Archaeological Investigations in Asiapə,
Malaeao Valley, Tutuila, American Samoa

A Report on the American Samoa Community College –
University of Oregon Field Archaeology Project

Summer 1999

William S. Ayres
Joan A. Wozniak
Gwendolyn Robbins

University of Oregon

Manuscript Draft submitted to the SAMPAC Program
American Samoa Community College
and
American Samoa Historic Preservation Office

July, 2001
Table of Contents

I. General Background and Introduction
   Tutuila's Samoan Context
   Overview of Samoan Archaeology

II. Project Overview for 1999 ASCC-UO Field School
   General Introduction
   Field School Research and Teaching Plan
   Introduction to Malaeloa Valley

III. Oral History and Site Information for Malaeloa Valley

IV. The Field Projects
   Description of Reconnaissance Survey
   Description of Features
   Mapping and Collecting Transit Data: Procedures and Results
   Excavation Methods

V. Results for Sites Located in Malaeloa Valley
   Mapping Features
   Surface Artifacts
   Excavations
   Laboratory Analysis

VI. Summary and Interpretations
   Lithic Analysis
   Ceramic Analysis

VII. Conclusions
Figures.

1. Location of Malealoa Valley and site area. (Map 1)
2. Asiapa site area: location of landmarks and features (and Central Datum) Map 2.
3. Features 1, and 2: Grinding stones (foaga) associated with Feature 6 terrace
4. Features 4 Surface lithic scatter: concentrations of basalt flakes by quadrant
5. Features 4 Surface lithic scatter: tables of counts and weights of basalt flakes by quadrant
6. Feature 4a: Profile of excavation STP 2, a control unit outside of lithic scatter;
   Feature 4b: Profile of excavation F3 unit excavated within the lithic scatter.
7. Stone artifacts found on the surface (Feature 5) at Asiapa

Bibliography

Appendices (*not included in draft of July 2001)

Appendix I* Field School Schedule, Syllabus and Procedures
Appendix II Oral history of Malealoa Valley
Appendix III Lists of Artifacts
Appendix IV Table of Lithic Material Analysis
Appendix V* Table of Ceramic Analysis
Appendix VII Charcoal Samples (Radiocarbon date from AS 32-006-4
Acknowledgements

Appreciation is extended to Pulefa'asisina Tuiaosopo, Director of the Samoan and Pacific Studies Program at the American Samoa Community College, and to Bryan Jackson and all of the other SAMPAC and ASCC staff who organized many of the logistical aspects of the field work, who were responsible for recruiting and preparing students, and who arranged accommodations for the students and staff during the Field School project. Pulefa'asisina Tuiaosopo also provided the students with interpretations of Samoan culture, oral history, and discussions of Samoan history. We appreciate his time and talents. Without the interest, dedication, and funding provided by the Community College, the field school might not have continued. A special thank you is extended to Epi Suafo'a of the National Park Service, who identified the archaeological site area in Mataeloa and helped arrange for the field school to be here.

Thanks also to the Engineering and Survey Department, especially Mr. Mogens Ring who instructed the students in use of the transit and who assisted us in the collection of survey data using the Total Station, and David Kulberg, ASCC, who provided us with topo maps of Mataeloa Valley. We also appreciate the ASPA maps provided to us by Mr. Afu Filisi.

We thank High Chief Amiutana'i and High Talking Chief Gagai for allowing us to do archaeological recording within Mataeloa Valley, and for participating in the collection of oral history related to Mataeloa. A special thank you is extended to the entire Filisi family, caretakers of the land that we surveyed. The Filisi family provided us with all the necessities to make our life easier in the field, and patiently provided us with information about life and landmarks in Asiapa. And we thank the people of Mataeloa Village who welcomed us into their valley.

The authors wish to thank the ASCC and University of Oregon students who participated in the 1999 Archaeology Field School program in American Samoa. Special appreciation is extended to Lavinia Sefuiva, ASCC participant, who initiated, conducted, and transcribed the oral history component of research at Asiapa along with Letitia Peau, former ASCC student, who is presently attending the University of Oregon.

We thank Julie Taomia of the American Samoa Historic Preservation Office for providing site records, maps, and information. Special thanks as well to David Herdrich, ASHPO, for providing the students with a discussion about the importance of Cultural Resource Management in American Samoa.

Last but not least, we wish to thank the Department of Anthropology at the University of Oregon, Eugene, OR, for co-funding the field school with ASCC.
Archaeological Investigations in Asiapa, Malaeaoa Valley, Tutuila, American Samoa

Report on the American Samoa Community College - University of Oregon Field Archaeology Project

General Background and Introduction

Tutuila’s Samoan Context

American Samoa is located 2600 miles southwest of Hawaii and 550 miles northeast of Tonga. The Samoa archipelago is positioned at latitude 14 degrees South and longitude 170-178 degrees East. Nine of Samoa’s eleven volcanic islands are inhabited. American Samoa is made up of five volcanic islands, and two coral atolls. Tutuila, made up of a composite volcano that rises about 4.8 kilometers (3 miles) from the ocean floor, is the largest island of American Samoa. It is 29 km (18 miles) long and 9.7 km (6 mi.) wide with a total land area of 135 square kilometers (52 sq.mi.). Tutuila has a UTM easting of 528420 meters and a northing of 8416280 meters at the Pago Pago International Airport on Tutuila. The American Samoa Coordinate easting is 239300 feet and the northing is 290525 feet. The topography of Tutuila is rugged and geographically complex. The island is bisected on the southeast shore by a deep natural volcanic embayment known as Pago Pago Harbor.

American Samoa has a warm, humid, tropical climate with an annual mean temperature of 28 degree C (79 degrees F). The average humidity is 80 %. During the drier season (May to November) moderate southeast trade winds predominate; June to August exhibit the driest and coolest conditions. Weakened variable winds occurring during the wet season cause the high temperatures and heavy rains that persist from January to March. Average annual rainfall measured at the Pago Pago International Airport weather station is 3,175 mm (125 inches). However, rainfall varies greatly with elevation and aspect. Pago Pago Harbor rainfall is estimated at 7600 mm (300 inches). Hurricanes of varying intensities occur frequently.

Samoan Archaeology

Prehistoric (that is, pre-contact) and historic archaeological features have been identified and documented in various environmental settings in the Samoan Islands. Prehistoric village sites, quarries, star mounds and other constructions, and fortifications are located on mountain tops, ridge lines, and in lowland areas (Buck
1330; Green and Davidson 1969, 1974; see also Best 1994). Modern archaeological research in Samoa began with Golson (1957), and Green and Davidson (1969, 1974) in Western Samoa, while Kikuchi (1963) identified fortifications and four refuge sites in Manu’a, American Samoa. Since the early 1970s cultural resource management (CRM) projects have been the major force in documenting archaeological remains in American Samoa. Clark (1980) evaluated the historic preservation program in American Samoa and compiled an inventory of known sites.

During the 1980s the American Samoa Historic Preservation Office (ASHPO) sponsored archaeological projects employing a number of scholars (e.g. Gould, Reinhardt and Honor 1985; Ayres and Eisler 1985; Hunt and Kirch 1987, 1988; Clark and Herdich 1988; Clark 1989; Best, Leach and Witter 1989; Kirch and Hunt 1993). Most of these projects involved surveys, intensive mapping and excavations predominately on Tutuila.

The current literature lists numerous sites in eastern Tutuila, including several residential terrace complexes that could potentially be considered defensive structures (e.g. Frost 1978; Clark and Herdich 1988, 1993; Clark 1989). Three ridge top complexes with defensive features have been identified in Western Tutuila (Leach and Witter 1985; Best, Leach and Witter 1988; Best 1994). Two lowland defensive walls are located on Tafuna Plain, one in the center of the Plain and one at the mouth of Malaeimi Valley (Best 1992, 1994). Another wall was found on Aunu'u Island (Buck 1930; Clark 1980). The wall in Malaeimi consists of two major sections: a portion that extends up the eastern slope of Tuasivitas Ridge near the mouth of the Malaeimi Valley (AS 31-60) and another section runs up the western slope of Mt. Tau (AS 31-59). The AS 31-59 portion is physically divided into three sections by the recent road construction and by a streambed. This wall is estimated through oral traditions to have an age between 600 and 900 years old, from a time when Samoa was at war with Tonga (Best 1992). Inhabitants of Malaeimi Valley call this wall "the Tongan Wall". This was the location of the 1998 ASCC and University of Oregon Archaeology Field School.

