

Preliminary report on Phase I design  
for proposed ASPA Water line, Leone

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Cultural Resource Management Plan

## **Introduction**

ASPA plans to replace approximately 2,500' of existing water line with new PVC line. Because the plan calls for reusing the existing water line trenches which run alongside the road we anticipate that there will be no effect on historic properties in this developed area of Leone (see map #2). Approximately 2,000' of new line will be placed in the northern half of the Leafu Stream Valley alongside the road which runs on average 75' (20m) to the east of Leafu Stream in the south 1/2 and 100-150' (33-50m) in the north 1/2. The road is on a gentle grade (approx 3%). This gentle grade runs both up and down the valley floor and across the valley. Although the area shows no obvious surface features, the area's relationship to both the historic and prehistoric village of Leone and to the nearby quarry site, Tataga Matau, and recorded grinding/polishing stones along Leafu Stream, the area must be considered to have high potential for subsurface historic properties. In order to locate subsurface historic properties we recommend the use of four, 3m backhoe trenches along the road at slightly more than 150m intervals with 2 STPs placed between each trench location, with a total of 10 STPs. This approach should give us both profiles of subsurface strata and indicators of cultural presence through 100% screening of STPs. Additionally, we would monitor the new water line trench connecting the end of the west road and the east road, as well as spot monitoring the replacement line trenches.

## **Description of the area**

Leone valley (Leafu Stream valley) is a north to south drainage, running 1 mile, from 30' above sea level to sea level at the bay where the valley is slightly more than 1/2 mile wide. Valley walls rise steeply to approximately 700' at Mulimauga Ridge on the west and Malaoto Ridge on the east.

The upper valley, the general area of the ASPA waterline, has experienced a rapid increase in home construction since the early 70s (personal communication, Suafo'a) (see 1963 USGS map 5). Originally the area was plantations of banana and coconut which, today, still make up approximately 50 % of the area. Homes in the north 1/2 of the valley have large, well kept lawns, walls, driveways and gardens with large numbers of both domestic and ornamental exotic trees and shrubs. According to Suafo'a, the landowners have used bulldozers to landscape the sites. In the north 1/2 of the valley there has been no attempt to control the stream with walls and hence the flood plain has deposited deep silts across the valley floor. This soil is typically dense, fine silts with poor drainage.

## **Geology**

Leone is within a Pliocene area of Taputapu volcanics which are composed of olivine basalts associated with cinder cones, dikes, and thin vitric tuff beds. More recent volcanic flows from Vailoatai, Fagatele, and Fogama'a Craters cover Leone and the south half of Leafu Valley (See map 3). The valley bottom is composed of colluvial deposits at the foot of mountain slopes and deep alluvials within the stream flood plain.

## Soils

Leafu valley bottom is composed of Leafu silty clay on a 0-3% slope. The soil is very deep and somewhat poorly drained. It is derived from fine textured alluvium from basic igneous rock. The natural vegetation is mixed forest and grasses. Its cultural use has been for coconut, taro, banana and breadfruit. Soils are frequently saturated and vegetation may be limited to medium or shallow rooted crops. The area floods easily during heavy rainfalls. Currently the area is mixed homesite and coconut, banana plantation

## Previous archeology

The first archeological work in the Leone area was Sinoto and Kikuchi's (1965) work in 1961 and 1962. Along with surface surveys, Sinoto and Kikuchi excavated at 5 house foundation sites in Leone. These sites appeared to be post contact. In 1972 Frost excavated two house foundations in Leone within 100 meters of the coast. Carbon 14 dates put the site at AD 1410.

Kikuchi's 1963 surface survey (see map 4) located the general area of sites in the Leone area. Approximately a dozen sites are within the general area of the water line project and highlight the importance of the area for precontact Samoan communities. #83 is a wall built by High Chief Fai'ivai and is probably a historic boundary marker. 84 is a sunken path near Amaluia, 82 is a 6' deep ditch on a steep slope, 94 is a platform on Mulimauga Ridge, 96 is a tia mound on a muddy talus slope, 101 is an Aitu Cave also on a steep slope, 108, 109, 110 are springs connected with oral history, 133 is a central mound by a ditch with a wall circling the ditch, 134 is a ditch built by the marines which uncovered an ancient wall unknown previously to the Leone villagers, 146 is an adze grinding stone at an area called Ologa-to'i. Of greatest importance is the Tataga Matau Quarry site. Best, Leach and Witter's 1989 report indicate a site area which extends beyond the quarry to the valley floor (see figure 1). USGS maps, Best, Leach and Witter's location map and ASPA's project map taken from aerial photos do not accurately correspond and the exact site boundary overlaps with ASPA's project area by an undetermined amount. Leach and Witter (1987) describe the waterfall basin:

The land drops off sharply below the terraced area of Tataga-matau, and the hillside, though forested, is an unstable mixture of soil, eroded basalt blocks and adze manufacturing debris. At its base just below the waterfall, periodic flooding has cut into this material and redistributed it downstream. It is highly likely that adze manufacture also took place beside the stream and in its bed. Suitable blocks are regularly supplied by rockfalls from the waterfall cliff, and they could also have been dug out of the eroding hillside. The difficulty for the archeologist lies in separating in situ from redeposited material. Artifacts constantly erode from the river bank and a local resident found a very large hammerstone (Fig.4) suitable for detaching large primary flakes from natural basalt blocks.

