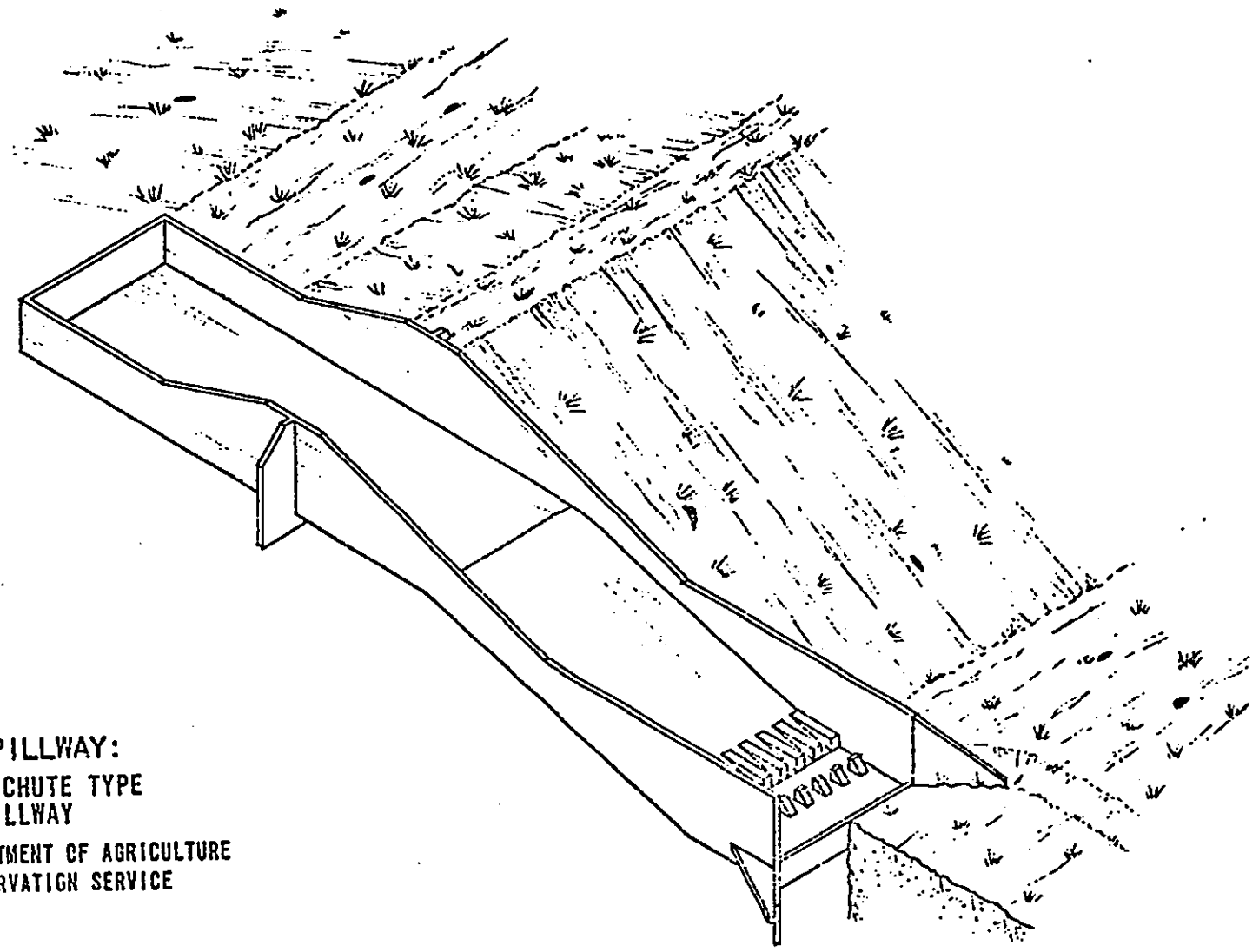


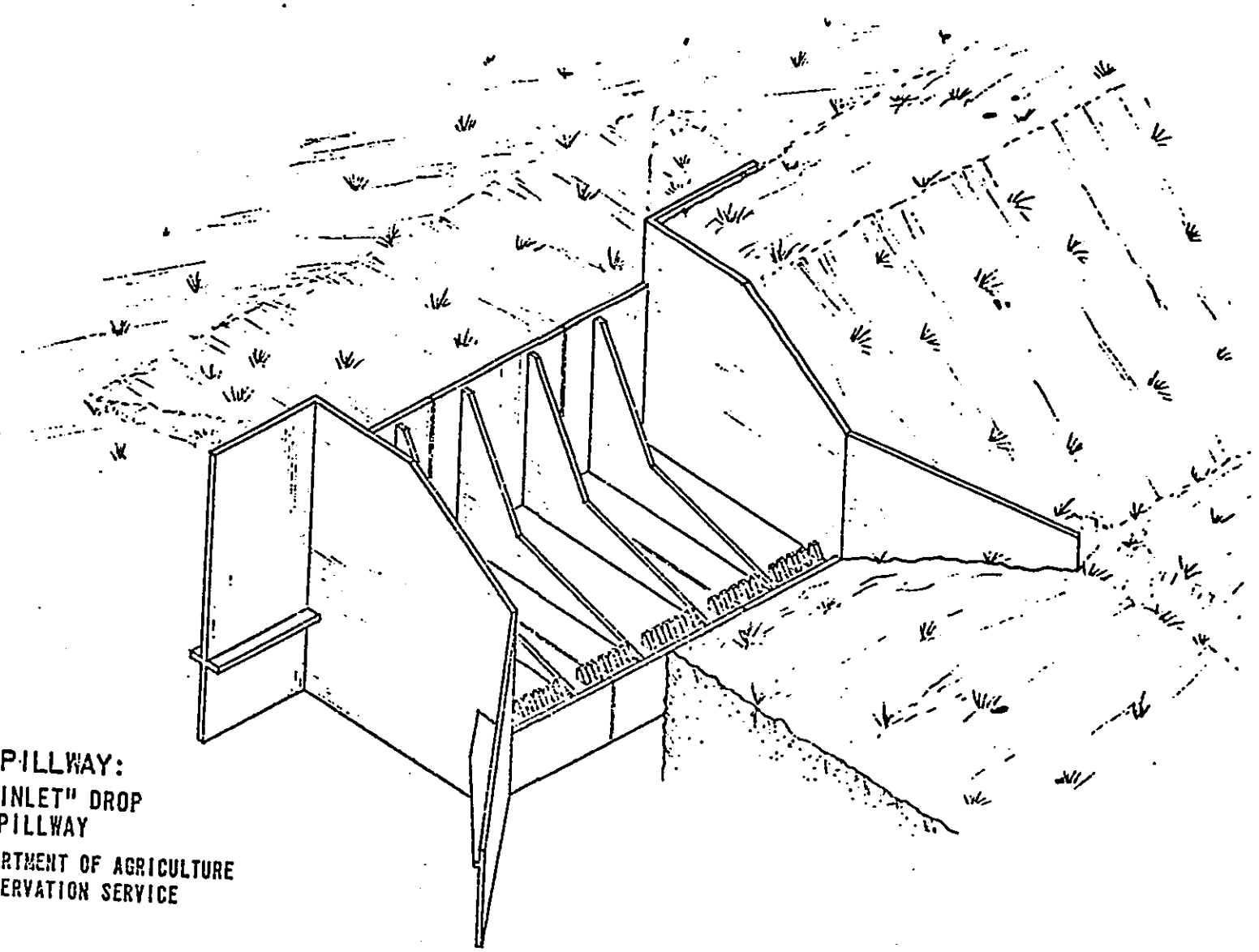
EMERGENCY SPILLWAY:
"BOX INLET"-CHUTE TYPE
CONCRETE SPILLWAY

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ASA
AUSTIN, SMITH & ASSOCIATES, INC.
ENGINEERS - HONOLULU, HI - AGANA, GUAM

MOUNTAIN VIEW FLOOD CONTROL STUDY

FEB. 1974



EMERGENCY SPILLWAY:
"STRAIGHT INLET" DROP
CONCRETE SPILLWAY

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

ASA — ANDERSON, SAHIN & ASSOCIATES, INC.
ENGINEERS - HONOLULU, HI - AGANA, GUAM

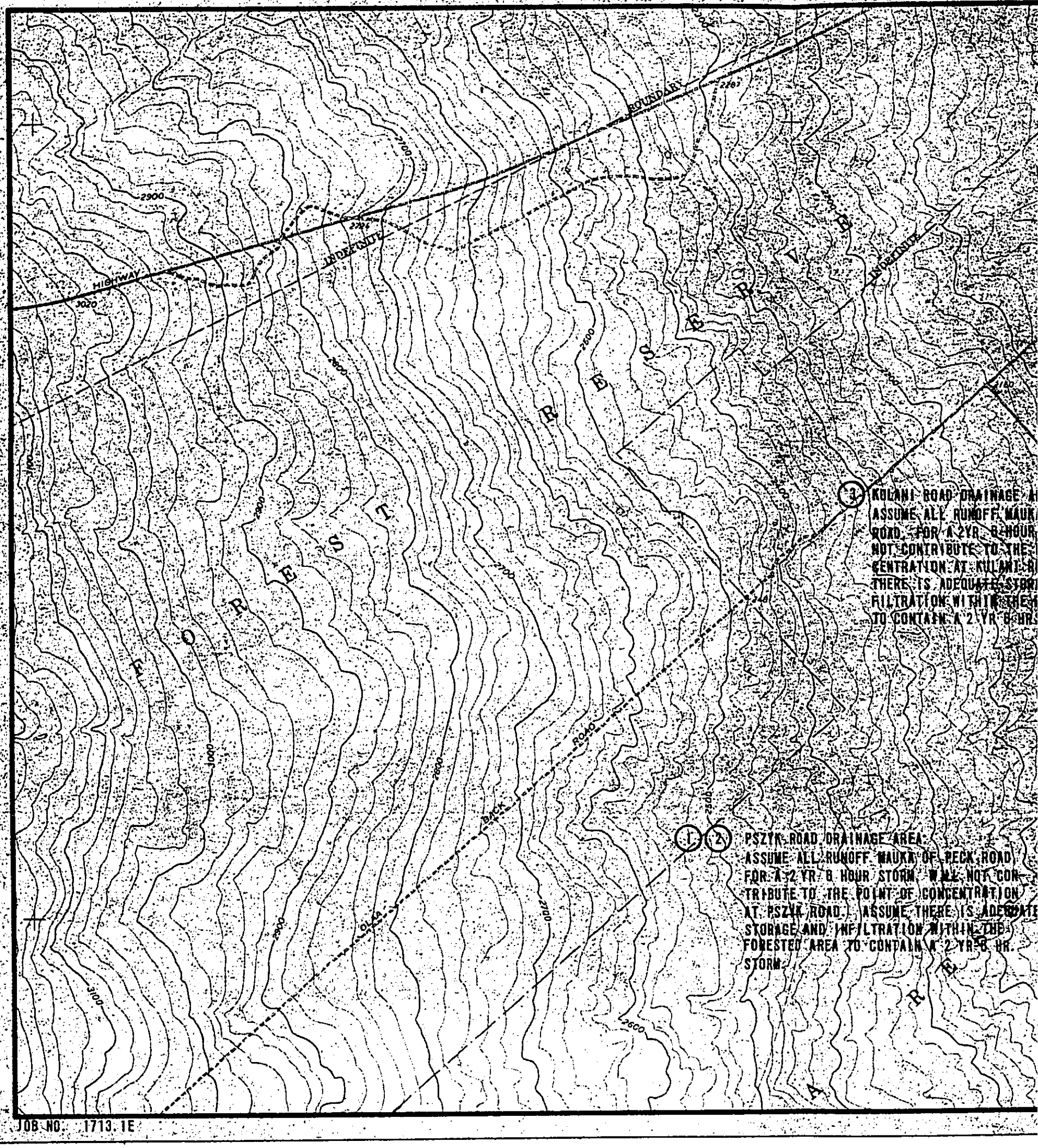
MOUNTAIN VIEW FLOOD CONTROL STUDY

FEB. 1974

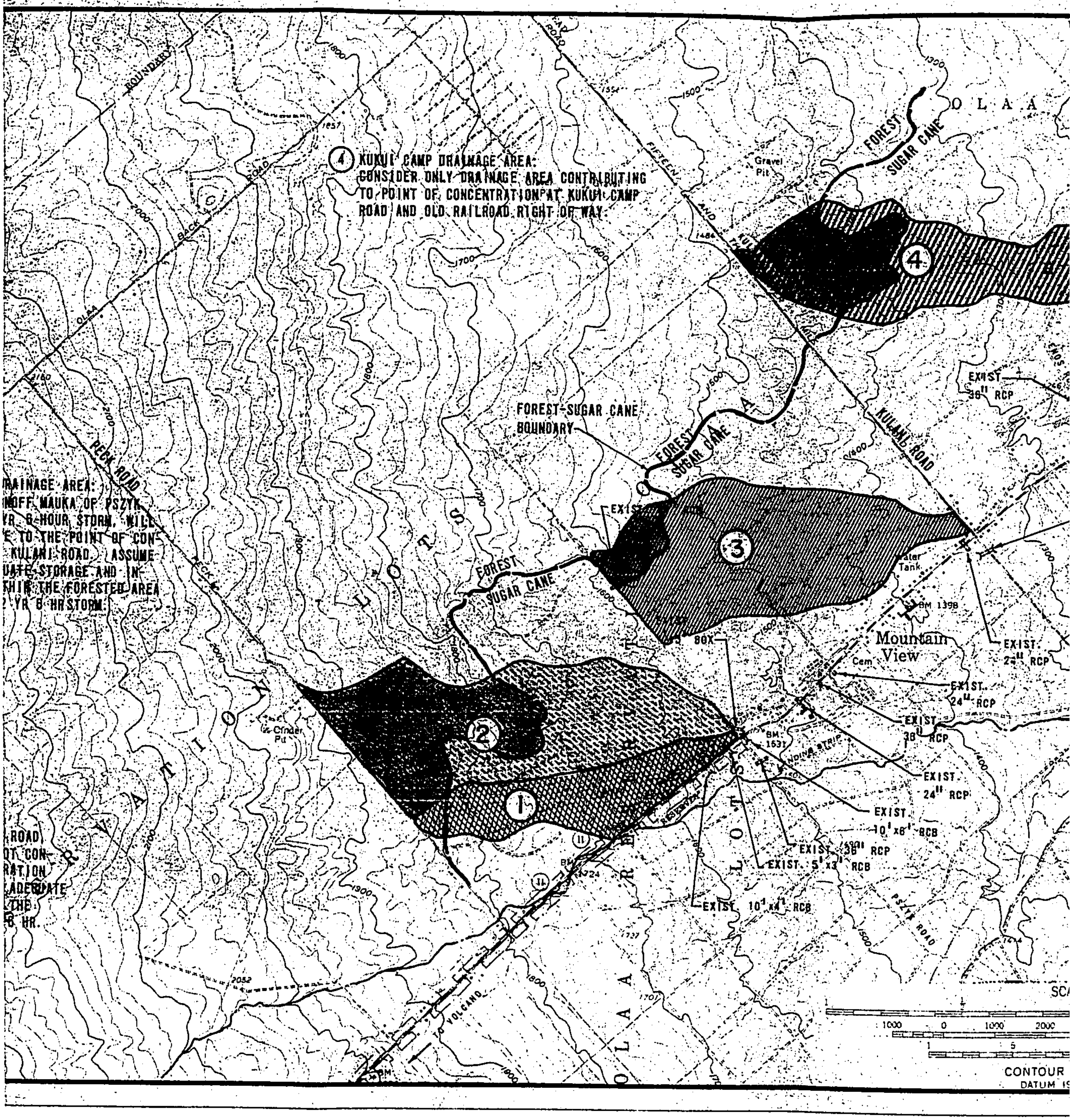
6 OF 6

APPENDIX "B"