Archaeological surveys have been conducted on the Tafuna Plain in Cultural Resource Management (CRM) projects that were conducted to satisfy compliance with Section 106 regulations. These surveys identified several prehistoric sites distributed over the plain, including star mounds, house foundations and subsurface deposits containing Samoan ceramics (Eisler n.d.a.; Kikuchi 1963; Frost 1978; Best 1992; Suafo'a 1994; Shapiro and Cleghorn 1995; Kennedy et al. 1996). The most extensive subsurface remains of pottery have been found at the northern edge of the Tafuna Plain near the foot of the mountain ridge that forms the spine of Tutuila. Villages were also located along the coast in Fagatele Bay (Frost 1978; Gould et al. 1985), Vairogí Fogagogo, and the old Tafuna Village at the southeastern part of the Plain (Kikuchi 1963; Clark 1980; Stover 1990).

Prehistoric settlements have been identified from ancient walls within Tafuna Plain. Kikuchi also notes stone-lined trenches near the western end of the original Tafuna
airport runway and burials in the vicinity of the more recently extended runway to the south (Kibuchi 1963, Clark 1980). Burial sites that contain prehistoric material remains (basalt flakes and adz pieces) were also discovered during a water tank project at Ilili between that village and Pava’i’i (Eisler n.d.b). Polynesian Plain Ware pottery, dated by radiocarbon methods to at least as late as A.D. 750-800, was recovered from several of the sites at the northern end of the Tafuna Plain (AS 31-34), which is also known as the Malaeimi Valley (Suafola’i n.d.). This is the first inland site recorded as having extensive ceramic deposits. In 1997 and 1998, the ASHPO conducted a survey on either side of the main highway near its junction with the road leading up to Aolo’au. In this area additional evidence of ceramics associated with inland settlement has been found (J. Taomia, personal communication).

Historic era sites that primarily date to the World War II (or Pacific War) era have been identified in many locations along the coast and inland. Military sites are located around the edges of the Plain, in the Malaeimi Valley, and closer to Leicone Village on the western end of Tutuila and also on the eastern end of the island. In the Tafuna area, the U.S. military features are most concentrated on the eastern part of the Plain in the vicinity of the modern airport. These are the remains of the original runways, taxiways and other supporting features of the airbase (Best 1995). During WW II many villages had two or three pillboxes located along the coast. Bunker sites include Fagaitua, Fagaalu and Fagatogo ridges.

Project Overview for 1999 ASCC-UO Field School

General Introduction

The Samoan and Pacific Studies Department of American Samoan Community College (ASCC) and the University of Oregon Anthropology Department co-sponsored the 1999 archaeology field school, under the direction of Dr. William S. Ayres. Six undergraduate students from the University of Oregon joined seven ASCC students for the archaeology field course. Fieldwork was carried out in the Asiapa region of southeastern Malaeoloa Valley under the direction of archaeologist Joan Wozniak (Ph.D. candidate, University of Oregon) and assistant field director Gwendolyn Robbins (M.S. student, University of Oregon). Malaeoloa Valley was selected for research based on reconnaissance conducted by Wozniak prior to the field season and ceramic sherds discovered by local resident Afu Filisi in the early 1990’s. Archaeological fieldwork had not been conducted in the valley prior to this project. Malaeoloa Village had been vacated in 1966 after a hurricane destroyed most of the homes at the mouth of the valley. Tiya, the policewoman of Malaeoloa Village, reported that only 4 structures remained after the 1966 storm. A hurricane in 1991 also removed many of the roofs in the village. The majority of houses now present in Malaeoloa were built in the 1980s and 1990s.

Afu Filisi collected the pottery from the ‘iliili and scoria in front of the Filisi house, 20 m west of the talus slope behind their home. The soil in front of the house had been
transported from the base of the ridge behind the house to make a level platform during construction. After working at archaeological excavations conducted by Epi Suao'a in Malaia, Mr. Filisi had gained familiarity with the significance of Samoan ceramics and recognized the pottery in amongst the rocks. He brought the pottery to the National Park Service office in Pago Pago for Epi Suao'a to examine and it was determined that these sherds were examples of Polynesian Plainware.

An initial reconnaissance prior to the 1999 field season was done in Malaia Valley. Epi Suao'a, Bryan Jackson, and Joan Wozniak carried out a preliminary interview with Mr. and Mrs. Filisi, who live within Malaia Valley. In 1967, Mr. Filisi was allocated land in Malaia through his marriage to Sefoforeo Akenese, whose family had worked that particular area of land during the early part of the 20th century. They lived in Olovalu prior to building their present house on this property, known as Asiapa, in 1991. According to Mr. Filisi, there were no other historic buildings on the valley floor prior to that time and no mechanical alteration had been made to the property. One oval fa'a foundation made of basalt boulders and several fa'aga (grinding stones) were located 30-40 m south of the Filisi house site on top of a terrace elevated 3.5 m above the valley floor. This terrace was carved out of the base of the eastern ridge.

Another terrace (Feature 10) is located east, and uphill, of the present Filisi house site. According to Mrs. Filisi, her older sisters occupied fales built on these two terraces (Features 6 and 10) during the 1950s and 1960s. She recalled that retaining walls were built east of their fales in order to stabilize the eastern hill slope, but there were no retaining walls present at the time of the field school. The two platforms were designated Features 6 and 10 during the survey. The fa'aga stones on and near Feature 6 were designated Features 1 and 2. Feature 1 was located on the Feature 6 terrace, while Feature 2 was on the valley floor west of the terrace. Originally, three fa'aga were found in the Asiapa area. The Filisi's son, Afo, moved one fa'aga (Feature 11) from the F6 area south of their house into the present family umu. Both F1 and F11 grinding stones have bowl shaped facets. F11 was broken after facets on two opposing sides of the boulder had been formed as a result of long use. Surface stone artifacts and ceramics indicate that this area had been occupied prehistorically or protohistorically.

The Field School Research and Teaching Plan

The field school project at Malaia was designed to teach archaeological field methods and interpretation with full recognition of the guidelines set forth by International professional organizations, including the Society for American Archaeology concerning the use of archaeological sites for educational purposes. The integrity of archaeological sites should not be compromised for training purposes and no archaeological activity, especially excavations, should take place without a well-defined purpose, research design, and plan for conducting activities.

There are no previous surveys for Malaia Valley. The valley is situated east of
Leone Valley and west of Malaeimi Valley on the western end of Tutuila. Malaeloa opens onto the Leone Plain, while Malaeimi Valley opens onto the Tafuna Plain. A low, natural ridge separates the two coastal areas of level terrain. We wanted to determine whether there was a relationship between these valley areas in terms of the distribution of both ceramics and stone tools. The distribution of ceramics on the west side of the island of Tutuila is relatively unknown compared with the large number of sites researched on the east side of the island. Maloata, excavated by Ayres and Eister in the 1980's, yielded evidence about ceramics on the west side of Tutuila. This began a chain reaction involving, and inspiring Epi Suafa'a, the first Samoan archaeologist, to pursue her M.A. in archaeology at the University of Oregon.

Suafa'a did her Master's work at Malaeimi Valley, one of the first inland sites that have yielded prehistoric ceramics (Suafa'a 1998). This site provided evidence that the manufacture and use of ceramics dates to well past the third century A.D., much later than previously thought (Clark 1997). Malaeloa is a large valley west of Malaeimi Valley and east of Leone. Leone is the largest village in Tutuila and the location of the Tataga Matau adze quarry, as well as several star mounds. The Tafuna plain and Malaeimi both have star mounds as well, and both have large fortification structures. The turretted stone wall in Tafuna has been interpreted to suggest intra-island and regional conflict. Malaeloa is situated in an ideal location for exploring the nature of inland Tafuna Plain settlement and inter-valley relationships. The importance of working at Malaeloa is thus to improve distribution data for ceramics on the island's west side, to conduct the first survey in that area, and to recover information about the artifact content of the observed site complex.