This location was also used for the last stage of adze manufacturing: the grinding of the bevel, front and sides of the preform. One massive basalt boulder in the streambed displays five deeply dished grinding facets (Fig 5). There are several other smaller faceted grindstones (foaga) along the 420m stretch of streambed between the waterfall and the first tributary, including one tipped on its side close to where Buck would have turned off to climb the access spur. He recorded the term Ologa-to'i (grinding adzes) as the place name of this locality. However our informant took us to another place with this name, on a tributary of Leafu (Fi. 1). Needless to say this was another in situ foaga, previously visited by Kikuchi and recorded by Clark (AS-34-20) (Fig. 6). Clearly, Ologa-to'i is not a unique place name but the widely used term for large dished grindstones (whetstones) traditionally associated with adze finishing and probably routine sharpening.

These features of the adze quarry and the recorded sites for the upper valley in general suggest that the gently sloping valley floor was an important use area for the precontact Samoans. Particularly because of the labor intensive activity of adze grinding and the political and economic importance of that activity, some sort of habitation sites should be expected in the area. Although Mr. Suafo'a stated that the area was all plantations as far back as he could remember (he is 73) and that there may have been some burials in the area and that there may have been a fale or two he thought that they were probably destroyed by the land clearing for the houses. Subsurface testing will be an opportunity to locate and define those features.

### **Recommendations**

In the approximately 2,500 feet of replacement water lines running through the developed area of Leone, we anticipate no effects on historic properties. Previous road building, houses, driveways and waterline construction have already created a corridor through the area. Replacement waterlines will reuse the already existing trenches. However, because the line passes through an original village site, ASPA's archeologist will spot monitor the area in order to assess the presence of subsurface cultural data in a disturbed area.

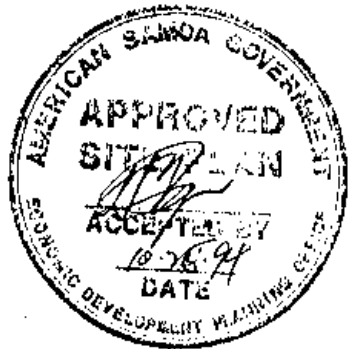
In order to determine what subsurface historic properties may be present in the area of the new water line trenches we propose the use of four backhoe trenches of 3m length to bedrock or 5 foot depth (1.75m) slightly more than 150m intervals with 2 STPs excavated between each trench with a total of 10 STPs (see map 2). Profiles will be done for each trench. This should provide stratigraphic profiles of valley floor depositional sequences and possible cultural associations. If we encounter cultural materials we will employ a .5x.5m column excavation. The STPs will help to establish cultural presence through 100% screening.

During the initial ground survey carried out on 2/9/95 we walked the entire new line area. The section connecting the west road and the east road traverses a somewhat marshy valley bottom of black silty alluvium in dense grasses. Likelihood of cultural subsurface deposits is extremely low. We will monitor this area as the backhoe trenches through the area.