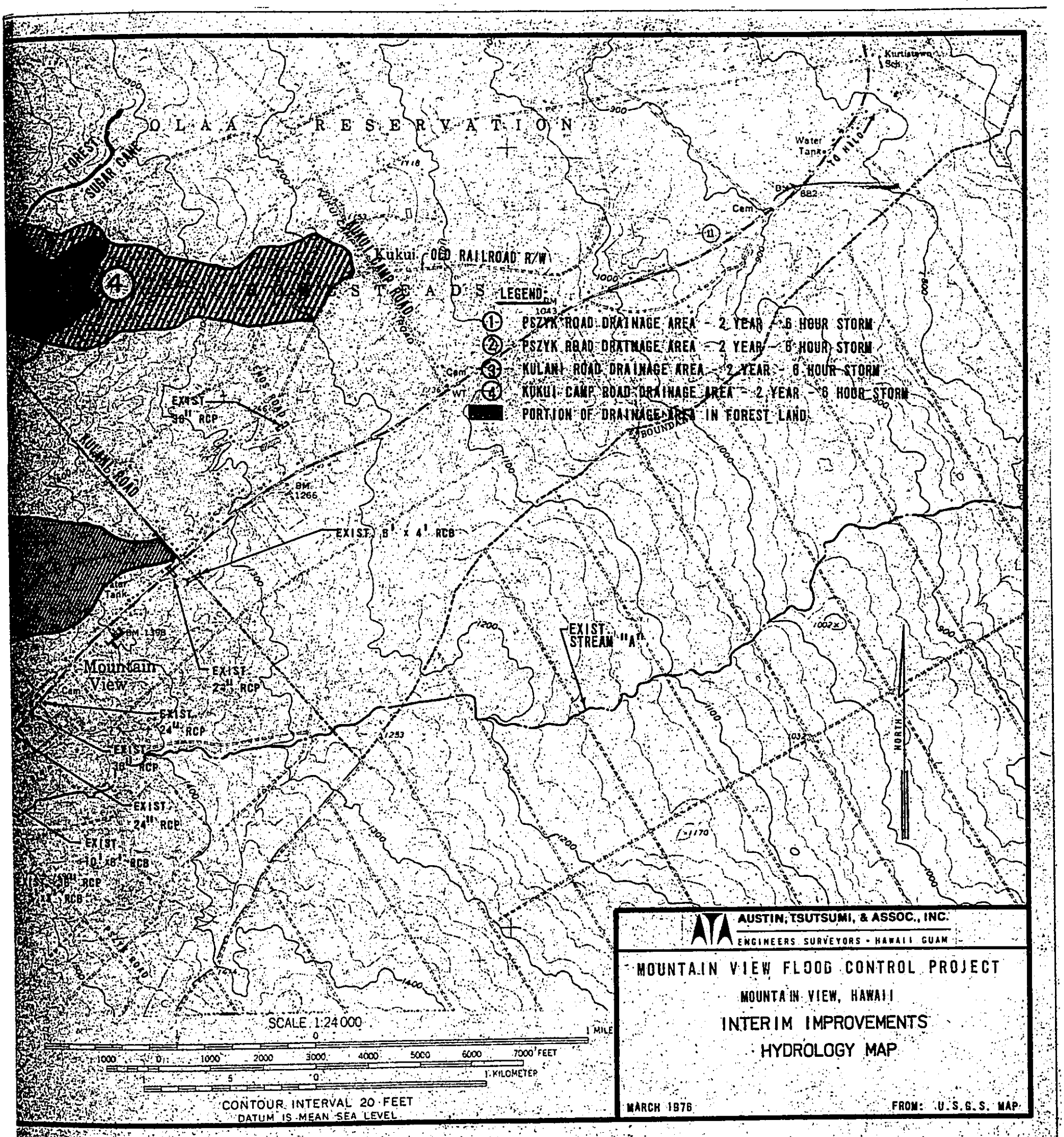
INTERIM DRAINAGE IMPROVEMENTS - CALCULATIONS AND DETAILS



JOB NO. 1713.1E



④ KUKUI CAMP DRAINAGE AREA:
CONSIDER ONLY DRAINAGE AREA CONTRIBUTING
TO POINT OF CONCENTRATION AT KUKUI CAMP
ROAD AND OLD RAILROAD RIGHT OF WAY.
RAINAGE AREA:
NOFF MAUKA OF PSZYK
YR 6-HOUR STORM, WILL
E TO THE POINT OF CON-
KULANI ROAD. ASSUME
UATE STORAGE AND IN-
THIN THE FORESTED AREA
2 YR 6 HR STORM.
ROAD
OT CON-
RATION
ADEQUATE
THE
6 HR.
FOREST-SUGAR CANE
BOUNDARY
FOREST
SUGAR CANE
OLAA
BOUNDARY
BACK ROAD
OLAA
PECK ROAD
FIFTEEN AND
KULANI ROAD
PSZYK ROAD
TO VOLCANO
Gravel Pit
Cinder Pit
Water Tank
BM 1398
BM 1631
BM 1724
Mountain View
Cem
LANDING STRIP
BOX
EXIST. 36" RCP
EXIST. 24" RCP
EXIST. 24" RCP
EXIST. 36" RCP
EXIST. 24" RCP
EXIST. 10' x 6' RCB
EXIST. 36" RCP
EXIST. 5' x 3' RCB
EXIST. 10' x 4' RCB
1
2
3
4
1000 0 1000 2000
CONTOUR
DATUM IS



AUSTIN, TSUTSUMI, & ASSOC., INC.
ENGINEERS SURVEYORS - HAWAII GUAM

MOUNTAIN VIEW FLOOD CONTROL PROJECT

MOUNTAIN VIEW, HAWAII

INTERIM IMPROVEMENTS
HYDROLOGY MAP

MARCH 1976

FROM: U.S.G.S. MAP

AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS
745 FORT STREET MALL, HONOLULU, HAWAII 96813 • P.O. BOX 87, AGANA, GUAM 96910

PROJECT: MOUNTAIN VIEW FLOOD CONTROL PROJECT
SUMMARY OF PEAK RUNOFF
2 YEAR - 6 HOUR STORM

JOB NO. 1713.2
BY KWL DATE 6-5-76
CHKD ____ DATE ____
SHT. NO ____ OF ____

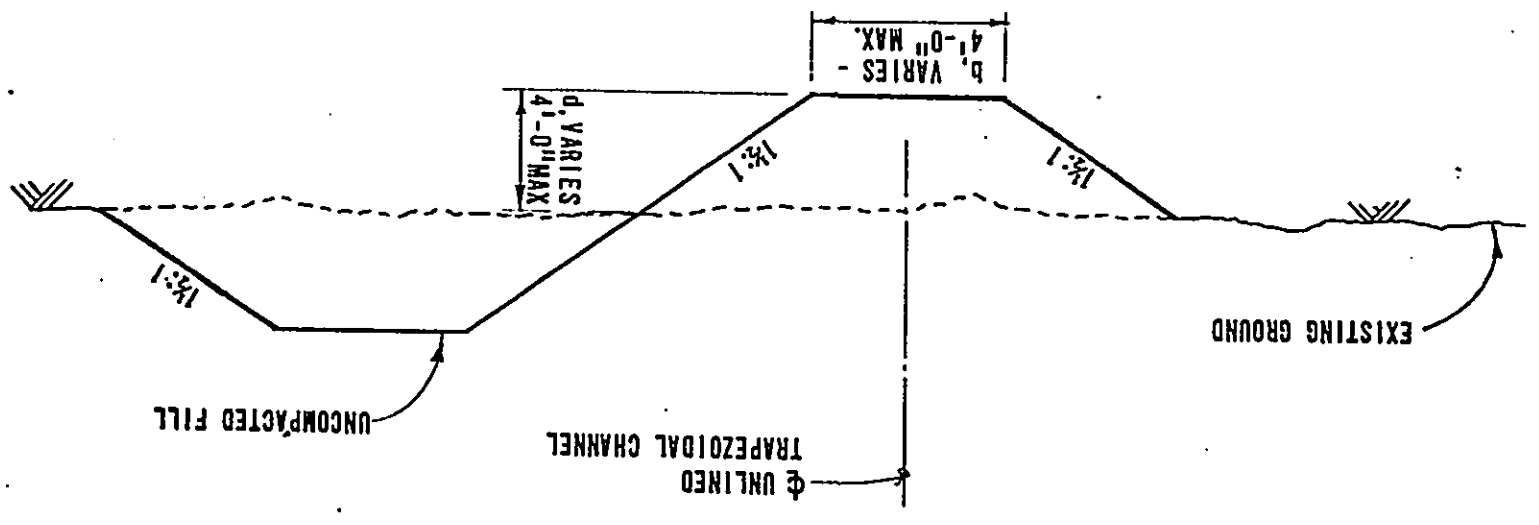
SUMMARY OF PEAK RUNOFF
2 YEAR - 6 HOUR STORM

AREA NO.	AREA ACRES	AREA SQ. MI.	L FT.	AVE. VEL. FPS.	Tc HR.	CN	Q IN.	qp CFS/IN.	Qqp CFS	q CFS
1	141	0.22	7,000	2.0	1.0	49	1.4	164	230	60
2	339	0.53	7,800	2.3	1.1	43	0.9	276	248	85
3	320	0.50	7,500	3.0	0.7	48	1.2	382	458	115
4	275	0.43	8,200	2.3	1.0	52	1.6	320	512	130

REFERENCE:

1. HYDROLOGY - NATIONAL ENGINEERING HANDBOOK, SOIL CONSERVATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE, AUGUST 1972.
2. STORM DRAINAGE STANDARD, DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII, OCTOBER 1970.

TYPICAL CHANNEL SECTION
NOT TO SCALE



PROJECT: MOUNTAIN VIEW FLOOD CONTROL PROJECT	JOB NO. 1713.2	BY KHH DATE 6-76
TYPICAL CHANNEL SECTION		CHKD ___ DATE ___
		SHT. NO ___ OF ___

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APPENDIX "C"

HISTORICAL AND ARCHAEOLOGICAL REPORTS

HISTORICAL/CULTURAL ESSAY REPORT ON

MOUNTAIN VIEW, OLA'A

By Anne H. Takemoto

In January, 1976, a historical cultural essay report was contracted by Austin, Tsutsumi & Associates, Inc. on Mountain View, Ola'a, Hawaii in relation to an interim flood control project environmental impact statement prepared by Austin, Tsutsumi & Associates, Inc. for the County of Hawaii. Anne H. Takemoto was hired as a consultant to do the history of Mountain View and a subcontract was awarded to the Bishop Museum for a walk through archaeological survey of areas under the interim flood control. These sites were visited on February 10, 1976 and interviews were conducted.

Thanked here are the many individuals who helped in the preparation of the report:

Dr. Yoshihiko Sinoto and Tom Dye of the Bishop Museum;

Dr. Herbert P. Ewaliko from the State Department of Land and Natural Resources;

Rudolph K. Espinda, Registrar, Land Court;

Charles K. Neumann III, Registrar, Bureau of Conveyances;

Agnes C. Conrad, and the staff of the State Archives;

State Representative Jack Suwa of South Hilo, Puna, and Ka'u;

Ted Kawahigashi and Akinori Nakata of Austin, Tsutsumi & Associates, Inc.;

Hawaii Councilman Tom Fujii of Mountain View;

United States Department of Agriculture, Soil Conservation Service, Hilo, Hawaii;

and Manuel Rezentes, Mrs. Fuse, and Mr. and Mrs. Yogi, residents of Mountain View, Hawaii.

MYTHS AND LEGENDS

Extant myths involve the general interior of Puna rather than Mountain View, specifically, and center around Pele, the goddess of volcanoes, and her sister, Hi'iaka. According to one version, Hi'iaka journeyed through the district of Puna on her way to Kauai to pick up Pele's lover, Lohiau. Rather than travelling along the safe coastal road of Puna, Hi'iaka chose to journey into the interior where she was ultimately forced into battle by the male witch mo'o (i.e. water spirit), Pana-ewa. Pana-ewa, a master of disguises, dressed himself as a kukui and ohia lehua tree, and had his birds spy on Hi'iaka and her companions before the final confrontation in which Hi'iaka with Pele's and her relatives' help, won the battle. The defeated mo'o was swept away to sea in a flood (Emerson, 1915:35-46).

The Pele myth illustrates the inaccessibility of Puna's interior and the lack of human habitation. The region was considered a mysterious, forbidding wooded area of kukui and ohia lehua trees, exotic birds, with many natural streams all under the control of a water spirit. The myth's physical and allegorical descriptions demonstrate the primeval regard Hawaiians had for the little travelled Puna interior where birds were sought for their feathers which were strung as lei or sewn onto capes as insignias of royalty.

Another Pele myth explains the land formation of Puna. The story involves Kamapua'a, the amorous pig-god who pursued the fiery goddess. After a fight between Pele and Kamapua'a, there was an agreement to divide the districts in Hawaii between them. Kamapua'a took Kohala, Hamakua, and Hilo, the windward side of the island moist with rain, while Pele claimed the districts overrun by volcanoes - Ka'u, Kona and Puna (Beckwith, 1970:206).