The aim of the 1999 field school was to teach archaeological theory and field techniques. The methods included reconnaissance survey, site mapping with transit and compass, excavation techniques, and initial stages of laboratory analysis. Initial classroom discussions and exercises were followed by field experience in Malaeloa Valley. We also designed this course to help the students develop an appreciation for Samoan archaeology, and how the material remains of the past relate to oral and written Samoan history. Our specific goals for Malaeloa were to:

- Conduct a surface survey in a transect extending from the eastern ridge top of Malaeloa valley west onto the valley floor, in order to locate architectural features and surface artifacts.
- Map architectural features to scale and place these features, as well as the position of the surface artifacts within the survey transect area, on a topographic map.
- Retrieve artifacts and dateable material from surface survey and test unit excavations adjacent to several of these mapped features.
- Compare the stratigraphy of excavations associated with architecture and features described in Aim 3, with that of test pits on the valley floor.
- Begin the process of recording the oral history related to the sites and land areas.

Research questions involved the relationship of inland valleys in the Tafuna area, as well as the relationship between Malaeloa valley and the rest of Tutuila and Samoa in general.
Specifically we asked the following questions:

Does Malaei Valley have comparable prehistoric settlement patterns and activity patterns with other inland valleys that empty onto the Tafuna plain (such as that found by Best in 1991 and Suafo'a in 1994 within Malaeimi Valley)?

Does the pattern of architectural features and artifact scatters found in Malaeo Valley support the hypothesis that valleys adjacent to the Tafuna and Leone Plains were used during early prehistoric periods for residence and subsistence? Was Malaeo Valley being used for agriculture and were residential sites present at the time of European contact? Did the pattern change after contact?

Does Malaeo exhibit artifact scatters of ceramics and lithics such as those reported for Malaeimi? What temporal and spatial context are they found?

Introduction to Malaeo Valley

Malaeo valley is located in Itulagi County, on the island of Tutuila. It is the largest valley on the south coast between Malaeimi valley and Leone village. Malaeo is an inland village at the base of a valley opening onto the Leone Plain (See Public Works maps 45- Upper valley and 50- Lower valley of the 55 topo maps of Tutuila).

The mouth of the valley is located approximately 2 miles from the coast. Malaeo valley is situated due west of Pava'ia'i Village. Fogamauga ridge defines the valley on the east side, Lesui Ridge delimits the northern boundary of the valley, and Malaloto ridge defines the western limit of the valley and separates Malaeo from Leone village.

The project area for the 1999 field season of the ASCC and UO Archaeology Field Methods class was located on the eastern side of the Malaeo Valley behind the village, near the valley interface with the Leone Plain. Malaeo village High Chief 'Amituana'i, Reupena Iosefa, and Mr. Fillisi gave their permission for the field school participants to survey, map, and excavate on land cared for by Mr. Fillisi. The land under the care of Mr. Fillisi is in an area known as Asipa in the southeastern portion of the valley. In the interest of brevity, this property will be called the Fillisi's land here, with recognition that they are not the current residents are tenants of the land within the traditional Samoan land tenure system, and do not own the land as on the American mainland.

The Fillisi land extends 26 m north and 39 m south of the telephone pole by the road in front of the Fillisi house. The total area of the Fillisi land surveyed is approximately 65 m from north to south and 150 m from east to west. The boundaries are marked by several niu vao palm trees at the north and the single coconut tree next to the road on the south. The eastern boundary of the Fillisi's land is at the top of Fogamauga ridge east of the valley. A north-south line of coconut trees demarcates the western boundary. A small, unnamed intermittent stream that drains off of the Fogamauga Ridge dissects the land. Water from this stream flows into the eastern side of the marsh-like Vailai Stream. The
lowest elevation of this stream is located 80 m west of the road.

Vegetation

The valley floor presently serves as a plantation area for the Fillisi family and several other families who live in Malaeaoa Village. The Fillisi land is planted with magnificent stands of 30 foot tall ‘ofe (timber bamboo), fa’i (Musa? banana), niu (coconut), niu o lotuma (coconut used for roof thatching), talo (colocasia taro), ta’amu (large-leaved alocasia taro), ulu (breadfruit), manioka, ti (Cordyline fructosa), fiu (ginger), paupau (papaya), Koko Samoa, kuava (guava), ago (turmeric), lama or kukui (candlenut trees), pele (hibiscus), fufufu (creeping vines in general), grasses and herbaceous vegetation. Refuse is scattered throughout the valley as well.

Geographic details

The valley floor varies between 130-138 feet (39.6- 42.1 meters) above sea level. Thus it is fairly level and acts as a broad, marshy channel for the Valtai stream. The Fillisi family has excavated shallow channels to drain their gray water discharge. These channels are 10-20 cm deep. One such channel is situated between STP1 and 2, and the lithic scatter (Feature 4). Malaeaoa Valley soils are classified into three associations. Leafu soils are found on the valley floor, Oloava silty clay loams are found on the hillslopes surrounding the valley and Sogi clay loam is found at the mouth of Malaeaoa Valley. The soils are described according to the USDA soil map for Tutuila (Bartlett 1981) as:

#8 Leafu silty clay - These very deep, somewhat poorly drained soils are on nearly level valley floors (0-3% slopes) and are formed from fine-textured alluvium derived mainly from basic igneous rock. The surface layer of Unit 8 soils is generally dark brown silty clay loam 10 cm thick, with some areas of stony silty clay. The subsurface layer is dark brown silty clay 23 cm thick. The upper 15 cm of the subsoil is very dark brown very fine sandy loam and the lower 65 cm is dark brown and very dark brown, mottled silty clay. To a depth of 155 cm or more, the substratum is dark brown mottled silty clay.

#20 and 21 Oloava silty clay loam - These soils are very deep, well drained soils found on sloping moderately steep, and very steep uplands. They were formed from volcanic ash and cinders. Typically, the surface layer of dark brown silty clay loam is 22 cm thick on the lower slopes decreasing to 15 cm thick on slopes of 12-25% (#20) and more than 40% (#21). The upper 13 cm of the subsoil is dark brown clay loam and the lower 8 cm is dark brown gravelly silty loam. The substratum reaches to a depth of 155 cm or more and consists of weather cinders that crush to a very gravelly sandy loam. Unit 21 soils support rain forest or woodland and wildlife consisting mainly of wild pigs, fruit bats, and birds. A few areas are used for subsistence farming.
#28 Sogi-Puapua clay loam - These soils occur on nearly level and gently sloping uplands (0-6% slopes), where runoff is slow and there is little risk of water erosion. They consist of about 50% Sogi clay loam and 35% Puapua clay loam. The Sogi soils are moderately deep and well drained. They formed from volcanic ash and are underlain by hard volcanic tuff bedrock. Typically, their surface layer is dark brown clay loam, 26 cm thick. The subsoil is dark brown clay loam 28 cm thick and the substratum is very dark grayish brown loamy sand 13 cm thick. Depth to hard tuff ranges from 50 to 100 cm. The Sogi soils are moderately permeable except in the underlying tuff. Runoff is slow and water erosion is slight.

The soil on the valley floor is gleyed, owing to frequent periods of standing water. The excavated units on the valley floor yielded a surface A horizon that is an organic-rich dark brown gravelly loam (A1). Gravel in this layer is made of basalt less than 15 cm in diameter. This layer also contains numerous small gravel-sized pieces of a red baked clay. The A1 horizon extends to a depth of 10-20 cm.

A second A-type horizon that is a reddish-brown silty clay loam lies below the dark brown A1 layer. This A2 layer is characterized by hard red inclusions of burned clay, which vary in size from less than 1 cm to sizeable chunks 15 cm in diameter. This horizon is 40 cm thick and extends to 60-70 cm below the surface. At about 60 cm in depth, a third A horizon is encountered. This layer is charcoal rich and includes both small pieces of burnt wood and fine particles of wood ash. The STP's next to Feature 4 were excavated below to a depth of 90 to 100 cm. The soil at depths below 70 cm in these units was mottled, charcoal-rich, brown loam. This horizon included some of the same red-brown clay as seen in horizon A2, however there was also a large amount of orange clay.