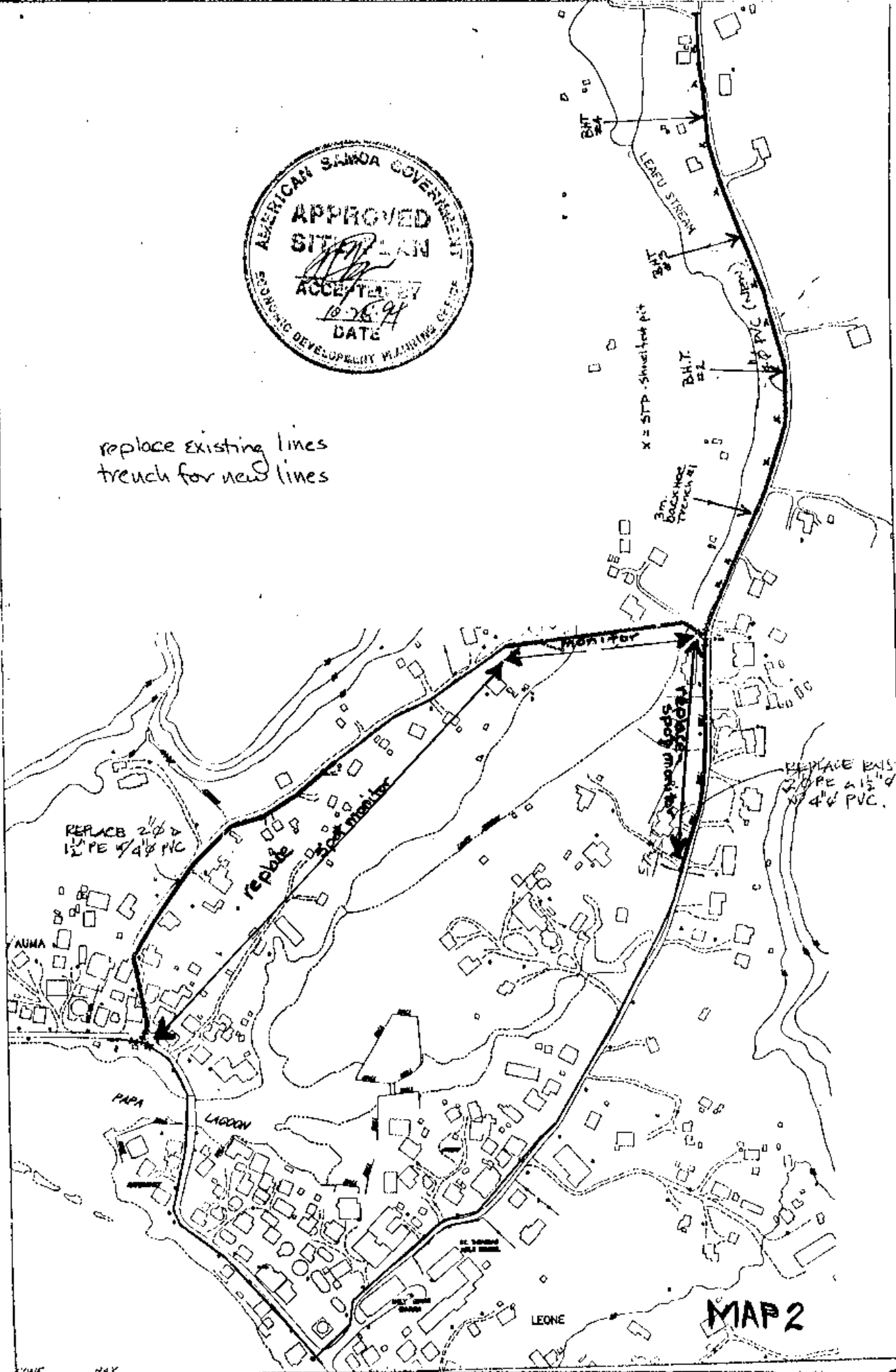


**PROJECT AREA**

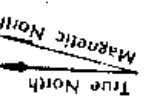
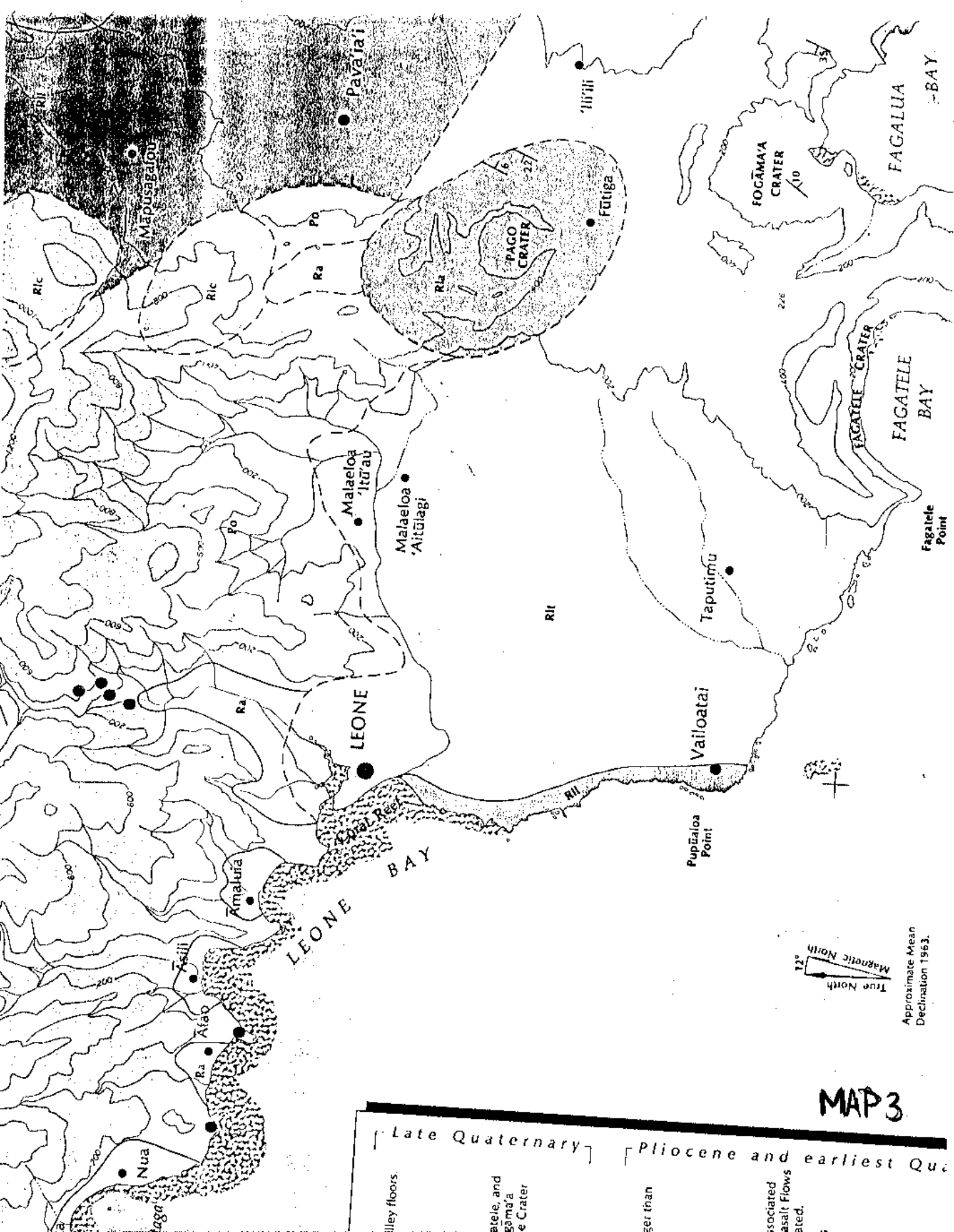
**MAP I**