As the guardian of Puna, Pele punished all transgressors and often innocent victims. One of the most well known myths concerned one Kahawali, who competed

and lost against the volcano goddess in a match. Lava was sent by Pele, killing Kahawali, his family, and his favorite pig, above Kapoho, Puna. As the lava flowed down to the sea, a group of hula pupils were caught in the trail and perished (Beckwith, 1970:206).

In both myths, however, it is clear that although volcanoes were active around Puna, the proximity of Mountain View to Hilo protected the town from volcanic destruction. The rains of the windward side came down in Ola'a so that despite the volcanic eruptions symbolized by Pele's apparent rule, Ola'a was really outside the perimeters of the lava land, as the Pana-ewa myth indicates.

A folklore of Ola'a describes the abundance of water in the area. In nearby Kurtistown, for example, two wells containing drinking water were once used for washing, a defilement of ancient Hawaiian sanitary and religious codes, and as a result the drinking water disappeared. The water only returned once the kahuna (i.e. priest) purified and blessed the wells. Today the wells still contain fresh water (Interview: Jack Suwa, March 1, 1976).

Before the coming of the Europeans, the district of Puna was the landing site of the second migration of the Polynesian people to the Hawaiian Islands. According to legends, it was in Puna that Pa'ao, whose descendants became the high priests (kahuna nui) of all the Islands, set up the first rectangular shaped heiau and introduced insignias of royalty. Despite Pa'ao's influence, however, there are no indications that a heiau was built in Mountain View, nor are there records of one. It is obvious, on the other hand, that the malo ula, the red feather girdle worn by the ali'i nui (high chiefs) as a symbol of authority was made from the feathers plucked out of the birds in the Ola'a forests.

HISTORY: THE HAWAIIAN MONARCHY

Until the sixteenth century when Puna and all other districts in Hawaii were united under Umi-à-Liloa, the region was ruled by an autonomous ali'i (i.e. chief). The only recorded ali'i of Puna was Hua'a who, according to legend, was killed on the battlefield of Kuolo in Ke'au (Kamakau, 1961:18). His conqueror, Umi-a-Liloa, replaced the ali'i of Puna with a district chief (ali'i-ai-moku), responsible to the new monarch (Fornander, 1973:111). Hua'a's son, Lililehua continued to fight against the royal house and was defeated by Keawenui-a-Umi, the son of King Umi (Fornander, 1973:111) and the land was assigned to one Imaikalani as chief tempore over Puna.

In the early eighteenth century Alapainui, a Maui usurper, conquered Puna and placed the district under his brother, Kalaniopuu (Kamakau, 1961:77) who succeeded to Alapainui's throne after the Maui conqueror had died. Kalaniopuu then placed Puna in the hands of an ali'i-ai-moku.

It was in the last years of Kalaniopuu's reign that a rebellion occurred, involving the chief of Ka'u and Imakakoloa, chief of Puna. Imakakoloa "seized the valuable products of his (Kalaniopuu's) district, which consisted of hogs, gray tapa cloth ('eleuli), tapas made of mamaki bark, fine mats made of young pandanus blossoms ('ahu hinalo), mats made of young pandanus leaves ('ahuao) and feathers of the 'o'o and mamo birds of Puna" (Kamakau, 1961:106). The conspiracy was crushed when the head of the conspirators, the chief of Ka'u, died of shark bites.

Economically, it is clear that the ancient Hawaiians prized numerous plants and birds of Puna found in the vast forests. And, once the rebellion was crushed, Kalaniopuu probably took royal possession of the district. Before his death, however, he divided his kingdom between his son, Kiwalao and his nephew, Kamehameha I. In this division, Kiwalao received Hilo, Puna, and Ka'u (Fornander, 1973:299).

Upon Kalaniopuu's death, Kiwalao inherited all his father's lands, which were then redivided among various chiefs as was customary. Kiwalao, however, influenced by his uncle, Keawemauhili, chief of Hilo, excluded Kamehameha, Keoua, and the Kona chiefs--men who normally received some land--from the distribution (Kamakau, 1961: 120, 121). Keoua, one of the excluded chiefs, for reasons still unknown, then killed Kamehameha's retainers, sparking a war. In the battle of Mokuohai in 1782, Kiwalao and Keawemauhili joined forces with Keoua against Kamehameha and lost. Kiwalao was killed and the island was divided by the three remaining chiefs. Kamehameha took Kona, Kohala and part of Puna; Keoua held Ka'u and part of Puna, and Keawemauhili added portions of Hamakua and Puna to his Hilo possessions. In this division, Ola'a fell to Keawemauhili (Kuykendall, 1968:33). In 1790, Keawemauhili joined Kamehameha as an ally in a war expedition in Maui, and angered Keoua who felt the balance of power shifted against him. Keoua therefore declared war against Keawemauhili, killed him in battle, and took possession of Ola'a. In 1791, however, after a series of stalemate battles between Kamehameha and Keoua, Keoua was treacherously murdered by Keeaumoku, a father-in-law and ally of Kamehameha. Keoua was killed by Keeaumoku's spear as he disembarked from his canoe on his way to the peace table with the future conqueror of Hawaii (Kuykendall, 1968:37-38). With Keoua's death, Kamehameha became master of all of Hawaii including Ola'a.

During Kamehameha's rule, Ola'a was probably held by the monarch but entrusted to the appointed governors of Hawaii, first Mahoa and later John Young (Keoni Ana), when he was away from the island (Kuykendall, 1968:53-54).

In 1819, Kamehameha passed away and the kingdom fell to his son, Liholiho. The land was divided earlier among Liholiho and several loyal chiefs with Liholiho receiving the hereditary island of Hawaii as his patrimonial lands. When Liholiho died, his possessions passed to the next successor, Kamehameha III.

Before and during Kamehameha I's rule, Ola'a was reserved for the monarch who coveted the fabulous birds in the area as well as the products from various trees and leaves. Cloaks made from the mamo feathers were "reserved exclusively for the king of a whole island" as his battle and ceremonial cloak (Malo, 1971:77). The o'o and mamo feathers were worn as a cloak by the ali'i in battle or for ceremonial occasions, as a lei (i.e. necklace and wreaths) by women of rank, and as decoration of the Makahiki idol (Malo, 1971:38). Out of the trees and leaves, tapas and mats were made which were used by everyone.

When sandalwood in Hawaii was exported to China, the trees of Ola'a were cut down and sold in China. Chaplain Charles Stewart of the U.S. Vincennes mentioned that in October of 1829 the chief of Ola'a named Kinai and family were away in the woods cutting sandalwood (Olson, 1974:75). Stewart observed that the material possessions of the chief of Ola'a had improved subsequent to the sandalwood expeditions, indicating that the price received for the wood allowed the ali'i a good standard of living for those times. Kinai's house had separate rooms covered with native cloth and mats probably from the trees and plants of the woods, books in the native tongue bound and wrapped in native cloth and slate, furniture, chintz, etc. (Olson, 1974:76-77). Economic prosperity derived from the sandalwood drastically changed the life-style of the chief of Ola'a within four years.

The natural resources of Ola'a may explain Kamehameha III's decision to keep Ola'a as Crown Lands, i.e., the personal property of the ruling monarch, when the Mahele, land division of all of Hawaii, was instituted. As Crown Lands, Ola'a was to be held by each succeeding monarch and the income derived from the Crown Lands was the personal possession of the monarch, not the state.

American Calvinist missionaries who landed in the Islands in 1820 set up stations on each island, but in the beginning rarely managed to travel far into the woods of Ola'a. This was changed by 1835 when Titus Coan arrived and travelled throughout the districts of Hilo and Puna preaching the gospel. Coan successfully began a great revival movement baptizing hundreds of natives (Kuykendall, 1968:115) and organizing outlying parishes such as Ola'a into small congregations administered by native assistants (Kuykendall, 1968:115).

Besides missionaries there were also others travelling through Ola'a who made a stop in Mountain View on their way to the volcano. Since the journey from Hilo to the volcano at Kilauea took two days, either by foot or by horse, through incredibly difficult terrain, there were several half-way houses for itinerants who needed a place to stay overnight. One native grass dwelling was managed by a Hawaiian named Hawelu who did horse-shoeing as a sideline. Hawelu was given the title "Kia manu Ola'a, official bird-catcher for the king in the Olaa district" (Olson, 1974:75).

One of the travelers who wrote of the area was William Ellis. Ellis journeyed through Puna with Chamberlain, Ely, and Blatchy, who preached in Ola'a before Coan arrived. On their way to the volcano, Ellis noted that the ascent towards the volcano was gradual, the soil uniformly rich and fertile with two or three extensive woods, several pools, and small currents of fresh water (Ellis, 1969:307).

In 1837, Laura Fish Judd stopped in Mountain View on her way to the volcano from Hilo but her description was very different from that of Ellis'. She and her companions spent an uncomfortable night in Mountain View in a large thatched hut which had neither window nor door. Throughout the night, natives whispered and talked, fleas bit, and at midnight a huge, black hog unsuccessfully tried to enter the house (Judd, 1928:50).

Comments on Mountain View and the inhabitants varied greatly from source to source; some were pleased with the village and the accommodations, others were very critical, as Laura Fish Judd had been. In 1860, for example, a group of people travelled to Kilauea and stopped at the halfway house in Mountain View. Around the hut, natives were burning fires and inside the house mats were used as beds. The anonymous writer jokingly stated of the famous ti leaf swamp: "to the manufacturers of okolehao (Hawaiian moonshine), this might be the most attractive part of the journey, for there is ti-root enough here to manufacture liquor sufficient to kill off the whole population of the Kingdom" (Our Trip to Kilauea, 1860). Ten years later, Frank Vincent journeyed through Mountain View and favorably commented on the drinking water, native food, beds, and the special lomi-lomi (Hawaiian massage) available to the weary traveler (Vincent, 1875:71). J.W. Boddam-Whetham, on the other hand, called the thatched house "a hovel" standing in the swamp with sedge growing (Boddam-Whetham, 1876:11).

A new carriage road from Hilo to Kilauea appeared in the 1880's and more visitors travelling to and from Kilauea passed through Mountain View. Thrum mentioned the native school standing opposite the halfway house in Mountain View. Samuel Kneeland, on his stop in Ola'a described the thatched grass, straw and screw-palm leaves house and the wild herds of cattle further toward the volcano (Olson, 1974:78). In 1890, Thurston travelled through Ola'a's woods on the horse trail which crossed the uncultivated, uninhabited ti swamp. (Olson, 1974:61).

The entire area of Ola'a was always sparsely populated in the eighteenth century since the woods were reserved for the monarch. The native population, however, diminished even further in the nineteenth century. According to the first tax records of 1859 on Ola'a, there were only 34 families in Ola'a; in

1870 only 34 families, and in 1880, the population fell to 29. Because the forests and ti swamp made walking difficult, the residents owned a number of horses and mules, thus allowing them greater mobility than the general native population living in the countryside at that time. In 1859, there were 61 horses and 13 mules for the 43 families; in 1870 34 families owned 91 horses and 43 mules while in 1880, 29 residents had 55 horses.

Descriptions of Ola'a from the tax records before 1890 do not make any mention of a taro field or farming of any sort. The population may have farmed, but it was not noted in the tax records; or the local population may have supported themselves mainly by working on the pulu, i.e. fern, business flourishing in Puna, as well as making Hawaiian crafts and catching birds. The pulu industry, set up by George W.C. Jones, William H. Reed, Charles and Julius Richardson, L.G. Kaina, and J.C. King, supplied all of the Islands with dried ferns used as stuffing for beds, pillows, etc. (Olson, 1974:29). The abundance of trees and plants, as well as birds probably allowed the Ola'a residents to continue the livelihood that their ancestors held before the coming of the Europeans. Thus, although travelers frequently stopped over, they brought little change to the lives of the residents.

In 1890, probably because of the new carriage road, the population of Ola'a increased. There were 36 families, 2 of whom were Caucasian. The families owned 22 horses, 12 donkeys, and 12 mules. The decrease in horses and the increase in pack animals may signify that the residents no longer used the roads to commute to work, but instead grew and manufactured goods which would be carried to Hilo on the hardier and more steadfast animals such as mules and donkeys. The hypothesis may be supported by the 1890 tax records which stated that in Ola'a two families were raising awa (a Hawaiian narcotic drink made of the awa root), and one family raised various crops - which would be exportable to Hilo.

The history of Ola'a during the Hawaiian Monarchy is one of very little change until the 1890's. Ola'a, as part of Puna, was conquered by Umi-a-Liloa and separated from Puna by Keawemauhili. It was ruled independently only when Hawaii was not unified under a strong monarch. After Kamehameha conquered all of Hawaii, the 'ili of Ola'a remained in the personal possession of the Hawaiian monarchs, prized for the rare feathered birds in the forests, sandalwood, arts and crafts made from the natural resources of the area, and the trees and plants growing in the dense forests and swamps. Although many visitors made a stop-over before proceeding to Kilauea or Hilo, the natives were not affected by their brief stay and Ola'a remained a Crown Land possession with a predominantly Hawaiian population following the life-style and occupation of their ancestors until the last two years of the Hawaiian Monarchy. The old way of life, preserved in part because the regions were part of the Crown Lands, changed drastically once the monarchy was overthrown and the Crown Lands were seized by the new government.

HISTORY: 1893 TO PRESENT

When the last Hawaiian monarch, Queen Liliuokalani, was deposed the new rulers of the Provisional Government seized the Crown Lands, without any compensation. Under the Provisional Government and Republic of Hawaii, some lands were quickly sold to sympathetic followers of the new governments for fear that with Annexation to the United States, the Crown Lands would be returned to the ex-monarch and her heir, Princess Kaiulani.

When Ola'a was bought by many Caucasian residents during the Crown Land speculation the entire character of the region changed drastically from a sanctuary of old monarchical Hawaii to a modern plantation town and finally a community with many ties to Hilo, capitol of the County of Hawaii. This began when

the new owners, people of European ancestry, settled in Ola'a at the turn of the century. According to the 1899 tax records, 102 white occupants (which included seven Portuguese residents) owned land while only a handful of the 94 Chinese and 45 remaining Hawaiians held any land in Ola'a. Of the 453 Japanese, only 4 owned land; the majority of the Japanese were laborers working for the larger land holding companies owned and administered predominantly by the whites.