The land at the eastern side of the valley is steep, ascending from 140' above sea level at the Filisi home to 450' at the top of the ridge, which serves as the eastern boundary of the Filisi land. The horizontal distance of this rise is less than 1/3 of a mile. The valley walls ascend at a 75 degree slope in places and are mostly covered by subsistence plants including fruit and niu (coconut) trees, fasai or fala (pandanus), yams (yams), 'ava'avaa (or kava), tamu and talo. The slopes show indications of slumping, possibly from undercutting the slopes during construction of houses, or from repeated clearing for cultivation. The highest elevation of the mountain ridge east of the valley is over 600 feet above sea level. This high point lies northeast of Malaealoa Valley.

Behind (east of) the Filisi house, the hill slope was truncated to produce a terrace for the present house site. A profile of the hillside paleosol and the developing A horizon is exposed here. The profile indicates periodic erosion from the ridge above and deposition on the lower hill slopes. The A horizon is composed of a dark brown organic layer containing rocks. Under the A horizon is a reddish brown cindery gravel layer. There are large basalt boulders within this horizon, indicating that massive debris flows had occurred, possibly during or shortly after an eruption. Below this horizon lies a red clay-rich oxic horizon. This oxisol plus A horizon is located 20 m north of the unnamed stream bed, immediately adjacent to and east of the Filisi house.
Lavinia Sefuiva participated in the field methods class. Lavinia is originally from the Kingdom of Tonga but she has lived in Samoa since her marriage to Tuveve, a Samoan man. Lavinia is not only an ASCC student; she lives in the area of Malaeola that is controlled by HT-Chief Gagai Johnny Roe Lefefe. She was a great source of help and information about Malaeola Valley. In addition to her fine work as a student of archaeology, she collected oral history about the site for the ongoing ASCC ethnographic project. The interviews were conducted in Samoan, were recorded using both video and audio tape, and were transcribed by Lavinia Sefuiva and Letitia Peau. ASCC graduate and current University of Oregon student. During the interviews, Lavinia and Letitia gathered information about the history of archaeological sites and features, the occupation history for the area, the history of land use in the valley for the last 50 years, the origins of family and place names. Lavinia also passed on the legend of Fijian chief who conquered the area almost 2000 years ago, Tu‘Fiti, his cannibal chief son, Tu‘Feai, and Fala, a spirit of Malaeola Valley (See Appendix II). She graciously shared the information that she had collected from her family members and from other local sources with the archaeological field school. Lavinia and Letitia had assistance from ASCC student Fa‘afetai Salii.

The oral histories were collected from several sources in an attempt to discover the historical complexities related to Malaeola Valley. Oral history interviews were conducted with ‘Amituana’, the High Chief of Malaeola who controls the land on which the field school worked. The students also interviewed the High Talking Chief for ‘Amituana’ and High Talking Chief Sa Tele of Malaeola. This latter chief is formally known as Gagai Johnny Roe Lefefe; he controls Sigaloa (the area north of the land cared for by Mr. Filisi). He is responsible of taking care of Sigaloa stream and he is the mayor of Itu‘au, the district that covers the east side of Malaeola where we are working. The students also conducted an interview with Eneliko Tu‘i, Lavinia’s uncle-in-law (Tuveve Sefuiva’s uncle). Lavinia’s mother-in-law Taufa‘o Sefuiva now lives in Western Samoa. She provided information about the history of the site area via telephone during our project. She also visited the site upon her return to Tutuila during the last several days of the field school. Most of the information from Taufa‘o Sefuiva was obtained indirectly through Lavinia’s memory of conversations they had about Malaeola before Taufa‘o moved to Western Samoa.

The students tried also to interview Reverend Elder Panama Mutu, Letitia’s grandfather who lives in Leone, on the Tafuna Plain. However, when he was asked about Malaeola, the reverend declined to discuss the history of the village. He informed the students that the Malaeola chiefs should be the one’s to tell the story of Malaeola. Letitia Peau also asked her aunt to tell the story of Tu‘i Feai. Her only response was a sentence or two about the story of Tu‘i Feai (discussed below) which concerned her family land in the village of Ao‘o‘o‘au.

The information gathered from oral histories gave us valuable clues about material culture, land use, and settlement patterns over the past 30-50 years. We were informed of features that were used and possibly constructed within historic times, such as the fale
platforms at features 6 and 10, and an umu (Feature 7). This information was used to
determine which sites were selected for excavation within our limited time frame. Several
foaga (‘grinding stones’) were known by Malaeloa residents to have been present for all
of recent memory and had been used though not manufactured by the villagers. The
original location for one of the foaga that had been transported to another location was
also gained from the oral history, something that could not have been determined
archaeologically. While no one had information regarding the manufacture of stone adzes,
information was collected about the types of stone tools that were used in recent memory,
such as the foaga. In short, a lot of valuable information about the site was gained through
these oral histories. We are grateful to Lavinia and Letitia for their initiative and for the
long hours they put into this project. A transcript of their interviews can be found in
Appendix II. Only the information relevant to actual archaeological features will be
discussed here.

Eneliko remembered that his family had a house in the valley, and an umu near the
stands of timber bamboo. In our reconnaissance survey, we located a feature (described
below) that appeared to be an umu, with a small quadrangular area of fire cracked rock,
near the bamboo stands. We also found scattered artifacts north of that feature including
basalt flakes and a koko pounder. The koko pounder is a broken water-worn cobble that
has been obviously pounded or ground to a flat surface at one end. Eneliko did not recall
seeing anyone using stone tools except for the foaga. Foaga were used as bowls during
historic times. He described the foaga as being there before his family arrived and he
thought that these foaga had come down the mountain during a landslide ‘a long time ago.
Eneliko also remembered that there was a pigpen in that general area and that the family
graves were located south of the Filisi land.

Both Eneliko and Gagai remember that the valley floor used to flood during heavy
rain and that the water often comes up to the knee. According to Gagai, the village does
not flood as much anymore because the both the villagers and the US Marines brought in
so much soil and gravel during and after WWII. The gravel and soil was intended to cover
the lower areas, especially the wet lands west of the Filisi house site, on which tents were
constructed. He said however that the recent hurricanes did not cause flooding and that
heavy rains would cause flooding. Gagai also remembered that there had once been a
pigpen on the valley floor and that there is a wall of rock (a quarry?) on the Westem ridge.
When asked about the koko pounder, he said that that was the only stone tool he
remembered his father using, except for the foaga for sharpening metal knives, machetes
and axes, and small, unmodified boulders to hold down mosquito netting.

Lavinia’s mother-in-law Taufao Seluiva now lives in Upolu but over the years before
they moved Levinia talked with her about the land and the family history. Taufao was about
75 years old in 1999. The information from these conversations concerned the features
that we found on the Filisi land and was especially helpful. Taufao had said that Malaeloa
was where her parents had lived and farmed. Her family had three houses in the site area
in Malaeloa. One of the houses was at the bottom of the ridge, on a terrace that we named
feature 6. It is located 36.5 m south and 30.5 m east of the central datum on the road. Another house was located farther up the mountain, most likely located on one of several terraces above and to the east of feature 6. The third house was located at Olovalu crater. Taufao said that her father (______) had surrounded their houses with plantations where he grew tālo, kape, fa'i, ulu, niu, and koko trees. The family also kept pigs on the land, as well as chickens. He worked so hard to clear the land that he eventually ‘owned’ that whole section of the valley and his children all built their homes in the area.

The fale platform at Feature 6, reportedly was the site where Taufao’s parents built their house and a separate kitchen area. Outside of their kitchen was a foaga, or stone bowl. There was another foaga (grinding stone) under an ulu tree and a third on the other side of the house. After Lavinia’s husband’s grandparents, their son and his wife Taufao Sefuiva lived in a house on that fale platform. Then the platform was occupied by their brother Eneliko Tuli, Lavinia’s husband Tuveve’s uncle. Behind the house, Eneliko built a retaining wall of stones at the base of the ridge to prevent landslides. He also built a pigpen in front of his house and put in a koko plantation next to the kitchen. Eneliko’s house was destroyed by the 1966 hurricane. This is the same terrace identified by Ake as being used by her sister prior to the 1966 hurricane. It is not clear what the relationship between Ake’s sister and Eneliko was, or if there was one. Although they never lived on the platform at feature 6, Lavinia and Tuveve also used the kitchen area next to the Feature 1 foaga. They used to cook their umu on Sunday at that kitchen because it was close to their plantation.