replace existing lines  
trench for new lines



MAP 2

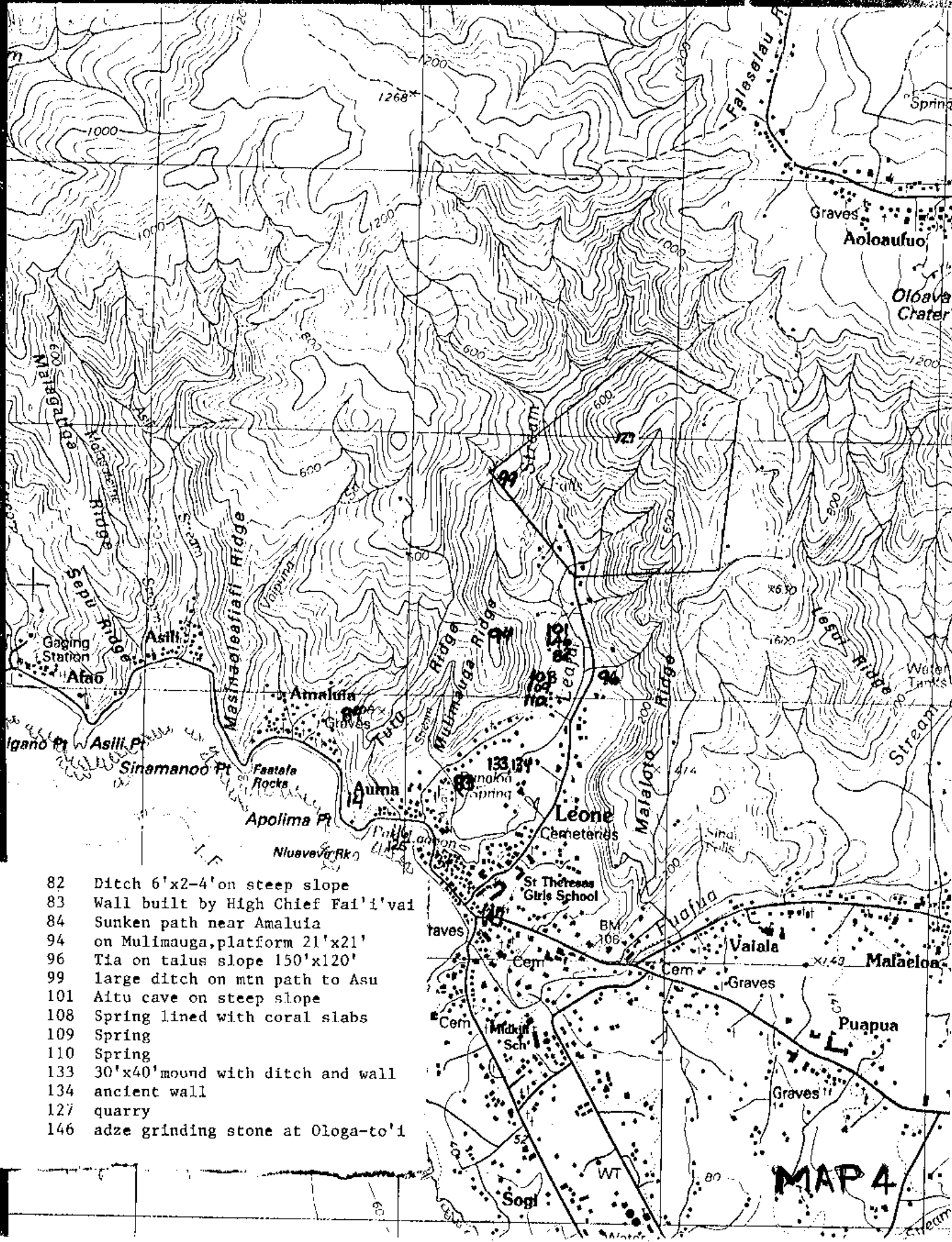


Approximate Mean  
Declination 1963.

# MAP 3

[ Late Quaternary ] [ Pliocene and earliest Quaternary ]