According to one resident, Dr. Nicholas Russel, there were 127 white and native planters in Ola'a using 21,182.5 acres of land while 25 Japanese planters cultivated 785 acres of land. The white and native coffee planters on the average held over 166.791 acres of land each while the average acreage the Japanese held was 31.40 acres. With large acreage owned by the whites, it is easily extrapolated that most of the Chinese, Japanese, and many of the Hawaiians worked as laborers for the larger plantations owned by independent planters and half-a-dozen incorporated companies (Russel, 1899:121).

Of the 22,670 acres of land the Provisional Government opened for settlement in Ola'a and sold in small 50 to 100 acre parcels, 5,915 acres were used for coffee cultivation. The bulk of the land was used for sugar cane. Only 670 acres were used for banana and citrus fruits (Russel, 1899:125). Thus, sugar cane planting dominated Ola'a and by the 1910's forced out most of the coffee planters (Telephone Conversation: Tom Fujii, April 19, 1976).

Sugar cane growing was facilitated by the soil and water. As Russel notes, the soil was "remarkable for its extreme porosity. After the heaviest rains one can walk over plowed fields in slippers. For this reason for the gentle slope of the district towards the sea, there is no stagnant water of any description. The numerous springs carry down the waters towards the sea through occasional

natural ditches and soil-fissures. The principal water supply comes from rain water collection" (Russel, 1899:122).

The cultivated lands, however, were just a small part of Ola'a. Forest still covered most of the region with ohia lehua tree fern, guava and waiwai making up the bulk of the trees since the sandalwood was stripped. Paper mulberry, pandanus, palm trees, and grass also grew. Native bananas, wild coffee, orange, ginger, guava, agava, awa root, passiflora, and Olona shrub made up the rest of the flora (Russel, 1899:123). Ranching was done on a small scale in Ola'a and horses, cattle, chickens and hogs were raised. There was also a dairy to supply milk for the town. Most of the ranchers were the Portuguese who worked for the sugar company (Interview: Jack Suwa, March 1, 1976). Stray goats and horned cattle and occasionally mongoose and rats wandered through the fields (Russel, 1899:126). The birds remained in the forests although many were probably destroyed by the new land speculation.

Of the land directly involved in the interim flood control, seven parcels were sold during the Republic of Hawaii. One parcel was sold to Capital Coffee and Commercial Company in 1895 while the other 6 pieces were sold to Dr. Nicholas Russel, W. Wolters, A.W. Wilson, W.D. Alexander, Jr., G.D. Lewis, and one to a Japanese named Y. Okino. Under the Territory, two more parcels were sold at auction, one to Ola'a Sugar Company and the other to Seichi Mukai, who assigned it to Isao Nakayama. The last parcel of land in the interim flood control plan was given in an exchange deed to a Japanese couple in 1951, Shigeru and Takeyo Kotomari, for their land in Mountain View. These parcels reflect fairly accurately the ethnic composition of the inhabitants and landowners in Mountain View through the twentieth century. In the beginning, land was first owned by companies and whites, but as time progressed, the parcels of land were sold to the Japanese residents of the area.

The bulk of the population at the turn of the century were male Japanese plantation workers who were not married. Chinese laborers who worked in Mountain View left for the cities by the 1910's (Telephone Conversation: Tom Fujii, April 19, 1976). In 1901, families living in Mountain View were mostly white and Portuguese as evidenced by the 1901 petition requesting a twenty-two mile road, school house, church, and civic area (Executive File, Letter to the Governor of Hawaii from 25 families in Ola'a, Hawaii, dated October, 12, 1901). By 1906, the Territory received land from Ola'a Sugar Company, Ltd. for the schoolhouse (Executive File, Letter to Bishop and Company, Agent for Ola'a Sugar Company, Ltd. from W.H. Babbitt, Superintendent of Public Instruction, August 25, 1906) and in the 1920's the Territory built the intermediate school addition (Executive File, Letter to C.P. Iaukea, Acting Governor of Hawaii, from N. Bailey, Commissioner of Public Lands, March 13, 1920).

In the twenties and thirties, children came to the schools from the Ola'a district. When the population began to slack off in the late forties, children from as far as the Volcano district of Kilauea came to Mountain View for their elementary and intermediate education. High school students, however, were bused to Hilo by independently contracted bus companies who also ran a scheduled route to Hilo between school hours (Interview: Akinori Nakata, March 10, 1976).

In 1898, Ola'a Sugar Company was created and the following year was incorporated with F.B. McStocker as manager. Despite Ola'a's 20,000 acres of land, which included limited ranching by the hired Portuguese, the company seemed almost perpetually in trouble after its first sugar harvest. The cane was attacked by Lahaina disease and only a third of the crop was saved. In 1916 and 1917, leafhoppers destroyed 10,000 tons of sugar (Sugar News, 1952:11). Thus, before 1920 the company seemed to have a rough financial road. The one successful

venture in this period was the bagasse paper mill operating in 1919. It was the first and only one of the "early mulching paper experiments with cane plant and ratoon crops (which) . . . was a forerunner of mulch paper developed for use in Hawaii's pineapple industry" (Sugar News, 1952:11).

The earliest workers of the plantation were for the most part Japanese contract workers from Hiroshima (Interview: Akinori Nakata, March 10, 1976). Many returned home to Japan after their contract expired but some stayed and raised their families, working as independent sugar planters using the equipment and the sugar mills of Puna Sugar Company (Telephone Conversation: Tom Fujii, April 9, 1976). Japanese from other prefectures came later.

Some of the early Japanese laborers working for the plantation were involved in the strikes of 1920 which attempted to create better wages and working conditions for all laborers of the sugar company. In 1920, one of the most interesting and paradoxical events growing out of the strike movements occurred in Ola'a. On June, 3, 1920, the house of one J. Sakamaki, an office clerk with Ola'a Sugar and an alleged anti-strike agitator, was bombed. Fifteen Japanese labor leaders were arrested, charged with criminal conspiracy, and found guilty after twenty-five ballots were taken by the jury. The presiding magistrate, Bunks, sentenced the men to a term in prison of four to ten years, but the defendants appealed to the Territorial Supreme Court. When the Supreme Court sustained the lower court's verdict, the defendants petitioned Federal Judge J.B. Poindexter, who rejected their writs of habeas corpus. The men finally appealed to the U.S. Supreme Court, but they were refused a hearing and were imprisoned. Twelve were later paroled in 1923, but two were released in 1925 on the condition that they leave Hawaii for Japan (Wakukawa, 1938:263-64). Thus, the Ola'a Dynamite Case did much to focus on the consequences of strikes throughout

Hawaii and crushed the spirit of any further striking for another twenty-six years.

The laborers continued to work on the plantations and most of the population was employed by Ola'a Sugar Company. The dairy and coffee plantations of the turn of the century disappeared and Mountain View became solely a plantation town. The tradition of the halfway house remained but the grass hut was replaced by a house built in 1891 by J.R. Wilson, who owned and operated Volcano Stables (Olson, 1974:75). Later, as Ola'a Sugar expanded, even the halfway house was abandoned; people took trains to Hilo and the Volcano and the old paved road was infrequently used (Telephone Conversation: Tom Fujii, April 19, 1976).

After Ola'a Sugar Company began planting in Mountain View, flooding became a greater problem, despite the plantation's attempts at drainage and flood control. Residents of Mountain View recall periodic floods, but especially remember some of the more severe ones in the 1930's (Interview: Manuel Rezentes, February 10, 1976). Since the flooding of Mountain View occurred regularly, many residents built houses on stilts. Thus, although the floods did do material damage, they were not responsible for any deaths.

After World War II, several important events affected plantation life. In 1946, the first big post-war strike for betterment of wages began (Interview: Jack Suwa, March 1, 1976). During this period, the workers began soup kitchens and some small flower growing businesses (Interview: Akinori Nakata, March 10, 1976). After the strikes were resolved, however, the plantation began hiring Filipino immigrants who lived in the single male barracks (Interview: Akinori Nakata, March 10, 1976) and replaced many of the workers with machines (Star-Bulletin, November 24, 1953:21). The strike and the subsequent plantation action changed the entire demography of Mountain View. Many of the residents

left to seek jobs elsewhere, commuted to new jobs in Hilo, or stayed and raised fruits and flowers.

In 1959, the sugar companies in Hawaii began to lose their high profits and in Ola'a, many of the Filipino workers were sent back to the Philippines. Ola'a Sugar Company also changed its name to Puna Sugar Company in 1960, hoping with the change of name its financial problems would be resolved (Interview: Jack Suwa, March 1, 1976), especially since Ola'a was considered a kapu (i.e. sacred and forbidden) name to the Hawaiians. As Puna Sugar Company, the plantation sold much of its land for housing developments and to private individuals who would raise the sugar cane and have it harvested and milled by the plantation. The old labor camps were abandoned since there were new worker-land owners, and the old railroad which carried sugar to the mills was torn up, replaced by trucks on the newly built highways. The train station was converted into a house (Interview: Mrs. Fuse, February 10, 1976) and the population of the town was sharply reduced to less than one-tenth its former size during its heyday.

Major flooding in Mountain View began sometime in the twentieth century. Although it seems obvious that the town experienced major flooding in the 1930's during the peak of the sugar production, the plantation did make several attempts to improve drainage and prevent ponding (Letter from U.S. Department of Agriculture, April 7, 1976). Once the plantation began to cut back on its cultivation, flooding became less noted and the inhabitants of the town left, commuted to Hilo, or became small garden farmers. In all cases, Mountain View, once so far away from Hilo that it was a whole day's journey, became one of Hilo's bedroom communities once better roads were built. The population changed, the ethnic and occupational status changed, but the major problems of flooding remained, although the floods were reduced once planting diminished.

RECOMMENDATIONS

The history of Mountain View is of marginal importance with the exception of the Halfway House on the Old Volcano Road. This house, however, is outside the area of the proposed drainage master plan. For the master plan, it is recommended that a plaque be erected by the now abandoned house, explaining its history, with further research into the question of possible preservation and restoration.

In the Ola'a forest reserve owned by the State of Hawaii, some of the earlier Hawaiian fauna and flora in Mountain View still grow, but the fabulous birds are no longer there.

Moreover, the drainage master plan would help preserve an interesting aside in Mountain View's history. Its proposal may save the train depot, used by the plantation and converted into a house, from further flooding and early destruction. It is therefore concluded that work on the interim flood control would in no way harm any historical site in Mountain View and would enhance or help preserve some marginal ones.

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ARCHAEOLOGICAL RECONNAISSANCE SURVEY OF PLANNED FLOOD-CONTROL IMPROVEMENT AREAS IN MOUNTAIN VIEW, ISLAND OF HAWAII

by
Tom Dye

Department of Anthropology
Bernice P. Bishop Museum

Prepared for
Anne H. Takemoto Historical Research

Reconnaissance survey of the Mountain View area, Island of Hawaii, was done at the request of Anne H. Takemoto Historical Research, Honolulu, by the Department of Anthropology, Bernice P. Bishop Museum. The purpose of the reconnaissance survey was to locate and record any archaeological features within the survey area. The significance of these features could then be interpreted and recommendations made concerning the need for further archaeological research and/or preservation. Fieldwork was conducted on February 10, 1976.

The survey area included three drainage system areas proposed by Austin, Tsutsumi and Associates, Inc., to the County of Hawaii for control of flooding in the Mountain View area (see map, Fig. 1). These proposed drainage system areas are the Pszyk Road drainage system, the Kulani Road drainage system, and the Kukui Camp Road drainage system. They encompass an area of approximately 9.4 square kilometers. Six proposed retention-basin areas within the three drainage-system areas, labeled 2A, 3A, 3B, 4A, 5 and 7 on the map, are the localities where the most intensive construction activity is proposed. Portions of the Olaʻa Forest Park Reserve are located within the proposed Pszyk Road drainage system.

The three areas were reviewed by driving to various vantage points and carefully looking over the survey area. The six proposed retention-basin areas were pointed out by a representative of Austin, Tsutsumi, and Associates. The portions of the Olaʻa Forest Park Reserve within the survey area were walked through completely.

The survey indicated that most of the proposed drainage-system area is in sugarcane cultivation. Only the Olaʻa Forest Reserve and the small, scattered communities that make up Mountain View are not presently cultivated. The methods used to harvest and cultivate sugarcane usually destroy all but the most imposing prehistoric Hawaiian stone structures. Thus, any trace of prehistoric agriculture, temporary habitation sites, or workshop areas would have been quickly and completely destroyed with the introduction of cultivated sugarcane. These facts make the visual survey described above a totally adequate field technique. No stone structures were located within the sugarcane fields.

The portion of the Olaʻa Forest Park Reserve within the survey area is a narrow strip of land along the Hilo-Volcano Highway, dominated by a tall stand of Eucalyptus trees. Walk-through survey of the area showed it to be subject to frequent water wash and lacking any archaeological features. A drainage ditch has been built up in several areas in the forest reserve. Figure 2 shows one such built-up portion.

No archaeological features were discovered during the fieldwork, and no evidence of any prehistoric exploitation of the area was found. Therefore, if the proposed Austin, Tsutsumi, and Associates, Inc. flood-control plans are implemented, no additional archaeological research need be done. However, if design changes necessitate localized improvements in areas not presently under sugarcane cultivation and outside of the Olaʻa Forest Park Reserve, further archaeological reconnaissance survey should be undertaken.

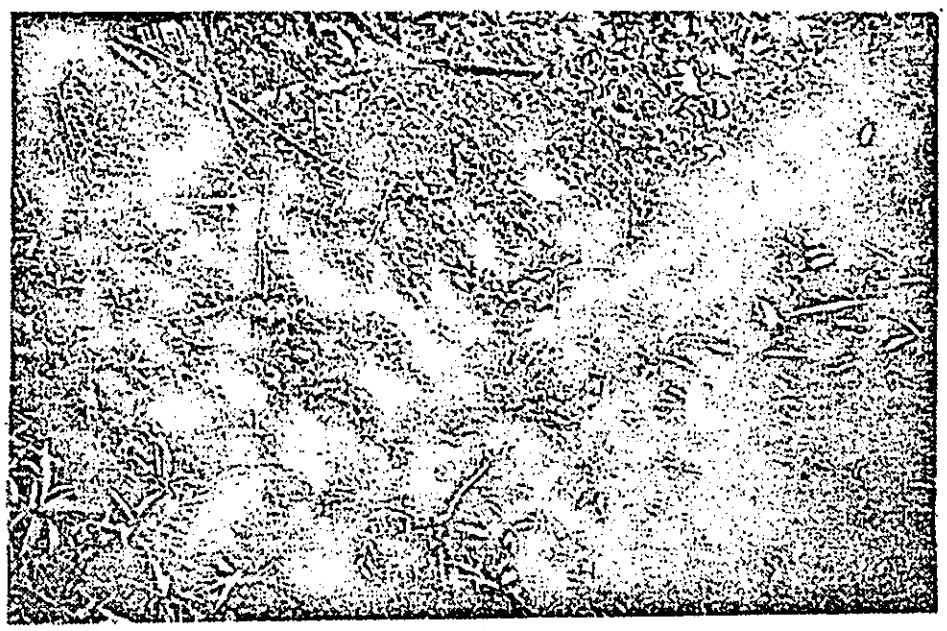

Fig. 2. BUILT-UP PORTION OF DRAINAGE DITCH (HISTORIC FEATURE) IN MOUNTAIN VIEW AREA, ISLAND OF HAWAII.