In addition to gathering information about the land and historic occupation, Lavinia Sefuiva provided her own memories about specific artifacts. She described how her husband Tuveve used the foaga we called Feature 1 for grinding up ‘ava niukini, a poisonous form of ‘ava used in fishing. According to Whistler (1984), this form of ‘ava originates in New Guinea and was introduced to Samoa by missionaries. In addition, Tuveve had also used the foaga we called Feature 2 to sharpen his machete blade within a shallow groove in the rock. During the field school survey, Lavinia found the river cobble that was ground flat on one end near Transit Station F-5. She is the one who called this cobble a koko pounder. Cocoa trees were planted nearby.

Lavinia also provided information about the two streams that flow down the eastern ridge in the area named Sigaloa. Sigaloa means ‘the water that always flows’. Both of the two eastern streams are called Sigaloa after the name for the land. Sigaloa is north of the Fiilisi site area. This land is under the control of Chief Gagai. The land adjacent to the southern-most stream is occupied by Mele Tele'a, her husband, and their daughter Sigaloa (after the land where she was born). Mele told Lavinia that the stream was only used for bathing and washing clothes or dishes. There were large boulders where the water originated and along both banks of the stream. The boulders were aligned along the stream in a manner that resembled a stone wall, or abutment built to prevent flooding of the house site during heavy rains.

The northern-most stream also exits the boulders on the eastern valley wall. This stream flows into a building used to house pigs. This stream appeared to be dry during
our August, 1999 visit. Both branches of the Sigaloa stream originated underground and had pipes projecting out of the rocks to channel the water. Both streams are approximately 50 meters from rocks containing pipes from which the water flows. There were artificial channels approximately 1 m in depth, which had been constructed to control the flow during periods of increased precipitation. It appears now that there are so many channels incised into the valley to control the flow of water, that the entire valley floor has become a marshy swamp that is permanently saturated with water.

Near the origin of Sigaloa stream in the banks of the excavated channels, there are basalt flakes. Joan collected rock samples from this area for comparative purposes. There is also a fale adjacent to the northern Sigaloa Stream, which has a large pavement between the stream and the fale. The dimensions of the pavement were not made, although photos were taken.
The Field Projects

Description of Reconnaissance Survey

We did a reconnaissance survey in Asiapa on the eastern side of Malaeloa valley; this included the land cared for by the Fillisi family of Malaeloa Village. Several features were located and subsequent work exposed ceramics and, especially in Feature 4, large quantities of stone flakes from adze manufacturing.

During the Asiapa survey, a concrete house foundation was identified and several flags were placed at surface artifacts including the cobble koko pounder, flakes of fine-grained and coarse-grained basalt, and a boulder alignment. After clearing around the locations of these artifacts, four possible features were identified: the concrete house platform (Feature 8), a boulder alignment (Feature 3), a possible planting area or 'paepae' (originally labeled Feature 5) and a large lithic scatter (Feature 4). After the first transect, we switched directions and did a transect going from east to west over the last 20 m of the Fillisi property. The total survey area was 65m from north to south and 80m from east to west.

We conducted another reconnaissance survey east of the road, north and south of the Fillisi house. The area south of the house was a 30 x 30 m square. ASCC student Nia Sefuiva participated in this survey, during which she indicated that there was a foaga and a terrace with a house platform at the southern boundary of the Fillisi property. The foaga, Feature 2, was located 30 m south of the Fillisi house and 12 m east of the road. A hillside terrace, Feature 6, is located 30 m east of the road and lies between the southern boundary of the Fillisi land and approximately 30 m south of this boundary. HC Gagai controls the land on which most of this terrace is situated. His permission to clear and map this terrace was subsequently obtained by Mrs. Sefuiva. A total of eleven features were thus identified during the reconnaissance survey; they were assigned numbers and cleared for closer inspection and mapping.

Joan Wozniak led the students on an additional reconnaissance beginning at the base of the eastern ridge behind the Fillisi house. Mrs. Sefuiva identified the ridge as Fogamauga. The students began their transect at the base of the ridge, within a streambed behind the Fillisi house. The survey team moved northeast for about 15 m before the slippery and steep nature of the survey location discouraged further scientific effort. The daunted students failed to notice a terraced area within their transect. A week later after the family had cleared the hill behind their house for ta'amu, the terrace, Feature 10, was noticed at a point about 30 meters east of the house and north of the mouth of the intermittent stream.

Wozniak, Robbins and two of the more stalwart students surveying within the eastern-most transects persisted almost to the top of the 400' tall ridge before the thick vegetation prohibited further ascent. No obvious features were located although there were several large rock outcrops and boulders. The current residents had recently
planted the ridge with cultivars. The area south of the streambed was not surveyed during this study.

At this point the students were divided into work groups and they began clearing the identified features. These teams were maintained throughout the mapping process, during which time the students were instructed in setting up local feature datum points, use of the transit, compass and tape, as well as gridding and mapping techniques. All of the features were recorded with transit readings and all of the students were encouraged to participate in this effort. Therefore each feature was mapped using a combination of techniques.
Description of Features

Feature 1 An oval bowl-shaped foaga 45 x 55 cm across and 10 cm deep was carved out of a boulder 51 by 77 cm and 70 cm high. The foaga currently sits at the base of the Fagamaua ridge and is part of a rock alignment that abuts the Feature 6 terrace. It is unclear as to whether Tuveve Sefuiva or his uncle Eneliko first found the boulder. Eneliko may have discovered the boulder overturned sometime before the 1960s when he built a faleo'o Samoa on the Feature 6 terrace. Nia was certain however that Tuveve had used the foaga to make 'ava niukini fish poison.

Feature 2 A boulder located 12 m east of the road in front of the Filisi house and 30 m south of the house. The grinding rock is approximately 1.2 m long and 70 cm wide and currently sits at the base of a large ulu (breadfruit tree), 15 m west of Feature 6 terrace. Tuveve Sefuiva used several portions of this rock for grinding machetes and axes within the past 20 years. The information on historical use comes from Lavinia Sefuiva who has used the area for plantation land during the past 10 years.

Feature 3 Two intersecting alignments of partially buried boulders. An east/west boulder alignment extends westerly from present road for 4 meters where it intersects a boulder arrangement having a northeast/southwest alignment. The boulders are rounded basalt similar to local Malaelo'o outcrop rock. Several large water worn cobblestones form what appears to be a walk-way 2-4 rocks wide. The boulders are sunk into the muddy soil of the banana plantation. Most of the rocks are situated such that 5-20 cm of rock height is above the surface. The local residents have indicated that 1.) a fale stood in this location in the past, 2.) the U.S. marines brought in gravel to make a tent platform during WWII, and/or 3.) part of the valley floor was used as a pig wallow over 10 years ago and it is possible that this alignment represents a pathway to the former pig pen. The shallow Vaitai Stream floods often during the rainy season and the valley floor is then covered with up to three feet of water.

Four ceramic sherds were found in the area next to two of the surface boulders, which are adjacent to, though not part of, the alignment. These ceramics possibly originated from the Filisi house site, where gardening may have exposed them to the forces of sheetwash during large rainstorms. We excavated 1 unit in this alignment in an attempt to discover the depth of the boulders within the alignment as well as to explore the possible presence of subsurface ceramics.

Feature 4 A lithic scatter is situated 29 meters east of the road and 24 meters south of the central datum (located near the electrical pole south of the Filisi house). The main concentration of the scatter was confined to a 4 by 6 meter area. However, the feature was expanded to include a 9 by 11 meter area for the sake of contrast. The local datum for Feature 4 was located in the center on the east-side (see Map __). A grid was placed
over the area that extended 4 m north (towards Nm), 5 m S and 11 m W of this local datum. The grid was labeled using numbers 1-9 for the N-S columns, and letters A-K for the E-W rows. We collected 1277 flakes laying on the surface of the 9 x 11 m gridded area. These flakes were collected by unit quadrant for lithic analysis. There were no flakes on the surface of either STP-1 or STP-2.

A 50 x 50 cm excavation was done as a shovel test pit 1(F4-SP-1). It was located 6 m W and 9 m S of the Feature 4 datum, in an area 5 m south of the actual grid. A second excavation unit was also begun as a shovel test pit 2 (F4-SP-2). It was a 1 x 1 meter excavation located 0 m west and 9 m south of the feature datum. A third 1 x 1 m controlled unit excavation was located 5 m west and 2 m north of the feature datum inside of the actual grid. This 1 x 1 m area was located in column 3 and row F of the grid and is referred to as Feature 4-F3. This unit yielded over 200 flakes during the surface collection and represented the area of greatest flake concentration.