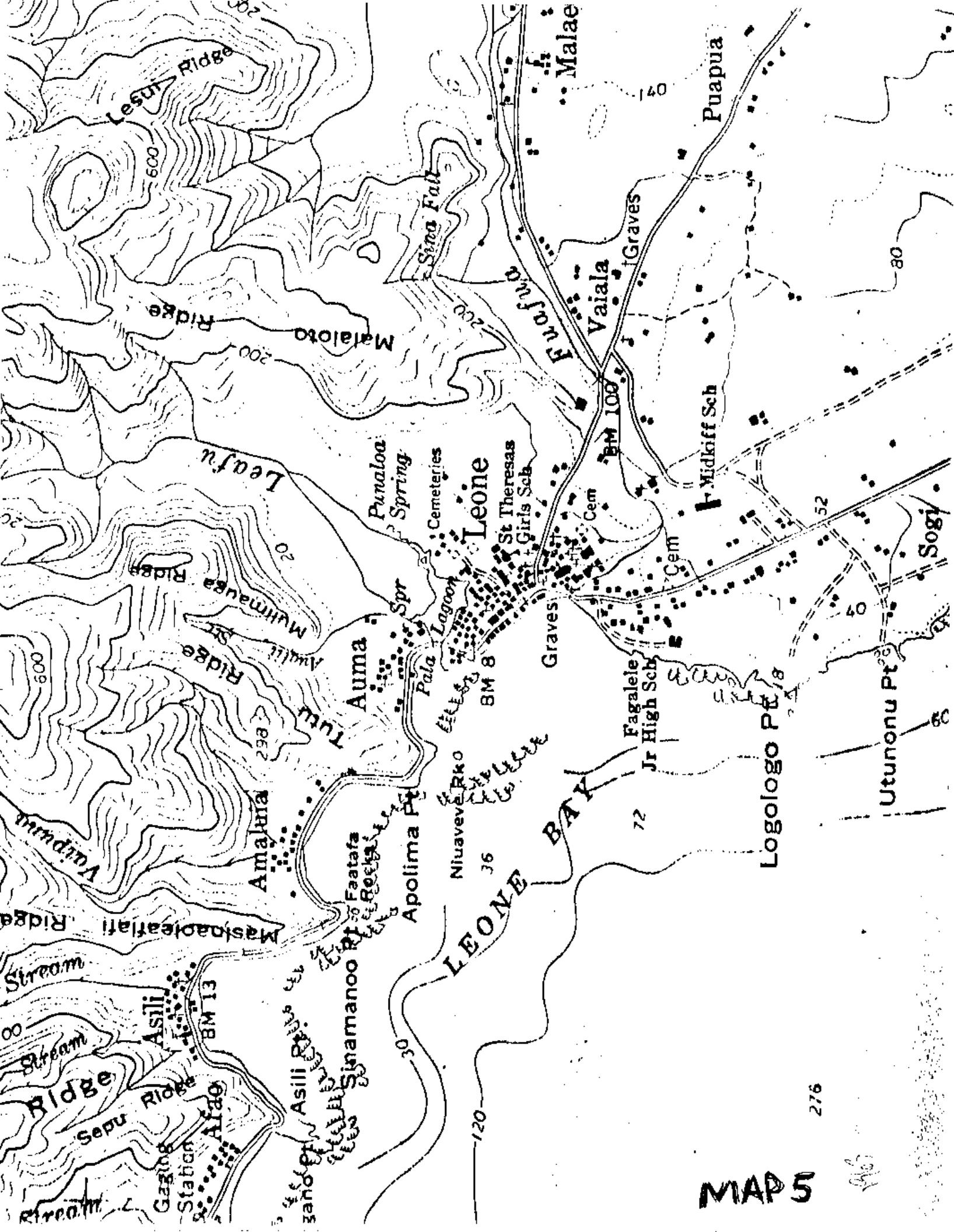
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- 82 Ditch 6'x2-4' on steep slope
- 83 Wall built by High Chief Fai'i'vai
- 84 Sunken path near Amalua
- 94 on Mulimauga, platform 21'x21'
- 96 Tia on talus slope 150'x120'
- 99 large ditch on mtn path to Asu
- 101 Aitu cave on steep slope
- 108 Spring lined with coral slabs
- 109 Spring
- 110 Spring
- 133 30'x40' mound with ditch and wall
- 134 ancient wall
- 127 quarry
- 146 adze grinding stone at Ologa-to'i

**MAP 4**





MAP 5

276

96

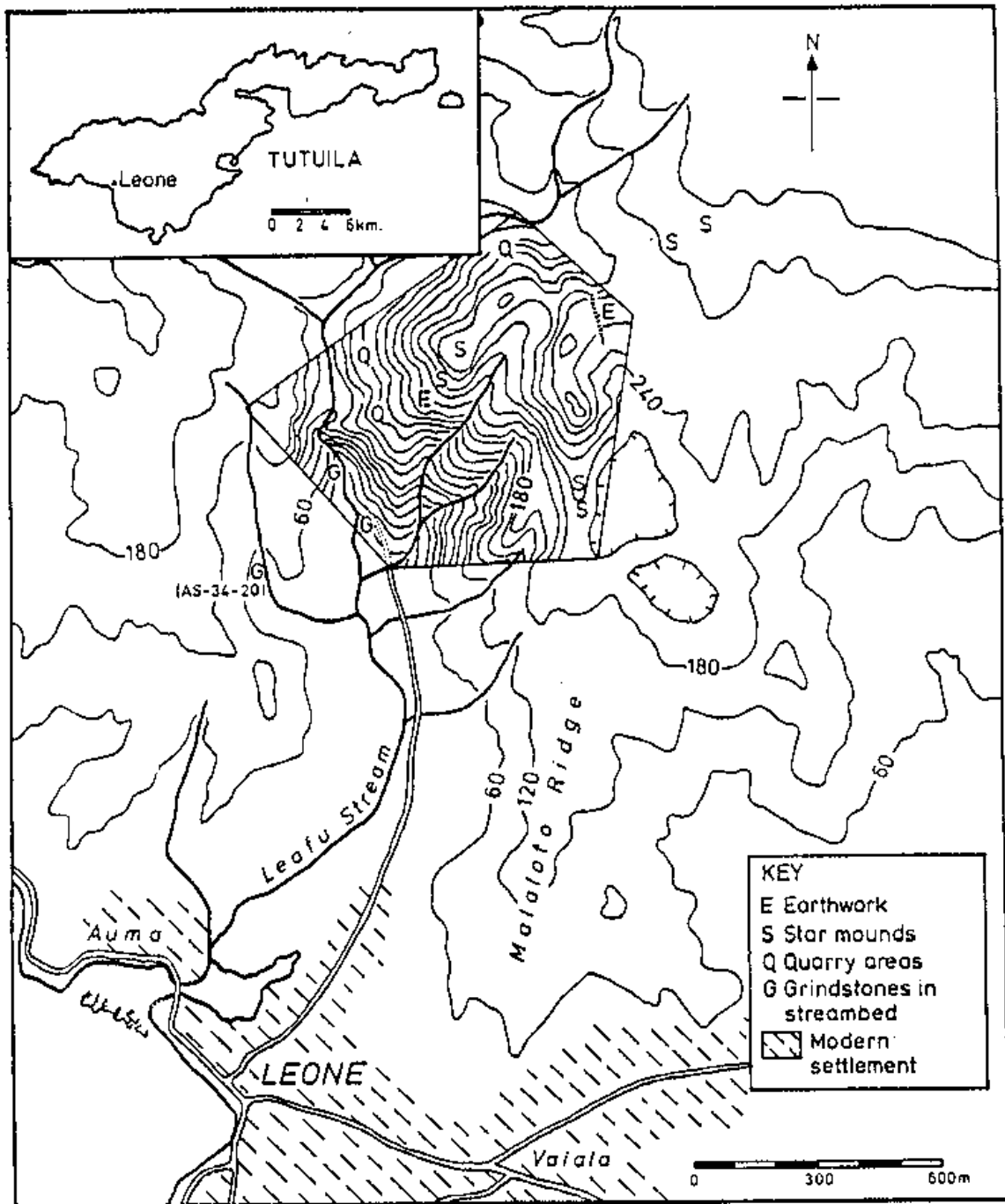


Figure 1.1: Location Map (revised from Leach and Witter 1985)