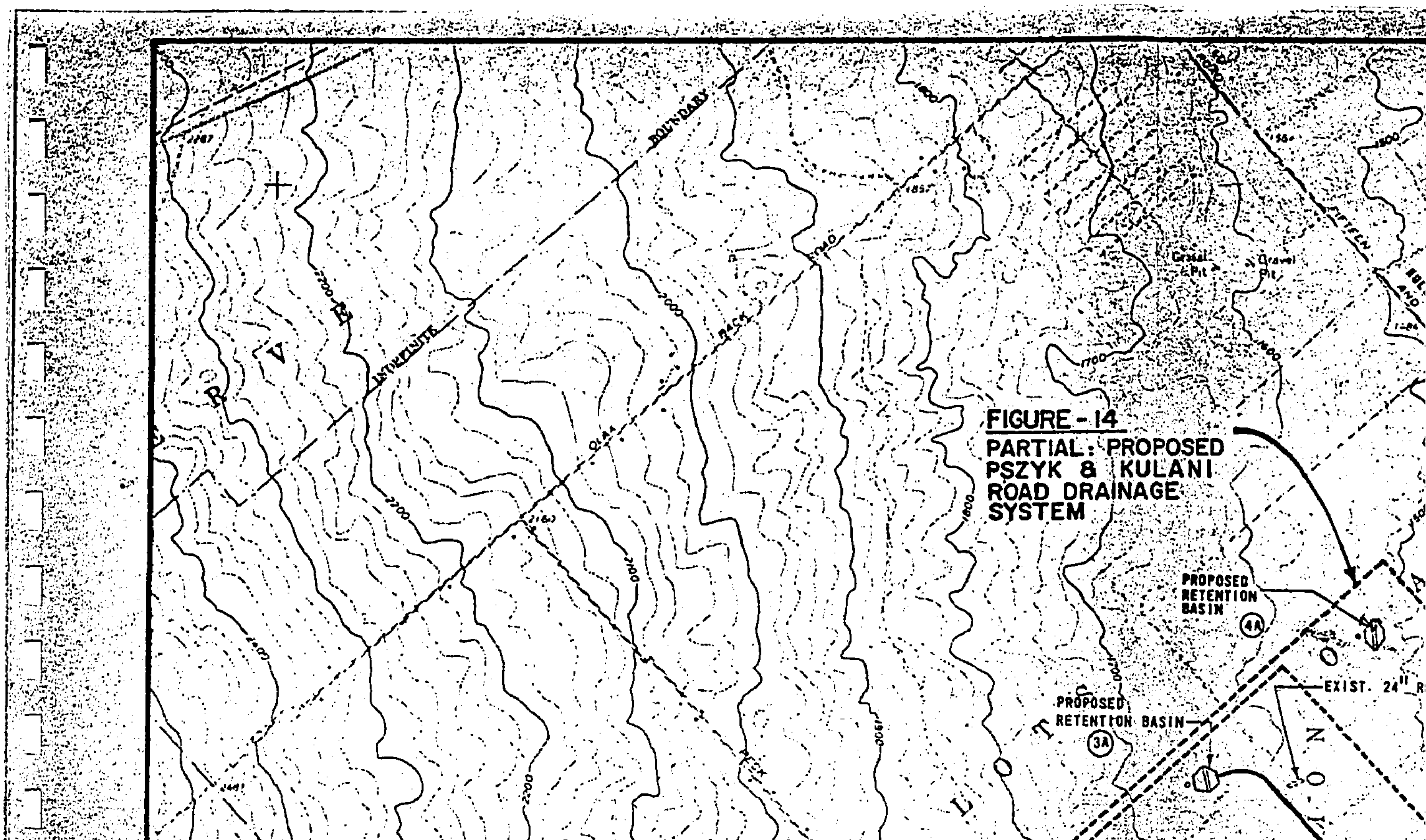
FIGURE - 14
PARTIAL: PROPOSED PSZYK & KULANI ROAD DRAINAGE SYSTEM
PROPOSED RETENTION BASIN
4A
EXIST. 24" R
PROPOSED RETENTION BASIN
3A
EXIST. SUMP
EXIST. 10'x8' RCB
EXIST. SUMP
PROPOSED RETENTION BASIN
2A
11
LEGEND.
EXIST. RCB
EXIST. RCP
EXIST. STREAM
EXIST. SUMP
PROPOSED RETENTION BASIN
PROPOSED SUMP
PROPOSED CHANNEL
PROPOSED CULVERT
Gravel Pit
Gravel Pit
Cinder Pit
BOUNDARY
INDEFINITE
ROAD
TO VOLCANO
RESERVATION
LOTS
1700
1800
1900
2000
2100
2200

JOB NO. 1713E

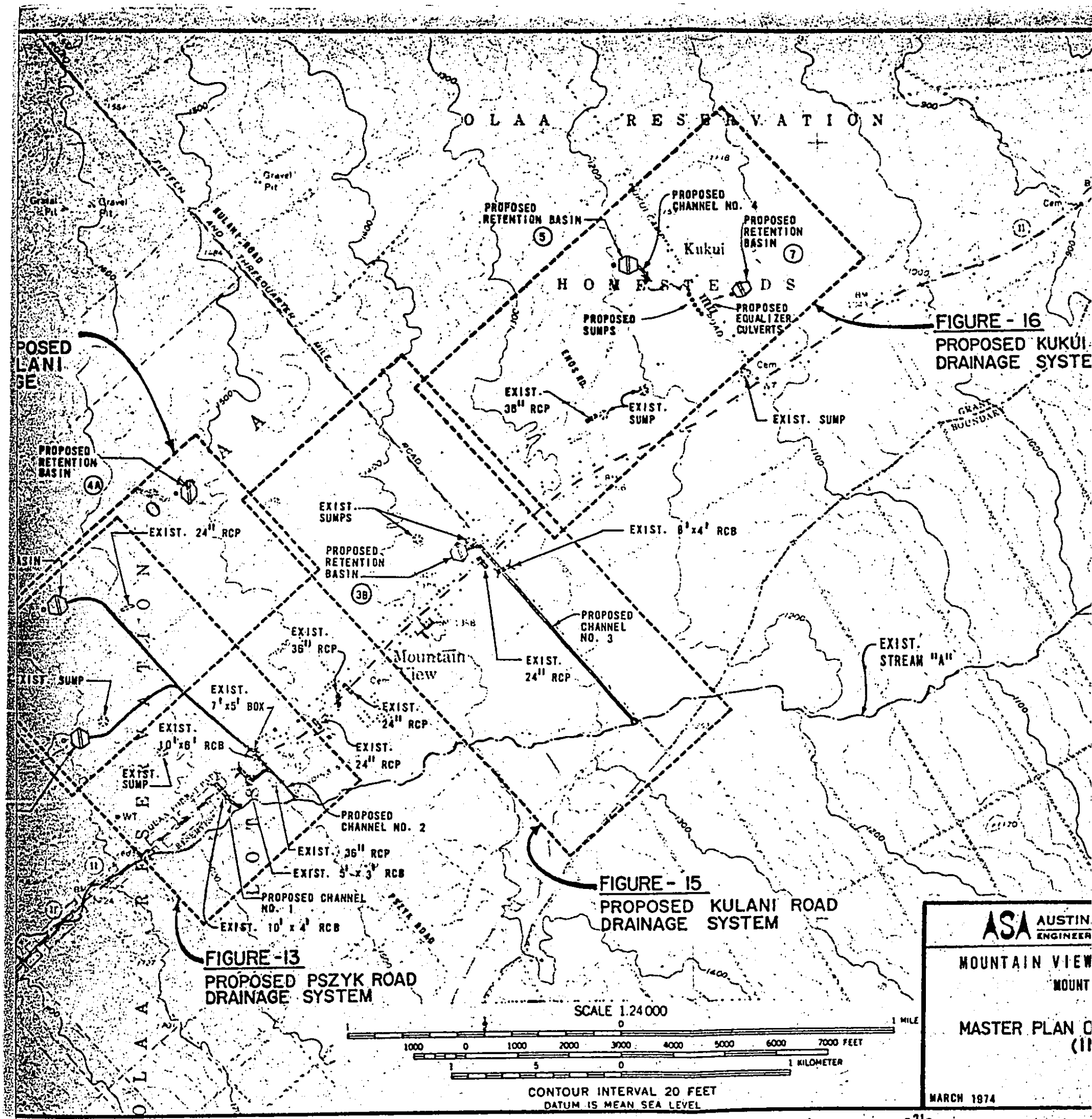

FIGURE - 16
PROPOSED KUKUI DRAINAGE SYSTE

FIGURE - 15
PROPOSED KULANI ROAD DRAINAGE SYSTEM

FIGURE - 13
PROPOSED PSZYK ROAD DRAINAGE SYSTEM

ASA AUSTIN ENGINEER

MOUNTAIN VIEW
MOUNT

MASTER PLAN O
(I

MARCH 1974

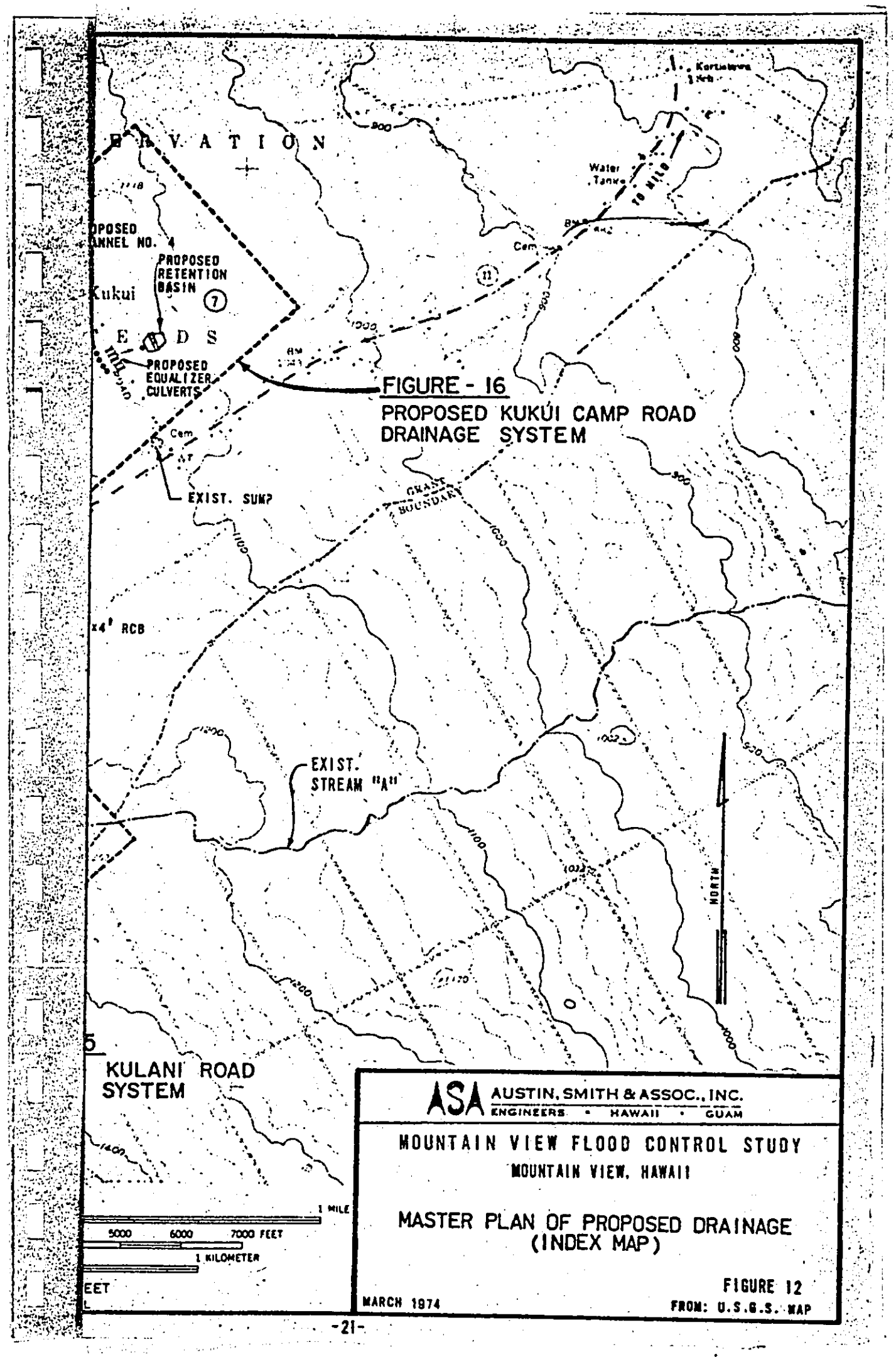

FIGURE - 16
PROPOSED KUKUI CAMP ROAD
DRAINAGE SYSTEM

APPENDIX "D"

COMMENTS AND RESPONSES

MEMORANDUM:

PLANNING DEPARTMENT — County of Hawaii, Hilo, Hawaii 96720

To: Chief Engineer

Date: March 29, 1976

From: Planning Director

Subject: Mt. View Drainage Improvements
Environmental Impact Statement

The EIS Preparation Notice merely summarizes the project scope and, as such, it is difficult to present detailed comments. We do have the following general comments:

1. The existing uses and zoning as well as the General Plan for the area should be described in your EIS. That the Puna CDP is currently being prepared should likewise be mentioned.

2. The history of flooding in the area should be included in the EIS.

3. Much of the descriptive information is already part of the "Mt. View Drainage Study and Master Plan for the County of Hawaii."