F4-SP 1, located 5 m S of the scatter proper, was excavated down in 10 cm arbitrary levels to level 10 (1 m). Fine charcoal was noted below level 6 in STP-1. Soil samples were collected and wet screened with a 1 mm screen. We collected one polished adz fragment (from level 3) and a total of 154 flakes from the entire unit. F4-SP 2, also located 5 m S of the scatter proper, was excavated to arbitrary level 9 (90 cm). STP 2 contained a total of 781 flakes. 1 adz pre-form (level 6), a 10 x 10 cm piece of weathered shell (level 6), 3 polished adz fragments (1 from level 3 and 2 from level 6), and charcoal (levels 6-9).

The excavation unit (F4-F3) was located 5 m W and 2 m N of the datum, within the gridded area of the lithic scatter proper. There was a large (approximately 10 x 30 cm) core fragment on the surface in unit F3 as well. Due to time constraints, the unit was excavated down to arbitrary level 2 (20 cm) in the northern half of the unit, and down to level 3 (30 cm) in the southern half. This unit contained 3 adz pre-forms that were collected in situ: 2 pre-forms from level 1 and 1 pre-form from level 2. We collected 1302 flakes from level 1, over 5000 from level 2, and 1234 from level 3. The profile drawn for the south wall shows a clear boundary for the flake concentration within level three. However it is unknown if more cultural material lies below 30 cm.

This area probably represents the remains of intensive tool making though the temporal and spatial associations on the surface are dubious due to flooding, severe weather such as the 1966 hurricane, plantation agriculture, and other human or animal activity. There was a partially buried nylon net that incompletely circumscribed the outside of the grid. This net could indicate that this area was a plantation at one time, the net acting to shield the plants from rooting and trampling activities.

However, due to the high concentration of sub-surface fine-grained basalt flakes, the result was that they had a cementing effect. This made the excavation unit very difficult to excavate. At the time we cleared the feature, there were only 5 banana trees planted within the grid. We returned to the site after backfilling the unit and following a week of heavy rain. The rain had exposed approximately 200 additional flakes distributed over the surface of the Feature 4 grid; these were not collected. The presence of newly exposed surface
flakes suggests however that the area is subject to substantial disturbance due to hydrological perturbation. During dry days, the soil was deeply cracked and parched; during rainy days the area was muddy. Time constraints did not permit a full examination of more than 1 unit within the scatter through excavation and/or deeper penetration within that excavation unit. Surface and excavation materials were collected, as were charcoal and soil samples.

**Feature 5** Surface scatter of basalt artifacts including a koko pounder, 1 polished tool, 1 adz tip, 2 blades, 1 retouched flake, 1 chipped flake, and 11 unmodified flakes. The scatter was located 30-35 m northwest of feature 4 and between 5 and 15 m north of the umu, Feature 7. The artifacts were scattered over an area covering 5 m x 10 m.

**Feature 6** A terrace is situated 15 meters east of feature 2 and 30 meters east of the road near the electrical pole located 30 m south of the Filisi house. The 9 by 29 meter terrace is carved out of the steeply sloping hillside south of the intermittent stream southeast of the Filisi house. According to Mrs. Akinesa Filisi, one of her sisters placed a stone wall on the uphill side of the terrace during the 1950s and 1960s. According to Lavinia Sefuiva, her husband's uncle constructed a wall. The downhill (western) side of the terrace is sharply cut and the soil horizons are exposed. A short span of several tiers of rocks holds up the middle portion of the terrace on the western side.

The northern end of the terrace is lower than the southern end and may have served as the umu (kitchen area). A curved rock alignment, which includes a foaga stone, Feature 1, holds the soil in place. Presently a dirt surface forms a ramp from the tiered rocks down to the feature 1 rock alignment. The soil slump/ramp extends downhill in a westerly direction towards the road. Soil creep and slumping has redistributed the rocks of the stone wall uphill of the terrace and has caused the terrace to slump. The terrace is situated approximately 15 meters to the east of, and 3.5 meters above the valley floor.

An incomplete, curvilinear, embedded rock alignment approximately 3 meters long is situated on the southern portion of the terrace. Another surface curvilinear rock alignment also approximately 3 meters long sits within the first alignment on top of the ground surface. This second alignment appears to have been constructed recently.

**Feature 7** An umu (rock oven) located 25 m west of the dataum of Feature 4 and several meters south of Feature 5. The feature was identified by the presence of a large number of fire cracked rocks, and is believed to be recent/historical in nature based on information gathered in discussions with Dorothy Filisi, the 21 year old daughter of Ake and Felisi Sr. Nine basalt flakes and 6 artifacts were collected from the surface at this feature.

**Feature 8** A concrete house platform 7 m x 7 m, located 10 m south of Feature 4. According to Lavinia, this platform may have been constructed by Tito in the early 1990s but abandoned before construction was completed. Another story was that it belonged to Chief 'Amituana' and was abandoned after the 1966 hurricane.
**Feature 9** An area where the Fogamauga slope was truncated and the soil moved to supplement the terrace on which the Filisi house now sits. The slope profile does not appear to contain any artifacts, however this is the location of the original pottery sherd that Aju Filisi found in the early 1990's (see introduction). In an attempt to locate additional ceramic sherds and to understand their relationship to soil movement, two units were placed 7 and 14 m east of the house. These two units were part of a transect of 4 units running east to west from the unit at Feature 3 in the valley floor, to the unit at Feature 10, which is 56 m up the ridge, east of the central datum. Feature 9, Unit 1 was located 7 m east of the Filisi house and Unit 2 was located 7 m east of Unit 1. In addition to basalt flakes, ceramics identified as Polynesian Plainware and yellow historic-era glass were recovered from level 1 of unit 1. Basalt tools (adz preforms and polished tips of adzes) were found in levels 4 and 5 (30 to 50 cm below the surface). A few fine-grained basalt flakes were found in Unit 2, levels 1 to 3 (0-30 cm).

**Feature 10** A terrace is situated 56 meters east of the central datum on the E ridge behind the Filisi house. The terrace (7.2 m E/W and 10.5 m N/S) is carved out of the steeply sloping hillside east of the road that runs in front (or west of) the Filisi house. According to Mrs. Akinesa Filisi, her sister had resided on the terrace during the 1950s and 1960s. The downhill (western) side of the terrace is cut sharply. There is a paepae on the terrace demarcated by an incomplete, curvilinear, embedded rock alignment approximately 6 meters long is situated on the south-eastern portion of the terrace. West of the alignment and slightly below, there are large boulders suggestive of another curvilinear, surface rock alignment. There is evidence of soil slumping uphill of the terrace. Large boulders are located in a dispersed alignment having a north-south bearing, but this alignment is staggered below the edge of the terrace edge, and above the Feature 9, Unit 2 excavation on the slope downhill of the Feature 10 terrace.

During the surface survey, basalt flakes were recorded on the surface of the terrace platform. The excavation unit was a 1 x 1 m controlled unit; it was excavated to an arbitrary level B (80 cm). Only a few flakes were recovered during the excavation. There was no sign of ceramics at this feature.

**Feature 11** The foaga located in the Filisi umu house is a broken piece of a boulder 40 cm long by 32 cm wide, having convex grinding surfaces on two sides. The bowl on one side is at least 40 cm long and 30 cm wide and has a diameter of at least 30 cm on the other. It is approximately 5 cm deep on both sides. The foaga currently sits in the umu house at the back of the Filisi house but was moved there from the base of the Fogamauga ridge near Feature 1 within the 1990s. No current use was described for this foaga and in its present condition it could not have been used as a bowl to hold liquids.
Mapping and Collecting Transit Data: Procedures and Results

Once the land had been surveyed for archaeological material, one group of the field school students was assigned to mapping the site area using a transit, another group was assigned to clearing and mapping the individual features. The transit team was assigned to map the site boundaries, the geomorphology, and the major archaeological and historical features. First the students practiced triangulation techniques using the transit under the direction of Mr. Mogens Ring. The transit measurements that were taken were measured in feet, because the Samoan base map and land boundary maps use the English system. Mapping projects of the sites were recorded in meters however, because archaeological field records are typically kept in the metric system.