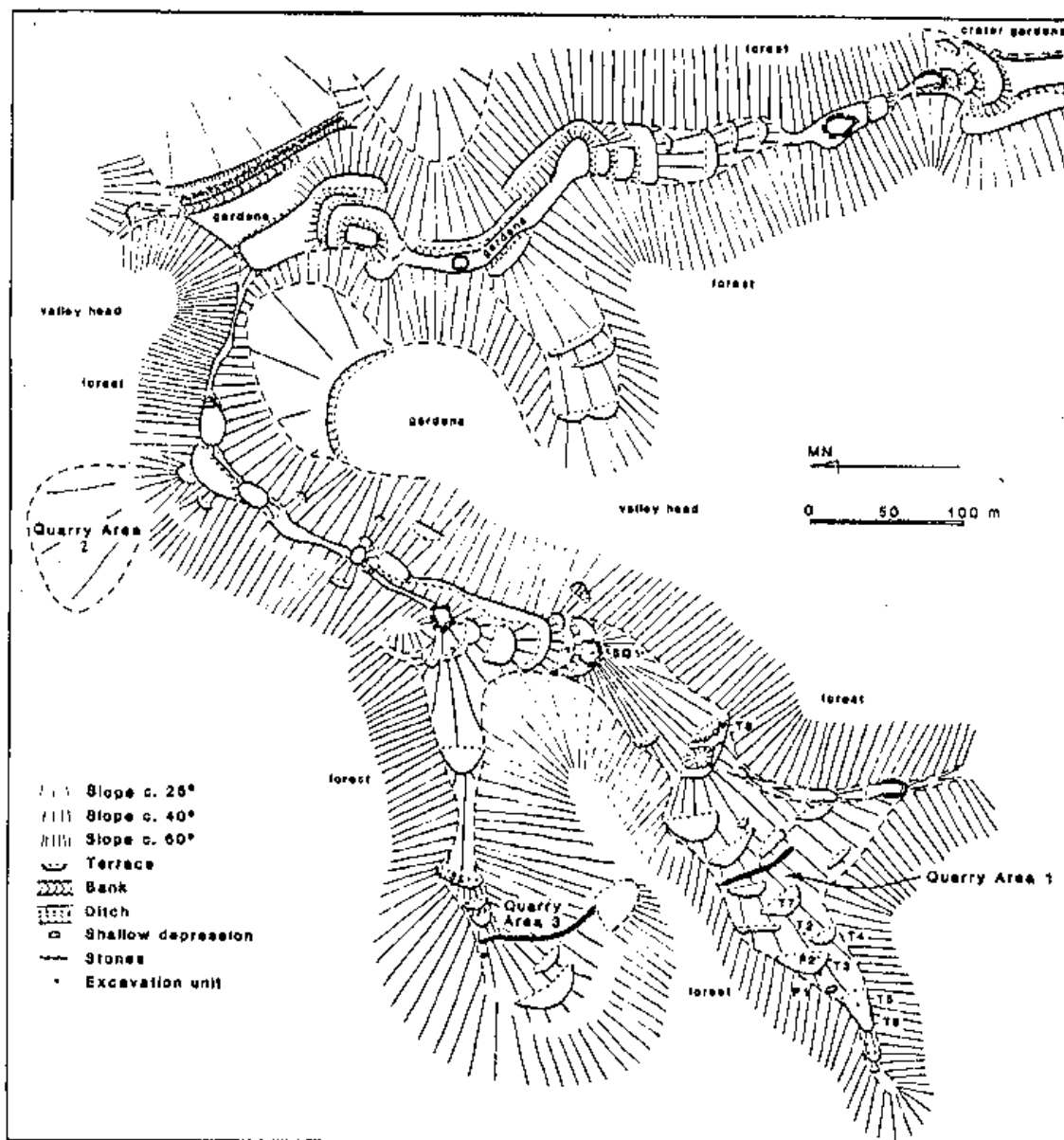


Figure 2.1: Map of Tataga-matau Fort and Quarry Complex

Figure 2

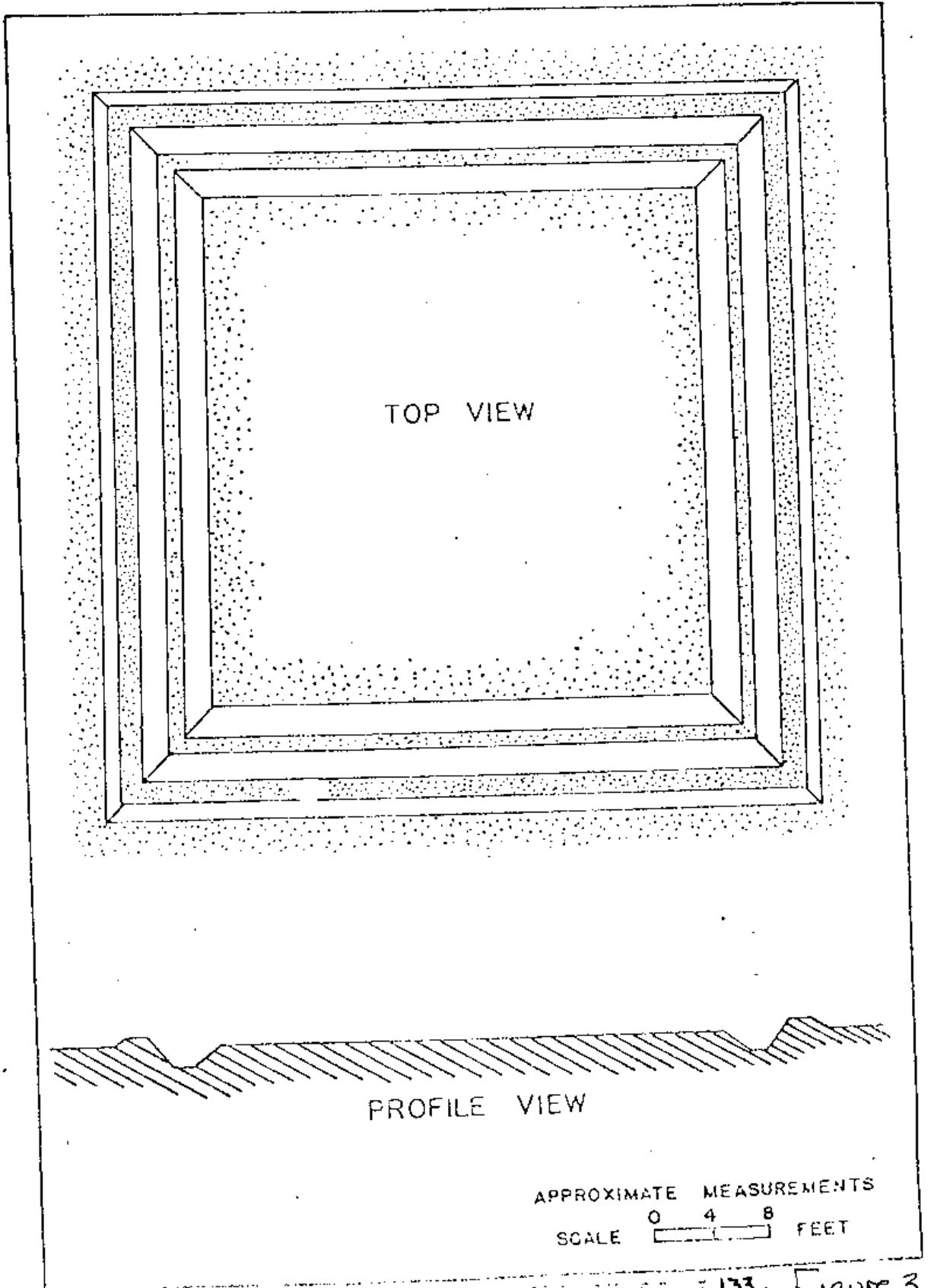