4. This Preparation Notice should be forwarded to EQC for publication.

RAYMOND SUEFUJI
Director

RN:rfd

Response to County Planning Department letter of March 29, 1976

1. The results of investigations conducted relative to zoning, General Plan, and land use are summarized in the appropriate statutory sections of the E.I.S. Data derived in the investigation show that the interim improvements would be unlikely to cause population growth in Mountain View or to affect sugar cane or diversified agriculture significantly. The E.I.S. reflects a finding of "non-significance" in these areas.

2. There is no good documentation of flooding in the Mountain View area. Public Works Department estimates that some type of flooding occurs on an average of 2 times a year at Mountain View. The Soil Conservation Service has some documentation of flooding which occurred in 1972.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 1361, Hilo, Hawaii 96720

April 9, 1976

Mr. Edward Harada, Chief Engineer
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ed:

Subject: Mountain View Drainage Improvements, Environmental Impact Statement

Stream A passes through Hawaiian Acres Subdivision, which is now beset by localized flooding. Hydrological studies should be made to consider adequacy of Stream A for handling added water.

Sincerely,

Nancy K. Shinsato for

Michael C. Tulang, Acting
District Conservationist

RC+D Cm
P.O.Box 195

Response to Soil Conservation Service letter of April 9, 1976

While Stream "A" through the Hawaiian Acres Subdivision may be inadequate to handle flood flows, the proposed project will not further aggravate the existing condition. In fact, the retention basins utilized in the masterplanned system will reduce the peak discharge into the stream.

The flood control study of Stream "A" should be handled as a separate study, which should include the entire length of Stream "A".

PUNA SUGAR COMPANY, LIMITED

KEAAU, HAWAII 96749

Amfac

April 20, 1976

Mr. Edward Harada, Chief Engineer
County of Hawaii
25 Aupuni St.
Hilo, Hawaii 96720

Dear Mr. Harada:

This is in reference to your letter of March 22, 1976 regarding the Environmental Impact Statement for the proposed drainage improvements in the Mountain View area.

Paragraph 4, page 3 states, "The proposed ultimate improvements would, by and large, be constructed in lands currently used for sugar cane production. They would result in approximately 26 acres being removed from production permanently." Puna Sugar Company, Limited is opposed to the removal of this or any other area from sugar production within this drainage system. We contend the land can be graded to allow cane production in the drainage basins except for a small dry well area.

I am enclosing a report on this subject by C. Wallis.

Very truly yours,

PUNA SUGAR COMPANY, LIMITED

T. J. O'Brien,
President-Manager

TJO:mh
Enc.
cc: C. Wallis

PUNA SUGAR COMPANY, LIMITED
Keaau, Hawaii 96749

April 19, 1976

To: Mr. T. J. O'Brien, President-Manager

From: C. Wallis, Field Superintendent

Re: Mountain View Drainage Improvement
Interim Flood Control Scheme, Letter from Edward Harada,
County of Hawaii, March 22, 1976

Pages 3 & 4 - Proposed the removal of 26 acres of land from sugar cane production.

Refer to: Mountain View Drainage Study and Master Plan for the County of Hawaii, Department of Public Works, by Austin Smith & Associates, Inc., March 1974.

Pages 19 - 20 - Quote "The proposed retention basins are located within the sugar cane fields at naturally depressed or low areas. The proposed grading of the basin embankment will be such that the area within the basin can be utilized for sugar cane cultivation. Therefore, a minimal amount of productive land is removed from sugar cane cultivation."

Page 22 - Pezyk Road Drainage System. Quote "Approximately 8 acres of productive cane land will be required for the construction of the basin embankments."

Page 26 - Kulani Road Drainage System. Quote "Approximately 15 acres of productive cane lands will be required for the construction of the basin embankments."

Page 28 - Kukui Camp Road Drainage System. Quote "Approximately 10 acres of productive cane lands will be required for the construction of the basin embankments."

We feel that the removal of 26 acres of cane lands from production in the proposed Interim Flood Control Scheme or the removal of 33 acres of cane lands from production in the 1974 Master Plan Drainage Study are excessive.

Puna Sugar Company at present cultivates cane on slopes far steeper than the proposed embankments and therefore these areas should continue to be planted in cane.

In construction of the embankments, the field road system of Puna Sugar Company must be considered. Our field roads will have to cross the embankments as they are presently designed.

Response to Puna Sugar Company, Limited letter of April 20, 1976

It is agreed that the basin embankment can be graded to permit cultivation of sugar cane. A review of estimated land area required for construction of the ultimate drainage systems indicates approximately 34.5 acres are required for basin and diversion channel construction. Approximately 6.5 acres are estimated to be required for channel construction and basin outlet work construction and, therefore, not available for planting. Final design will determine precisely the land area required. The channel alignments shown in the masterplan report are approximate, at best. Field topo survey would determine the best locations for the channels.

It is further suggested that a land exchange be considered where cultivatable land elsewhere would be offered for the land area required for the proposed project.

Approximately 0.5 acre of land presently in sugar cane is required for the interim drainage improvements. A land exchange should also be considered in this case.

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HARADA
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

DIVISIONS
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

April 27, 1976

Honorable Edward Harada
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Sir:

We have reviewed the EIS notice for the Mountain View drainage project.

The proposed undertaking will have no effect upon any known historic or archaeological site on, or likely to be on, the Hawaii and National Registers of Historic Places. In the event any unanticipated sites or remains are encountered, please contact the Historic Preservation Officer at this address immediately.

The proposed improvements affects only a very small portion of the Olaa Forest Parks Reserve. Trees within the strip that may be encroached upon are planted eucalyptus. Understory is predominantly waiawi and ginger. From the standpoint of forestry interests, there are no objections to the project.

The need for a drainage easement should be cleared through our Land Management Division.

Very truly yours,

Edgar A. Harada

for CHRISTOPHER COBB
Chairman of the Board

cc: Forestry
Historic Sites
Land Management

DEPARTMENT OF RESEARCH AND DEVELOPMENT
COUNTY OF HAWAII

HERBERT T. MATAYOSHI, Mayor
CLARENCE W. GARCIA, Director

April 14, 1976
76-4-216 CWG:pak

MEMORANDUM

TO: Mr. Ed Harada

FROM: Director Clarence W. Garcia

SUBJECT: Mt. View Drainage Improvements, Environmental Impact Statement

The statement appears to cover the points adequately. We have no additional comment at this time.

• 25 AUPUNI STREET • HILO, HAWAII 96720 • TELEPHONE 961-8366 •

GEORGE R. ARIYOSHI
GOVERNOR

RICHARD E. MARLAND, PH.D.
DIRECTOR

TELEPHONE NO.
548-6915

RECEIVED
OCT 12 PM 1 45

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
OFFICE OF THE GOVERNOR
550 HALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

October 8, 1976

Mr. Edward K. Harada
Chief Engineer
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

SUBJECT: Environmental Impact Statement for the Mountain View Drainage Improvements, Mountain View, Hawaii.

Dear Mr. Hayashida,

This Office has reviewed the above EIS and offers the following comments:

1) The "Approval Sheet" that appears after the title page is probably misleading to the reviewers of this EIS. Since the Governor is the final accepting authority, the county approval of the yet-to-be revised statement appears unnecessary.

2) Details on the retention basins need expansion. What will be the construction materials used in the embankments? The drawings of the spillways in Appendix A lack scales. Figures 13, 14, 15, and 16 of Appendix A show the embankments as extensions of the contour lines. It appears that the embankments would be 200 feet high, is this correct?

3) Will the proposed unlined interceptor channels of the interim improvements be left as exposed soil? What effects will the flood waters have on these channels? Soil erosion and sedimentation downstream are possible.

4) Endangered Species. Would suitable habitat or food sources for any endangered species be affected by the proposed project?

5) What are the plans for this area as set forth in the County of Hawaii General Plan? What are the present zoning controls for the affected area? Their inclusion in the revised statement is recommended.

6) Downstream of Mountain View lies the Hawaiian Acres Subdivision which is subject to flooding. Would the implementation of the ultimate drainage plan for Mountain View affect the flood problem of this subdivision, especially if subdivision construction increases?

7) What is the economic cost of removing 34.5 acres of sugar cane land temporarily, and 6.5 acres permanently, unless there is a compensating land exchange by the County or State? What will the cost be for the one-half acre of cane land to be removed in the interim improvements?

8) Secondary effects resulting from the proposed action are mentioned on page 8 on the EIS under Economic Characteristics. These secondary effects may be equally important as, or more important than the primary effects of this flood control project. Under the section Probable Impact of The Proposed Action, there should be a thorough discussion of the points raised on page 8 of the EIS. There is no discussion on the secondary impact that urbanization of the Mountain View area would have on valuable agricultural lands due to the proposed level of flood protection to the area. What documentation exists to support the statement, "the proposed project would not necessarily make Mountain View more attractive to new industry or to more development?"

9) Will the primary and secondary socio-economic benefits that may derive from the ultimate drainage improvements outweigh the more than seven million cost of the project? Was a cost-benefit analysis prepared for this project? If yes, what were the results?

10) Mitigation Measures. What mitigation measures are proposed during the construction periods of the interim and the ultimate drainage improvements that would counter the production of air, water or noise pollution? We recommend an expand discussion.

11) Alternatives to the Proposed Action. There is no discussion of the environmental impacts associated with the reduction of flood protection from the 100-year storm level. Although Federal Construction Funds appear desirable to the County, the decision to provide the level of protection necessary to qualify for the funds should not be made before a comparative analysis of the environmental benefits, costs, and risks of each reasonable alternative has been made. Thus, an expansion of the discussion on the alternatives to the proposed project is strongly recommended.

12) Since the ultimate drainage improvements will not be implemented until fifteen or more years from now, it appears quite probable that a supplemental statement to an accepted revised EIS for this project will be necessary. Changes in project cost, and alternatives or the potential land exchange may require a supplemental statement.

For brevity and fairness, this Office did not attempt to summarize comments made by other reviewers. Instead, we strongly recommend that careful consideration be given to each comment made by the reviewers. We also recommend that a copy of the revised EIS be provided to those persons and agencies that have provided substantive comments on the EIS.

Please find attached a list on comments that this Office has received to date.

The EIS Regulations allow the accepting authority or his authorized representative to consider responses received after the fourteen day response period. This Office will exercise the option and will consider responses after the fourteen day period.

We trust that these comments will be helpful to you in the preparation of the revised EIS. Thank you for the opportunity to review this EIS.

Sincerely,

Richard E. Marland
Director

Attachment

List of Commentors for the Environmental Impact Statement for Mountain View Drainage Improvements, County of Hawaii.

	Date of Comments
State Agencies	
Dept. of Land and Natural Resources	9/9/76 & 9/30/76
Dept. of Health	9/30/76
*Dept. of Defense	8/1/76
*Dept. of Social Services and Housing	9/15/76
*Dept. of Education	9/1/76
Dept. of Transportation	9/28/76
University of Hawaii	
Water Resources Research Center	8/30/76
Federal Agencies	
U.S. Fish and Wildlife Service	9/28/76
*U.S. Army - DAFE	9/3/76
*U.S. Coast Guard	9/1/76
Hawaii County Agencies	
*Dept. of Parks and Recreation	9/23/76
*Dept. of Water Supply	8/30/76
*Planning Department	9/8/76

*denotes no comments

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

BUREAUS AND DIVISIONS:
AUTOMOTIVE EQUIPMENT & MOTOR POOL
BUILDING CONSTRUCTION & INSPECTION
PLANS AND SURVEYS
ROAD CONSTRUCTION AND MAINTENANCE
SEWERS AND SANITATION
TRAFFIC SAFETY AND CONTROL

November 1, 1976

Dr. Richard E. Marland, Director
Office of Environmental Quality Control
550 Halekauwila Street
Honolulu, HI 96813

SUBJECT: E.I.S. for MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments dated October 8, 1976.

1. Approval Sheet. The approval sheet shall be removed.

2. Details on the Retention Basins. Most probably, the retention basin embankments will be constructed with earth. The details of construction will depend upon the results of the soil investigation.

   The drawings in Appendix "A" are provided to furnish the reader an idea of the various types of spillways that are available for use with retention basins. Each spillway will be designed and detailed for construction at the time of project design.

   It is correct; Figures 13, 14, 15 and 16 of Appendix "A" show the embankment to be an extension of the contour lines in the area. However, with close scrutiny, it will be noted that the contour lines at the dam embankment are at four-foot intervals. The embankment heights for the retention basins do not exceed 50 feet in height.

3. Unlined channels will be grassed where lava rock is not encountered. Where the velocity of flow exceeds the required County standard, the channel shall be lined with grouted rubble paving.

4. There are no known endangered species in the project area.

5. County General Plan. See page 36 of the E.I.S. The County Planning Department has reviewed and has no comment regarding this matter and the E.I.S. in general (letter of September 8, 1976, to O.E.Q.C.).

6. Hawaiian Acres Subdivision. See page 36, 37, 38 of the E.I.S. We believe Article V-5 adequately addresses the concern, particularly the last two paragraphs on pages 37-38. Should increase of development justify further study, a separate study will be conducted because of the length of stream A and the large tributary area.

7. Cost. Compensating land exchange is proposed as a mitigating measure to reduce the impact of lost sugar production. The one-half acre required for the interim improvement is presently not cultivated for sugar cane and the estimated cost for compensating the owner is $3,000. If, during land negotiations, additional acreage is to be affected, appropriate action will be taken for exchange proposal or purchase.

8. Secondary Effects. As stated on page 39, the project benefits directly 25 homes and 4 anthurium farms. There are many areas of Mountain View that do not suffer flood damage. Therefore, if development is to take place, land area is available even without the project.

9. Cost/Benefit. The benefits will not outweigh the estimated cost of $7,000,000. A cost-benefit analysis was not prepared.

10. Mitigation Measures. We feel that Article V-D, pages 38-39, adequately addresses the provision to cover concerns in the design and construction specifications and the requirement of vegetation of denuded areas.

11. Alternatives. The question or comment is not very clear. It appears that the degree of protection afforded would indicate the frequency of flood damage that can be anticipated for Mountain View. The environmental impact would not be significantly different for 25-year, 50-year, or 100-year protection as it relates to the construction of the facility. The U.S. Soil Conservation Services could not in its cost-benefit analysis for flood control improvements in Mountain View justify a project.

12. Supplemental Statement. We agree that a supplementary statement will have to be prepared for the ultimate drainage improvement.