The central datum point was established near the only semi-permanent landmark, under the telephone pole 100m west of the Filisi house. The students mapped the road west of the house using the transit. The gravel road runs along the eastern edge of Malaeolua Valley, directly below the eastern ridge. This team also collected transit data for the boundaries of the rectangular-shaped project area extending east of the road up the slope and west of the road. The area surveyed was approximately 60 meters by 80 meters.

Three mapping techniques were used to map the elevation of the terrain, the geomorphology, and the archaeological features in relation to the geomorphic landscape features: the transit, total station, and compass and tape. Ten "transit stations" (TS) were set up on the Filisi property, three of them were located respectively at 72, 120, and 143 ft south of the central datum (transit measurements were made in feet and later converted to meters). There were 7 TS established on the western side of the road, at features 3, 5, 6, 8, 9, and 10 (See Fig 2). A feature datum was established for each feature, their distance, azimuth and elevations were recorded in relationships to the TS and to the central datum. Dr. Mogens Ring also recorded these locations using a total station.

The students also used tape measures and compasses to map the individual features (generally 10 by 25-meter areas) and unit locations. A group of students was assigned to features 1, 2, and 6 due to their proximity and the relative simplicity of mapping features 1 and 2. These students were asked to map the foaga (feature 1) and the surrounding area (See Fig 3). They used the Brunton compass to establish a North-south and East-west boundary and the tape measure and graph paper to plot each stone surrounding the foaga. Then the foaga itself was mapped; a string was stretched across the margins of the grinding surface and the depth of the bowl collected at 5 cm intervals. The students then mapped the grinding stone, which was designated Feature 2, using a small grid positioned to cardinal directions. To map the Feature 6 terrace, the students set up the transit and plotted the margins of the platform and the alignment of individual rocks composing the alignment (See Fig 2).

Another team was assigned to the boulder alignment at Feature 3 (Fig. 2). The boulders were divided into two discrete alignments, 3a and 3b. The feature datum was
established and its location taken from the central datum point. A grid was established using a compass and tape measure and the individual boulders were measured and plotted on graph paper.

The lithic scatter, Feature 4, was identified during the reconnaissance survey and was cleared essentially by hand. Machetes were used to remove the sparsely scattered banana trees in the vicinity but the ground itself was manually cleared of detritus. The main concentration of basalt flakes was an area 4 by 7 m. The concentration of lithic flakes in and around the scatter decreased outwards from the 4 by 7 m area in a roughly concentric manner. The actual area cleared, gridded and mapped was 9 m north to south x 11 m east to west. This rectangular grid was oriented on a north-south axis and was designed to cover an area at least 1 m past the flake concentration. The feature datum was established in the center of the east boundary. The grid was divided into columns and rows; columns were labeled alphabetically (A-K), rows numerically (1-8) (See Fig 4a). There was a partially buried nylon net along the southern and eastern border of the scatter. The net begins 1 m south of the datum on the east side of the grid and ending 2 m north of the grid on the west, running roughly parallel 1 m north of the southern boundary.

Once the 9 x 11 m area was staked and strung in 1 m square units, photographs were taken from an aerial plan view (from a ladder) in both color and black and white film. We decided that the surface of the feature, being at the lowest elevation of the valley and designated as a stream on USGS maps, had been heavily disturbed by floral, faunal, fluvial and soil movements. The distribution of flakes was mapped roughly by sight in the field. We then made a contour distribution map using Excel of the flake count per quadrant (See Fig 4b). For the surface collection of flakes, the 1 x 1 m grid units were further subdivided into quadrants. The surface flakes were collected separately for the NE, NW, SE, and SW quadrants. 1416 total flakes were collected from the surface within the grid. Surface artifacts were also collected. One adze preform was collected from the surface in the center of grid unit 7B and a basalt boulder core (Fig. 7d) was collected from the center of grid unit F3 (also the unit with the greatest concentration of flakes).

Feature 5 was a surface scatter of artifacts and was mapped by a different team. A grid was overlain in 5m blocks using the Brunton compass and the artifacts were mapped with a tape measure. Once this team had mapped and collected the artifacts at feature five (See Fig 7), they were assigned to map the umu (Feature 7) and a cement fale platform (Feature 8), both of historic origin. This team finished these tasks quickly and they moved on to excavate Features 9 and 10, locations on the talus behind the house where pottery had been discovered by Mr. Afu Filisi (discussed above). There were no archaeological features on the surface at these locations at the time of this study.
Excavation Methods

When the feature mapping projects were completed, areas were identified for further research and excavation. Five excavation units were planned for four of the features: Features 3, 4, 9, and 10. The pottery that had been discovered in Feature 3 was not associated with a secure context and appeared to be located in an area where debris might settle from ridge landslides. Therefore a transect was designed to run from Feature 3, the boulder alignment on the valley floor, through areas identified by the Filiisi family as the source of previously found ceramic sherds: the talus and the terrace above (east of) the Filiisi house on the ridge. The latter two areas were identified after the initial survey and were designated feature 9 and feature 10. Units 3, 9 and 10 will be discussed as a discrete transect.

Two surface ceramic sherds were found within feature 3, the boulder alignment, during the course of mapping that area. Feature 9 is located at the base of the ridge behind the Filiisi house, 30 m east of the road, and this was the location of ceramics that AFu Filiisi found during construction of the outside bathroom. Feature 10 was located on the ridge 50m E of the road, behind the Filiisi house. It consists of a rock alignment on a level terrace carved out of the steep hillside. Given the nature of the site in terms of the potential for mass soil movement and landslides, a unit was planned for feature 10 as a possible source area or deposition site for ceramics from further up the hillside.

Units were planned for the lithic scatter (Feature 4) to determine the origin and the nature of this feature. Two shovel test pits were planned for the area outside the scatter boundaries and one 1 x 1 m excavation unit was planned within the area of greatest concentration of surface basalt flakes (grid F3). However we encountered many basalt flakes and artifacts within STP2 and proceeded to excavate the lower levels with trowels. All sediments removed from the excavation units and pits were screened with ¼" or ½" mesh.

Lithic scatter site (Feature 4)

Several excavation units were planned to determine the pattern and disturbance of the lithic scatter. Two shovel test pits were opened outside the grid in order to establish a contrast between the scatter and the valley in general, as well as to gain an understanding for the stratigraphy in that section of the valley. These shovel test pits were both located 5 m south of the grid (9 m south of the feature datum) and measured 50 x 50 cm for STP 1, 1 x 1 m for STP 2. STP 1 was 6 m west of the datum; STP 2 was 0 m west of the datum. A control unit was placed in a 1x1 m square within the grid, which had the greatest surface concentration of flakes (F3 or 5 m west and 2 m north of the feature datum). If time had permitted, further control units were planned for the grid units adjacent to F3. However, the high concentration of cultural material within unit F3, specifically almost 7000 flakes in the first 3 levels (30 cm), caused the excavation to proceed very slowly as the students were being exceedingly careful.
There were no flakes on the surface at either STP 1 or 2. The datum for each excavation was set in the NE corner of each excavation unit. The units were excavated in arbitrary 10 cm levels and bulk soil samples were collected for flotation. STP 1 (50 x 50 cm) was excavated down to 1 m and 87 flakes were collected in the ¼" screen. There were roots and pores present in the soil down to level 8 (80 cm). From the surface down to a depth of 40 cm, the soil was a dark brown, wet clay (Munsell 10 YR 3/3). Below 40 cm, the soil was a lighter reddish clay with hard red inclusions of baked clay (Munsell 7.5 YR 2.5/3).

STP 2 (1 x 1 m) was excavated down to the floor of level 9 and a total of 375 flakes were recovered from the ¼" screen. Level 1 was a heavily organic soil with roots and charcoal throughout. Levels 2 and 3 consisted of a reddish clay with hard red inclusions (Munsell 7.5 YR 2.5/3). The base of level 3 had a ring of dark soil and charcoal resembling a burned tree. The soil from level 4 through level 6 was gleayed clay (Munsell 10 YR 3/3) with mottled black areas (10 YR 2/1). Levels 7 and 8 had three distinct patches of clay soils (Munsell 5 YR 4/5, 2.5 YR 3/3, and 10 YR 3/2). Level 9 (or stratum 4) still contained roots and pores though the soil was more of a silty loam than a silty clay at this level. The Munsell reading for this level was 7.5 YR 2.5/3. Two artifacts were recovered in situ from STP 2, both at the base of level 6 (at 80 cm). At 38 cm south and 37 cm west of the datum in the NE corner, there was an adze preform. There was a weathered piece of shell at 77 south and 10 west of the datum, which measured 10 x 10 cm.