FIGURE 31. UNKNOWN STATURE, T-133. Figure 3  
LEONE VALLEY, TUTUILA

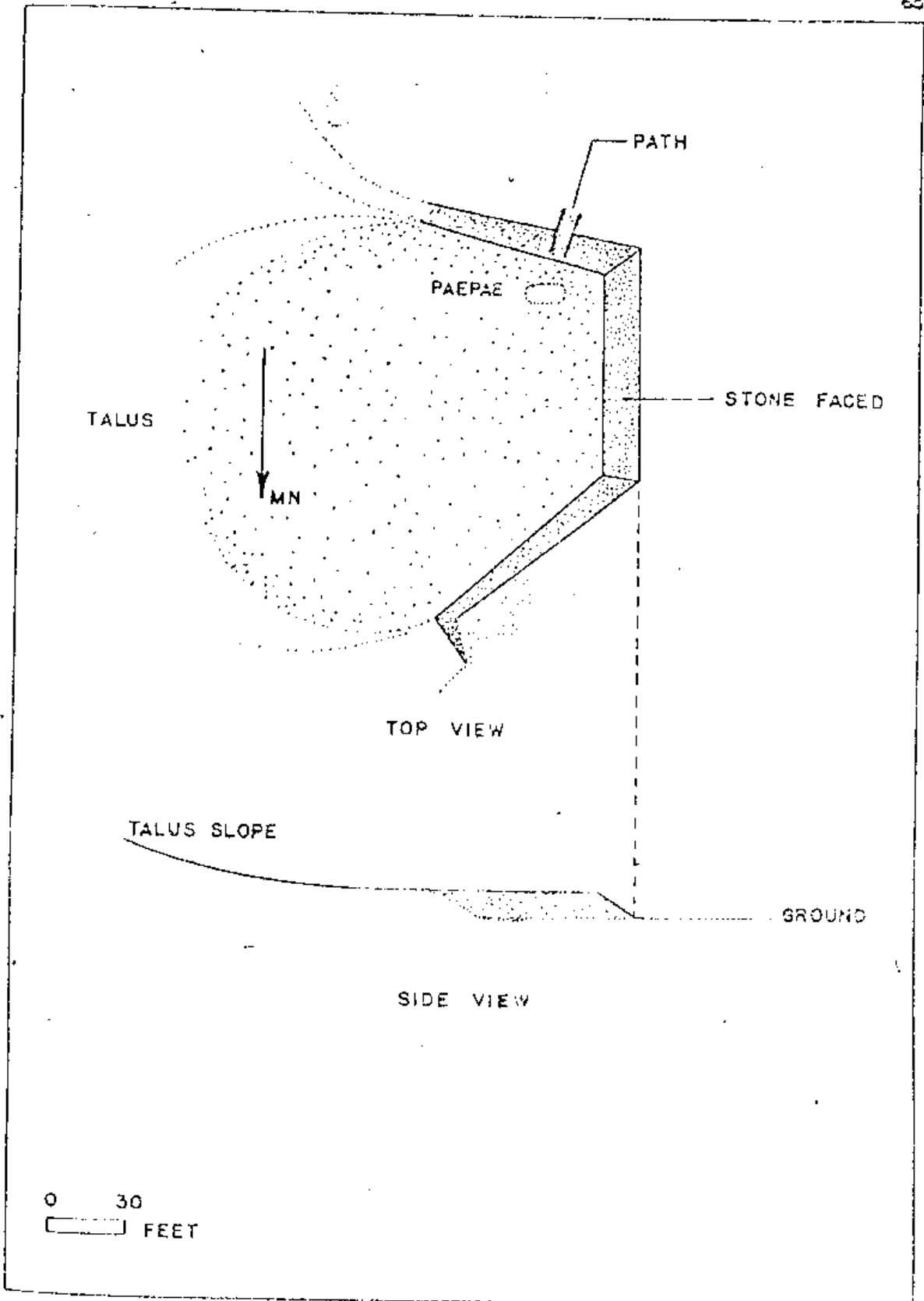


FIGURE 21. TIA SED LIRE, T-96  