EDWARD HARADA
Chief Engineer

University of Hawaii at Manoa

Water Resources Research Center

MEMORANDUM

August 30, 1976

MEMO TO: Office of Environmental Quality Control

Edward K. Harada, Chief Engineer
Dept. of Public Works, County of Hawaii

FROM: Reginald H. F. Young RHFY
Asst. Director, WRRC

SUBJECT: Mountain View Drainage Improvements EIS

We have reviewed the subject EIS and found it lacking in one major aspect. Dry wells are an integral part of both the Kulani Road and Kukui Camp Road Interim Drainage Improvements. No comments were included of the effects of storm water recharged to subsurface on any groundwater resources, nor is there any mention of the size and capacity of the dry wells and how their capacity is to be maintained.

RHFY:jmn

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

BUREAUS AND DIVISIONS:
AUTOMOTIVE EQUIPMENT & MOTOR POOL
BUILDING CONSTRUCTION & INSPECTION
PLANS AND SURVEYS
ROAD CONSTRUCTION AND MAINTENANCE
SEWERS AND SANITATION
TRAFFIC SAFETY AND CONTROL

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

November 1, 1976

University of Hawaii at Manoa
Water Resources Research Center
2540 Dole Street
Honolulu, HI 96822

ATTENTION: Dr. Reginald H. F. Young
Assistant Director

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments dated August 30, 1976.

No ill effects of storm water recharged to subsurface ground water is foreseen. The area presently has many drywells located in various locations in the Puna sugar cane lands and have not affected the water supply well which is about 5 miles from the nearest proposed drywell. Also, the Mountain View area has no sewer system and disposal is by cesspool. No ill effect has been recorded.

The size of the drywells will be five to six feet in diameter and have a minimum depth of 25 feet. The drywells will be located in low areas to drain residual waters. Their capacity will be maintained by periodically removing the silt and debris and occasionally fracturing the invert floor with a small dynamite charge. Presently, Puna Sugar Company uses a small dynamite charge on its drywells and has been very successful in maintaining and in some cases, increasing the capacity.

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

GE RGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

September 9, 1976

Office of Environmental
Quality Control
556 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

Dear Sir:

Subject: EIS, County of Hawaii, Mountainview Drainage Improvements, Hawaii Island

Thank you for the opportunity to comment on the Environmental Impact Statement for the subject undertaking.

The proposed undertaking will have no effect upon any known historic or archaeological site on or likely to be eligible for inclusion to the Hawaii and/or National Registers of Historic Places. Therefore, this office has no reservations for the Department of Public Works, County of Hawaii to proceed. In the event that any unanticipated sites or remains are encountered, please inform the applicant to contact this office immediately.

Sincerely yours,

Jane L. Silverman

Jane L. Silverman
Historic Preservation Officer
State of Hawaii

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

BUREAUS AND DIVISIONS:
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SEWERS AND SANITATION
TRAFFIC SAFETY AND CONTROL

November 1, 1976

Department of Land and Natural Resources
P. O. Box 621
Honolulu, HI 96809

ATTENTION: Ms. Jane L. Silverman
Historic Preservation Officer

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comment dated September 9, 1976.

Historical or Archaeological Site - In the event any unanticipated sites or remains are encountered, the County shall inform the State Preservation Officer.

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

September 28, 1976

IN REPLY REFER TO:

STP 8.3880

Dr. Richard E. Marland
Office of Environmental
Quality Control
Room 301, 550 Halekauwila St.
Honolulu, Hawaii 96813

Dear Dr. Marland:

Subject: Mountain View Drainage Improvements

We have reviewed the above-captioned EIS and have no comments to offer.

Please advise the applicant that his construction plans for work within the State rights-of-way must be reviewed and approved by our Highways Division.

Sincerely,

R Higashionna
for E. ALVEY WRIGHT
Director

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

BUREAUS AND DIVISIONS:
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TRAFFIC SAFETY AND CONTROL

November 1, 1976

Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

ATTENTION: Adm. E. Alvey Wright, Director

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

This is in response to your comment dated September 28, 1976.

We understand that any work within the State rights-of-way must be reviewed and approved by the Highways Division.

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
821 Mililani Street
Honolulu, Hawaii 96813

Reference: ES

September 28, 1976

Interim Director
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Sir:

This provides comments on the environmental impact statement for the Mountain View Drainage Improvements, County of Hawaii, Hawaii.

GENERAL COMMENTS

Although the EIS proposes that State of County land be exchanged for cane land necessary for proposed drainage improvements, it suggests that a review of this action be suspended until construction of the master-planned drainage system is "imminent". However, it should be pointed out that the exchanged public land could be significantly impacted when converted for agriculture needs. A discussion outlining the proposed land exchange in greater detail should be included in this EIS.

We suggest statement also discuss present or future provisions, if any, to control excess soil erosion during flood conditions of adjacent cane fields, as well as proposed project embankments, reservoir areas, and unlined interceptor channel where cane planting may be unfeasible.

SPECIFIC COMMENTS

In II - Use of Public Funds or Land, Section D, page 11, we recommend the last sentence in the second paragraph be expanded to include a general description of the public land proposed for exchange.

III - Environmental Setting, Section A-1, page 13, should include a complete description of the proposed land exchange, including location, zoning, total area, climatology, and geology.

III- Environmental Setting, Section A-2, page 14, Flora and Fauna, should discuss the flora and fauna resources of proposed land exchange areas, including a list of species and their relative abundancy.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

V - The Probable Impact of the Proposed Action on the Environment, Section B, page 38, should be qualified or altered to reflect the impact of cultivation on wildlife resources located on the land proposed for exchange.

Section D, Air, Noise and Water, page 38, should outline specific measures which are and/or would be used to minimize soil erosion of surrounding cane fields and project structures.

In IX - Mitigation Measures Proposed to Minimize Impact, page 42, we suggest the inclusion of provisions (i.e., planting suitable ground cover) to reduce excess soil erosion of earthen embankments, reservoir areas, and unlined interceptor channels during flood conditions be made in this section.

We appreciate this opportunity to comment.

Sincerely yours,

Maurice H. Taylor

Maurice H. Taylor
Field Supervisor

cc: ARD, AE
PW, Hilo

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

BUREAUS AND DIVISIONS:
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COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

November 1, 1976

U. S. Department of Interior
Fish & Wildlife Service
Division of Ecological Services
821 Mililani Street
Honolulu, HI 96813

ATTENTION: Mr. Maurice H. Taylor, Field Supervisor

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments made on September 28, 1976.

General Comments

Land exchange is proposed as a means of mitigating the loss of cultivated sugar lands. Since the ultimate construction of the Mountain View Drainage System is some 15 to 20 years in the future, it would be highly speculative to discuss the impact of the proposed exchange site at this time. It could be that 20 years hence, the areas may not be in agriculture, or any identifiable land suitable for exchange today may not be suitable or available in the future. Therefore, we feel that the environmental effects of the proposed exchange site should not be discussed at this time.

Excess Erosion. Control of soil erosion for adjacent cane lands is not a part of this project. The retention basin embankments will be grassed where sugar cane cultivation is not feasible. Unlined channels will be grassed; unlined implying not concrete or rock lined.

Specific Comments

All pertains to land exchange; see above. See page 39, Air, Noise, Water, Section D. Soil erosion measures for canefields - none proposed. Soil erosion measures for project - all denuded areas will be revegetated.

IX. Mitigation Measures. We don't agree with the comment. Soil erosion is covered in Article V-D, pages 38-39. Mitigation measures pertain to major impact; i.e., the loss of 6.5 acres of sugar cane land.

EDWARD HARADA, Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

/ED

SEP 30 1976

MEMORANDUM

To: Dr. Richard E. Marland, Director
Office of Environmental Quality Control

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Mountain View Drainage Improvements

Thank you for allowing us to review and comment on the subject EIS. Please be informed that we have some concerns on this project.

Staff comments are as follows:

(1) The subject EIS did not discuss possible mosquito problems that could occur within proposed retention basis and drywells. Impounded flood waters tend to provide excellent breeding areas for mosquitoes thereby creating a potential health hazard.

(2) The proposed unlined drainage channels to be constructed during the interim phase maybe damaged by erosion and allow direct discharge of silty or muddy waters to Stream "A" shown on various exhibits. Any occurrence of storms with greater intensity than that used in the design of the interim drainage improvements will tend to aggravate ditch erosion and consequent siltation of Stream "A".

(3) The subject EIS did not address the possible problem of discharge of pesticides, fertilizers, nutrients and other pollutants into Stream "A" via the drainage channels. Present topography lends itself to sheet flow of storm runoff, possibly dispersing pollutants within the specific drainage area. Proposed improvements will increase the concentration of discharges to Stream "A" via drainage channels.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

JAMES S. KUMAGAI, Ph.D.

cc: OEQC, HI
Chief Engineer, Dept. of Public Works, Hilo, HI
DHO, Hawaii

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

BUREAUS AND DIVISIONS:
AUTOMOTIVE EQUIPMENT & MOTOR POOL
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SEWERS AND SANITATION
TRAFFIC SAFETY AND CONTROL

November 1, 1976

Department of Health
P. O. Box 3378
Honolulu, HI 96801

ATTENTION: Dr. James Kumagai
Deputy Director for Environmental Health

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments dated September 30, 1976.

(1) While mosquito breeding does present a potential health hazard where impounded flood waters are permitted to stand over prolonged periods of time, it is not envisioned that waters in retention basins will be retained for periods of longer than 5 to 6 days. Waters in drywells are anticipated to drain within the same time span. During the design phase of the project, soils investigation will be conducted to determine the permeability of the soil at the locations of the various proposed retention basins and drywells.

Should standing water in the drywells or retention basins become a serious source of mosquito breeding after construction, special preventive measures or corrective measures will be employed by the County; e.g., more frequent maintenance of the wells, and chemical spraying (after storms) of ponded waters.

(2) The interim phase of construction proposes to utilize the existing unlined ditch paralleling Pszyk Road to Stream "A". The interim drainage system proposes to accommodate a 2 - 3 year return storm and does not alter the drainage pattern for the South Mountain View area. Storm flows will not be significantly different that that which is carried by the existing unlined ditch at the present time. Further, higher flows resulting from higher intensity storms will continue to do damage at approximately the same intensity the area sustains presently. Therefore, it is not anticipated that the quality of the Pszyk Road Drainage System storm runoff will be lower than the existing condition as it enters Stream "A".

(3) The contribution to the retention basins and channels for the proposed projects will be via sheet flow. Granted, once the storm water is in the improved "system," it, along with the pesticides, fertilizer, etc., will be transported to Stream "A" in a shorter time. The proposed improvement will concentrate the discharge into Stream "A" at two locations, but it <u>will not</u> increase the Q, runoff.

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

September 30, 1976

Office of Environmental Quality Control
550 Halekauwila St.
Honolulu, HI 96813

Gentlemen:

Subject: Mountain View Drainage Improvements
County of Hawaii, Department of Public
Works (EIS), Hilo, Hawaii Island

Thank you for the opportunity to comment on the final EIS for the subject undertaking.

The entire Mountain View Town District is currently being considered for nomination as a historic district. Significant buildings within the district are: 1) Former Plantation Supervisor's house, TMK 1-8-02-45; 2) St. Theresa's Catholic Church, TMK 1-8-02-06; 3) Alexander J. Watt Auditorium, TMK 1-8-02-36; 4) Tao House, TMK 1-8-02-46; 5) Mountain View Intermediate and Elementary School, TMK 1-8-01-07 and 6; and 6) Cluster of old buildings along the old road: the Japanese Shinto Temple, Old Cabugon Store, Old Plantation dispensary, old movie theater, Yamada billiard hall, K. Yamada Store and Mountain View Bakery.

The proposing agency should append this information to the subject EIS and should also state if there will be any affects on these existing structures within the Mountain View District.

Very truly yours,

GORDON SOH
Program Planning Coordinator

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

BUREAUS AND DIVISIONS:
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COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

November 1, 1976

Department of Land and Natural Resources
P. O. Box 621
Honolulu, HI 96809

ATTENTION: Mr. Gordon Soh
Deputy Planning Coordinator

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

Please refer to the attached copy of a statement from Anne H. Takemoto, Historical Consultant, in response to your letter of September 30, 1976. We believe this adequately addresses the concern.

EDWARD HARADA
Chief Engineer

Attach.

cc: Dr. Richard E. Marland, Director, OEQC

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

RE:0209

Office of the Director

October 7, 1976

Mr. Edward K. Harada
Chief Engineer
Dept. of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Harada:

Draft Environmental Impact Statement
Mountain View Drainage Improvements

The Environmental Center has been assisted in the review of the above cited EIS by Joe Halbig, Hilo College and Charles Lamoureux, Botany Department.

The EIS seems reasonably complete and a fair assessment of the potential environmental impacts. Our reviewers have suggested the following comments.

Page 6. Pszyk Road Interim Drainage Improvement

Improvement of existing channels and the addition of an interceptor channel on the SE side of the Olaa Forest Reserve unit will undoubtedly have an effect on increasing the discharge that presently enters Stream "A" at Pszyk Road. If it is true that this drainage improvement does not increase the discharge that presently enters Stream "A" at Pszyk Road (as stated in the EIS) does this mean that the present discharge to Stream "A" from the Pszyk Road Drainage System is 150 cfs (2-3 year storm flood) as stated on page (3f?) v.38

Page 36-38. Flooding

The statement "It is beyond the scope of this project to determine the deficiency of Stream "A" through the Hawaiian Acres Subdivision, and on down-stream" reflects somewhat of an irresponsible attitude relating to the impact that either the masterplanned system or interim improvements could have on downstream areas. Concern over the probable increase in discharge to Stream "A" as a result of interim improvements to the Pszyk Road Drainage System was expressed above. It is also felt that the masterplanned system could present a similar problem, even though its design calls for the

construction of sumps and retention basins. The discussion on p. 4 leads one to believe that the construction of these structures will actually serve to reduce discharge to Stream "A." This may be true in times of heavy flooding, but during low flood the channel improvements downstream from the retention basins and the additional new channels (e.g., the Kulani Road Extension) will more effectively channel water to Stream "A", thereby resulting in increased discharge to that stream. It appears, therefore, that adequate consideration has not been given to fully delineate the impact of the proposed project on downstream areas along Stream "A." A detailed appraisal of the impact on downstream areas should be included in the final EIS.

Appendix B

Explanation should be given for the column headings of the table on hydrologic data.

We appreciate the opportunity to review this EIS.