 LATE PRECOLUMBIAN PERIOD

Figure 4

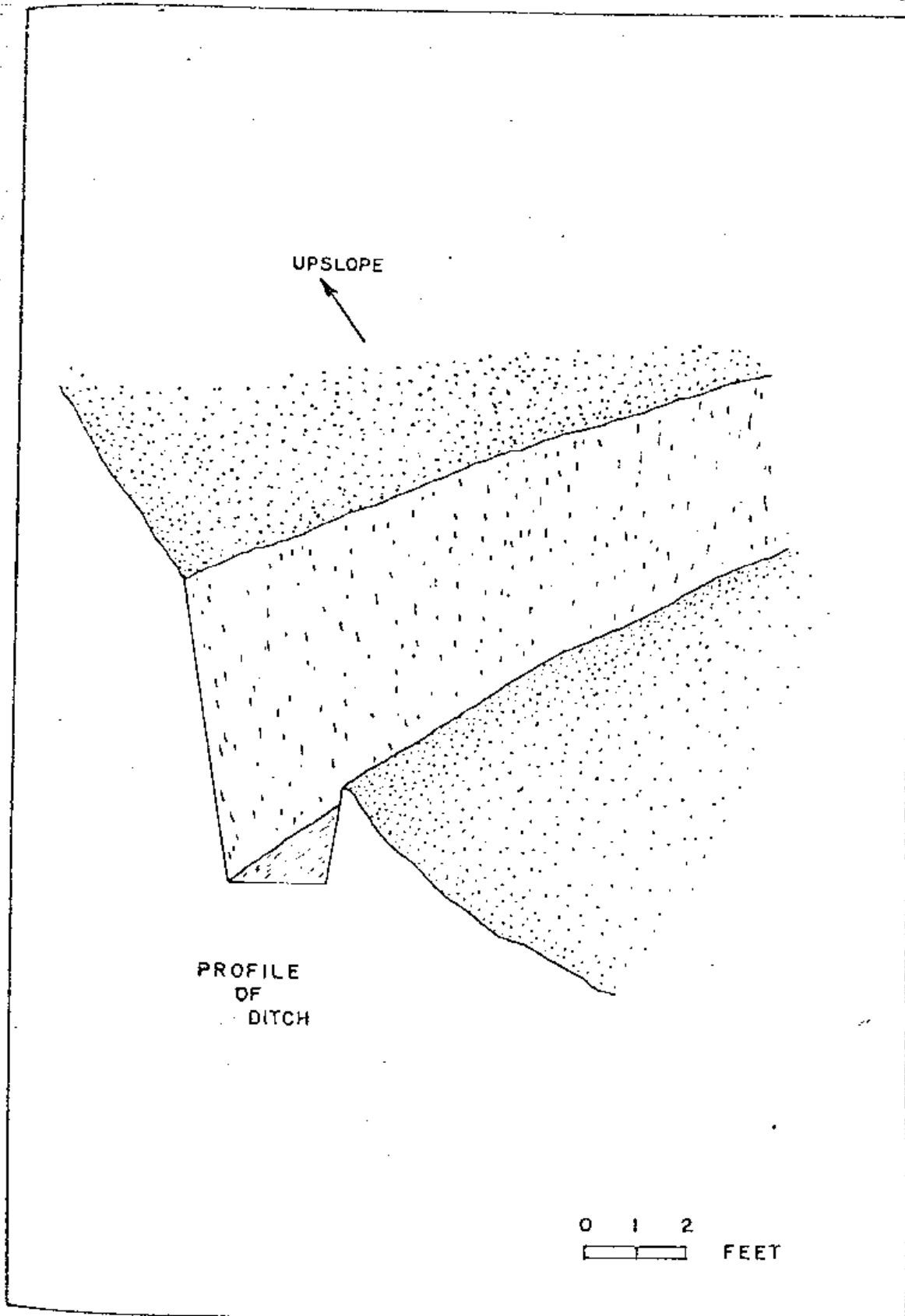


FIGURE 15. DITCH, T-82  
LEONE VALLEY, WYOMING

Figure 5