Yours very truly,

Doak C. Cox
Director

cc: OEQC
J. Halbig
C. Lamoureux

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

BUREAUS AND DIVISIONS:
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COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

November 1, 1976

Environmental Center
University of Hawaii at Manoa
Crawford 317
2550 Campus Road
Honolulu, HI 96822

ATTENTION: Dr. Doak C. Cox, Director

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments dated October 7, 1976.

Pszyk Road Interim Drainage Improvement - Page 6

From the hydrology calculations, the runoff area above the intersection of Pszyk Road and Stream "A" presently contribute a discharge of approximately 150 cfs. (See Appendix B, Summary of Peak Runoff - Sum of the "q"s of area 1 and area 2) The interim drainage system proposes to accommodate a 2 - 3 year return storm and will not alter the drainage pattern for the South Mountain View area.

Flooding - Pages 36-38

We feel that a discussion on the impact of Stream "A" at this time is unnecessary since the ultimate retention basin concept of design will not contribute a significant discharge into Stream "A". The proposed concrete-lined channels will convey water, which reaches a certain level in the retention basins, safely to Stream "A". The discharge from these basins and from the sheet flow intercepted by the channel would be at a time when the peak flow from both low flooding or heavy flooding has passed. The proposed channel discharges will not aggravate the already deficient Stream "A".

Because of the above and due to the great length of Stream "A" and its large tributary area, the discussion of the stream should be made under a separate drainage study at the appropriate time when increase in development justifies further study.

Appendix B

The following is the explanation for the notations used.

1. L - Distance from the remotest point of the drainage area to the point of discharge.

2. Ave. Vel. - Average velocity of the overland flow in feet per second.

3. Tc - Time of concentration is the time it takes for the runoff to travel from the hydraulically most distant part of the storm area to the watershed outlet.

4. CN - Curve number; a combination of hydrologic soil groups (soil), land use and treatment class (cover) is a hydrologic soil-cover complex. CN is a number to such a complex; the higher the number the higher runoff potential.

5. "Q" - Direct runoff in inches.

6. qp - Peak discharge in c.f.s. per inches.

7. Qqp - Product of direct runoff and peak discharge.

8. q - Peak discharge from a hydrograph in c.f.s.

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, CORPS OF ENGINEERS
BLDG. 230, FT. SHAFTER
APO SAN FRANCISCO 96558

7 October 1976

PODED-P

Mr. Edward K. Harada
Chief Engineer
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Harada:

We have reviewed the environment impact statement for Mountain View Drainage Improvements, County of Hawaii and offer the following comments for your consideration.

a. The statement indicates that a 100-year design will be used for the ultimate drainage system. For retention basins immediately above urbanized areas, such as 3B, it is recommended that a much higher degree of protection be considered. It is also recommended that the emergency spillway be located so that discharges are not directed toward developed areas.

b. While apparently not a part of this study, it is suggested that the effects of adding discharges to Stream A and its flooding potential at Mountain View and the Hawaiian Acres Subdivision be addressed.

c. The statement consistently describes both the ultimate and the interim drainage improvements as the proposed actions. However, it is noted several times that implementation of the ultimate system is not likely in the next 15 to 20 years. Under these circumstances, the purpose of focusing on both ultimate and interim improvements to the same degree at this time is not clear. A discussion of the specific relationships and compatibility of the interim improvements with the ultimate system would be helpful.

PODED-P

7 October 1976

Thank you for the opportunity to review this statement.

for KISUK CHEUNG
Chief, Engineering Division

Copy Furnished:
Office of Environmental
Quality Control
State of Hawaii
550 Halekauwila Street
Honolulu, Hawaii 96813

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

BUREAUS AND DIVISIONS:
AUTOMOTIVE EQUIPMENT & MOTOR POOL
BUILDING CONSTRUCTION & INSPECTION
PLANS AND SURVEYS
ROAD CONSTRUCTION AND MAINTENANCE
SEWERS AND SANITATION
TRAFFIC SAFETY AND CONTROL

November 1, 1976

Honolulu District, Corps of Engineers
Department of the Army
Bldg. 230, Ft. Shafter
APO San Francisco 96558

ATTENTION: Mr. Kisuk Cheung
Chief, Engineering Division

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments dated October 7, 1976.

a. 100-Year Design. The County will consider a higher recurrence interval for the ultimate system. For the direction of flow, we disagree with you; the discharge is away from the developed areas.

b. See Article V-5, pages 36-38, particularly last two paragraphs on pages 37-38. Due to the great length of Stream "A" and its large tributary area, the discussion of the stream should be made under a separate drainage study when increase in development justifies further study.

c. The ultimate drainage plan cannot presently be constructed because of insufficient funds. Estimated cost of the ultimate plan is $7,000,000. With the continuous flooding from 2 - 3 years' storms, the County decided to construct an interim plan which would be in a range where funds are available and at the same time fit in with the ultimate plan. In order to construct the interim plan an approved E.I.S. was required addressing both the ultimate and interim programs. This is covered under Chapter 343, H.R.S., Regulation 1:12 - Related Actions, which states, "a group of proposed actions shall be treated as a single action when the component actions are phases or increments of a larger total undertaking."

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC

GEORGE R. ARIYOSHI
GOVERNOR

JOHN FARIAS, JR.
CHAIRMAN, BOARD OF AGRICULTURE

YUKIO KITAGAWA
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

October 23, 1976

MEMORANDUM

To: Office of Environmental Quality Control

Subject: EIS for Mountain View Drainage Improvements, Hawaii

The proposed project has a positive effect on agricultural activities by reducing the extent of sheet-water flooding. This is especially true for the anthurium farms in the project area.

A secondary negative impact on agricultural activities that may arise is urban-type growth induced by decreasing flood damage caused by the project. Part of Mountain View's slow growth rate may be attributable to its unstable flood conditions.

A primary negative impact will be the permanent loss of 6.5 acres of cane lands. Adequate compensation should be made in the form of a land exchange. A short-term negative impact will be the loss of 34.5 acres of cane land during the construction phase. Adequate compensation may prove difficult, depending upon the length of time required to complete construction. A simple interim land exchange may not work equally well for the private owners or the donors of the land. Consideration should be given to maturity of existing field, harvest capacity per acre and other agricultural parameters. Adequate monetary compensation will have to be based on the fair market value of raw sugar at the time of construction of the project. Also, the loss of the mature cane will have to be balanced with the planting of cane seedlings after construction. Special consideration may have to be provided for the owners of the fields until the cane has again matured to its former state.

JOHN FARIAS, JR.
Chairman, Board of Agriculture

cc: Mr. Edward K. Harada, Chief Engineer
Hawaii County Department of Public Works

HERBERT T. MATAYOSHI
MAYOR

EDWARD K. HARADA
CHIEF ENGINEER

BUREAUS AND DIVISIONS:
AUTOMOTIVE EQUIPMENT & MOTOR POOL
BUILDING CONSTRUCTION & INSPECTION
PLANS AND SURVEYS
ROAD CONSTRUCTION AND MAINTENANCE
SEWERS AND SANITATION
TRAFFIC SAFETY AND CONTROL

COUNTY OF HAWAII
DEPARTMENT OF PUBLIC WORKS
25 AUPUNI ST.
HILO, HAWAII 96720

November 3, 1976

Mr. John Farias, Jr.
Chairman, Board of Agriculture
Department of Agriculture
1428 S. King Street
Honolulu, HI 96814

SUBJECT: E.I.S. FOR MOUNTAIN VIEW DRAINAGE IMPROVEMENTS

The following is our response to your comments dated October 28, 1976.

Secondary Negative Impact. We agree with you that the project may have an impact on the agricultural activities of the area because of the possibilities of increased urban type growth. This impact will depend upon the State and local government control over any proposed land use change. At present the majority of the area is zoned for agriculture.

Primary Negative Impact. Land removed permanently from cultivation during the ultimate or interim improvement will be compensated fairly for land loss and cane loss. The temporary loss of 34.5 acres will be fairly compensated for cane damages and ratoon damages.

EDWARD HARADA
Chief Engineer

cc: Dr. Richard E. Marland, Director, OEQC.

GEORGE R. ARIYOSHI
GOVERNOR

VALENTINE A SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
FORT RUGER, HONOLULU, HAWAII 96816

1 AUG 1976

HIENG

Dr. Albert Tom, Chairman
Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Dr. Tom:

Mountain View Drainage Improvements

Thank you for sending us a copy of the Environmental Impact Statement for the proposed "Mountain View Drainage Improvements." We have received the publication and have no comments to offer.

We are returning the Environmental Impact Statement for the proposed project per your request.

Very truly yours,

WAYNE R. TOMOYASU
Captain, CE, HARNG
Contr & Engr Officer

Enclosure

COPY

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI

P. O. BOX 1620 • HILO, HAWAII 96720 • 25 AUPUNI STREE

August 30, 1976

Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, HI 96813

Re: Mountain View Drainage Improvements

As you requested, we reviewed the subject environmental impact statement and have no adverse comments to offer.

We are returning the copy you sent us.

Akira Fujimoto
Manager

WHS

Enc.

cc: Department of Public Works

...Water brings progress...

STATE OF HAWAII

DEPARTMENT OF EDUCATION

P. O. BOX 2360

HONOLULU, HAWAII 96804

OFFICE OF BUSINESS SERVICES

September 1, 1976

MEMO TO: Office of Environmental Quality Control

F R O M: Koichi H. Tokushige, Assistant Superintendent
Office of Business Services

SUBJECT: Environmental Impact Statement (EIS) for
Mountain View Drainage Improvements

The Department of Education has no comments. The DOE's copy of the EIS is returned herewith.

KHT:JEE:yk

Enclosure

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to:
COMMANDER (mep)
Fourteenth Coast Guard District
677 Ala Moana
Honolulu, Hawaii 96813

16475
1 SEP 1976

Mr. Edward K. Harada
Chief Engineer
Department of Public Works
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Harada:

Staff review of the "Environmental Impact Statement for the Mountain View Drainage Improvements, County of Hawaii" has been completed. The Coast Guard has no comments to offer on either the ultimate or interim flood control systems in the Mountain View area. There are no objections to the project being implemented as stated therein.

The opportunity to review and comment on this environmental impact statement is appreciated.

Sincerely,

J. V. CAFFREY
Captain, U. S. Coast Guard
Chief of Staff
Fourteenth Coast Guard District

Copy to:
COMDT(G-WEP-7)
CEQ Washington DC
EQC Hawaii

...VED

8 SEP 1976

AFZV-FE-EE

76 SEP 8 PM 2 07

...ITY
... PUBLIC WORKS
...CLERK

Environmental Quality Commission
Office of Environmental Quality Control
550 Halakawila St. Room 301
Honolulu, Hawaii 96813

Gentlemen:

Reference is made to Environmental Impact Statement (EIS) for Mountain View Drainage Improvement, County of Hawaii, dated August 1976.

The EIS has been reviewed and we have no comments to offer.

Thank you for the opportunity to review this document.

Sincerely Yours,

CARL P. RODOLPH
Colonel, CE
Director of facilities Engineering

CF:
✓Edward k. Harada, Chief Engineer
Department of Public Works, Country of Hawaii
25 Aupuni St.
Hilo, Hawaii 96720

COPY

PLANNING DEPARTMENT
25 AUPUNI STREET

COUNTY OF HAWAII
HILO, HAWAII 96720

September 8, 1976

Dr. Richard E. Marland, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

Re: Mt. View Drainage Improvements
Environmental Impact Statement

Thank you for the opportunity to review the subject Statement. Our comments have already been incorporated in the document. As requested, the document is returned herewith.

RAYMOND SUEFUJI
Director

RN:rfd
Attachment

cc: Chief Engineer, DPW w/o

GEORGE R. ARIYOSHI
GOVERNOR

ANDREW I.T. CHANG
DIRECTOR OF SOCIAL SERVICES & HOUSING

STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
[illegible] Box [illegible]
Honolulu, Hawaii 96809

September 15, 1976

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Thank you for the opportunity to comment on this matter.

[illegible]

Sincerely,

Andrew I.T. Chang

Andrew I. T. Chang
Director

Attachment
cc: Office of Environmental Quality Control
Edward K. Harada, Chief Engineer
Dept. of Public Works, Hawaii County

DEPARTMENT OF PARKS & RECREATION
COUNTY OF HAWAII

Herbert Matayoshi, Mayor
Milton Hakoda, Director

September 23, 1976

Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Subject: Mountain View Drainage Improvements
County of Hawaii

We have no comments to offer on the impact statement and thank you for the opportunity to review the document.

Milton T. Hakoda
Director

enc. (copy returned)

•25 AUPUNI STREET • HILO, HAWAII 96720 • TELEPHONE 961-8311

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 15th AIR BASE WING (PACAF)
APO SAN FRANCISCO 96553

REPLY TO ATTN OF: DEEE (Mr. Nakashima, 4492158)

5 OCT 1976

SUBJECT: Environmental Impact Statements

TO: Environmental Quality Commission
555 Halekauwila St., Room 301
Honolulu, Hawaii 96813

1. This Headquarters has no comment to render relative to the following Environmental Impact Statements:

Natural Energy Laboratory of Hawaii
Ke-Ahole Point, Hawaii

Mountain View Drainage Improvements
County of Hawaii

Proposed Windward Civic Center
Kaneohe, Oahu, Hawaii

2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your development projects throughout the State and the opportunity to review the subject statements.

THOMAS L. HEDGE, Colonel, USAF
Director of Civil Engineering

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

440 Alexander Young Building, Honolulu, HI 96813

October 13, 1976

Mr. Edward K. Harada
Chief Engineer
County of Hawaii
25 Aupuni St.
Hilo, HI 96720

Dear Mr. Harada:

Subject: Environmental Impact Statement, Mountain View Drainage Improvements, County of Hawaii

We have reviewed the above-mentioned EIS and have no comments to offer.

We would like to receive a copy of the final EIS.

Thank you for the opportunity to review this document.

Sincerely,

Francis C. H. Lum
State Conservationist

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

October 19, 1976

Ref. No. 2197

MEMORANDUM

TO: Dr. Richard E. Marland, Director
Office of Environmental Quality Control

FROM: Hideto Kono, Director

SUBJECT: Environmental Impact Statement (EIS) for Mountain View Drainage Improvements, County of Hawaii

We have reviewed the subject statement and find that it has adequately assessed the probable environmental impacts that can be anticipated from the proposed project.

Since the construction of this drainage system results in a loss of approximately 6.5 acres of productive sugar cane lands, we concur with the statement in the EIS that consideration should be given for a possible land exchange with the sugar planters for other nearby cultivatable land to replace the loss of existing productive lands.

We appreciate this opportunity to review this subject statement.