The controlled excavation unit was opened at the highest concentration of flakes within the grid (designated F4-F3 for its location within the grid overlaying feature 4). This 1 x 1 m unit was excavated in arbitrary levels of 10 cm. A total of 225 flakes were collected from the surface of F3. After three days with no precipitation, the surface clay soil was dry and cracked on the day the excavation commenced, August 11. Artifacts found in situ were left on a pedestal until the unit was brought down to the bottom of that level. The unit contained few extraneous rocks, less than 1% of the fill consisted of small (5-10 cm) subangular basalt rocks. The flakes within the unit were all from a blue-grey basalt, in varying stages of erosion. Charcoal was uncovered in level 1 and thus not collected for fear of surface contamination.

The soil in level 1 was a sandy clay loam with a Munsell reading of 7.5 YR 3/2. In addition to 1279 flakes, two adze preforms were found in situ in the northeast quadrant (see Fig. 6a and Table 1 in Appendix V). The artifacts were 5 cm below the surface of the soil. Level 2 had moist sandy clay loam soil with a Munsell reading of 7.0 YR 3/2. There was a considerable concentration of flakes at this level, and a total of 5436 flakes were collected from the screen. One artifact, which resembled a very thin triangular preform was found at the center of the southern wall in this level, at a depth of 11 cm below the soil surface. Two adze preforms with more traditional outlines were also collected from this level. One was located at a depth of 10 cm, the other at 13 cm below the soil surface in the southeast quadrant. A total of 2320 flakes were collected from the 3rd level (adjusted to 0.1 by 1 by 1 m). Due to time constraints, only the southern half of the unit was excavated to level 3 (20-30 cm). The soil was a silty loam with a Munsell reading of 7.5 YR 3/2. No artifacts were collected from this level. The profile seemed to suggest that the main concentration of flakes was a lens between levels 2 and 3. Time constraints prohibited
further investigation into the depth and horizontal spread of the flakes. Profiles were drawn for STP 1, STP 2 and the unit at F4-F3 on the last day of the field school (Fig 6a and b).

Excavations were also carried out at Site Feature 3 approximately 10 m west of the central datum, and at Features 9 and 10, the location suspected as the source of ceramic shards found by Ake Filisi several years before. Several sherds were found in level 1 of Unit 1 of Feature 9. These were in the same level as historic artifacts. The stratigraphy indicates that these sediments were relatively recently deposited, possibly during flooding of the adjacent intermittent stream during a storm or hurricane.

Excavations of the terrace at Feature 10 also appears to be relatively recent as there is no formation of soil layers. A few basalt flakes and artifacts were found within Units 3, 9 and 10 (Appendix III).

Laboratory Analysis of artifacts from Site AS 32-006 in Malaeloa Valley

Analysis of lithic flakes and the few sherds of ceramics are underway at the University of Oregon. The tables in Appendix III demonstrate the numbers and sizes of flakes retrieved. Drawings of lithic artifacts are demonstrated in Fig. 7 a-d. Analysis has not been completed as of June, 2001. A field school in Malaeloa Valley at Asiapa will continue during July, 2002 to further clarify and expand the findings of 1999.
Appendix I: Archaeology Field School Schedule and Participants

Teaching Plan for the 4-week Field School

Students attended lectures about archaeology field methods; they read articles pertaining to prior research done in American Samoa and in Western Samoa and they practiced techniques for making measurements for the first week of the summer school. Once or twice a week additional lectures were given to discuss our research design and methodology. Quizzes were administered weekly. These exams were practical exams relating to data the participants were collecting in the field.

Subjects of importance to the field school during 1999 were archaeological mapping techniques, the concepts of provenience, stratigraphy, and using a transit. The students learned how to locate archaeological features and how to produce a map with the features accurately positioned. They learned how to make a drawing to scale of the features identified.

During the second half of the field school we concentrated on excavation techniques. The participants set up grids and excavated sediments in locations identified during the survey as those areas most likely to have subsurface archaeological elements. They learned how to screen the excavated sediments, how to identify artifacts, and how to record their methodology and results.

Their final assignment was to produce a final report based on their work during the field school. The report included the data they had collected, and the maps and calculations they had made during their field work.

Skill groups: Students divided into six teams having specialized duties. These groups included:

1. An organization team to assign feature numbers during the survey. This team also distributed and collected forms submitted by persons working at clearing and mapping specific features and related surface artifacts. A second team of two students were in charge of similar forms for excavations and cataloging of artifacts found during excavations.

2. Photography teams of 2 persons each (2 teams) who were responsible for photographing features using menu boards and North arrow. They were responsible for maintaining the photo records.

3. Transit teams (2 teams of 3 persons each). These teams spent more time learning how to correctly use the transit. They compiled individual site maps and located them on the master map plan using reference points and markers. They were responsible for maintaining a notebook of all transit readings and calculations.
4. Equipment managers were responsible for collecting and keeping track of survey and excavation equipment. They also served as helpers on other skill package teams when needed.

5. Geoarchaeology team (4 students) These students collected soil samples and learned how to do field soil analysis and make the profiles for the excavations.

6. Oral history (team of 3 persons) This team conducted interviews of personages living in Malaeloa Valley. They recorded place names and sites on the map of the valley and what was known about those sites. They also recorded the myths related to the area and translated Samoan versions into English.

Participants

Students from ASCC:  
Joseph Astonu  
Cheryl Kuresa  
Fellafei Saali  
Lavinia Seufuiva  
Chris Thompson  
Oso Oso Tuilemotu  
Penelope Vaiau

Students from University of Oregon:  
Pamela Bowler  
Stephen Delaney  
Letitia Peau  
Samsara Sorrells  
Charissa Wong

Appendix II: Oral History

The following oral history information is summarized from interviews with 'Amituana'i, Gagai, and Enelico Tuli.

According to the High Chief, the official ancestral titles of 'Amituana'i and Gagai are originally from Western Samoa. Gagai was a High Chief in Falealoloto and he married into the Amituana family in Solosolo. When Gagai came to Tutuila, he brought his three sons with him, leaving two daughters behind in Upolu. When they arrived, Gagai named one of his sons 'Amituana'i, after the family name they had left behind. Gagai and his son Amituana'i settled in Olovalu in the 1600s. They named the area Olovalu after an old couple who lived there when his family arrived.

HC 'Amituana'i remembered that the first Malaeloa village was on Fogamauga ridge near Olovalu, between the modern villages of Futiga in the north and Pava'aiai to the south. Over the next century, the family slowly expanded north and west towards Malaeloa. They came upon the Sigaloi stream, water that never dries, and some members of the family settled in the valley. They planted their plantations on the Fogamauga ridge between Sigaloi stream and Olovalu. They named the eastern half of the valley Asiapu after the containers that the people used to fetch the water.

At first, Gagai and 'Amituana'i lived together in Sigaloi. In 1720, Sa Tele the High Chief of Malaeloa valley came to visit his lands. He originally lived in Leone, until chiefs Fofu and Aitulagi made him the High Chief of Malaeloa valley. When Sa Tele arrived in
Asiapa, the Gagree family plantation covered all of Foganga. Sa Tele saw ulu hanging from the trees, so low to the ground that a pig could eat right off of the tree. Sa Tele was so impressed by the productivity of the plantation, that he gave 'Amituana'i the title of Pua'atoliulu (currently a chief title in Olovalu). Sa Tele told Gagree and 'Amituana'i to choose which of them would be the High Chief and which would be the High Talking Chief of Asiapa.

In High Talking Chief Gagree's version of the history, Sa Tele told Gagree that he would be the talking chief for 'Amituana'i and himself. Whichever is the case, Gagree became Gagaifonoosea (to part) and he was henceforth the High Talking Chief for Sa Tele and his son 'Amituana'i. The family was divided in two: Sigaloo was thereafter controlled by High Talking Chief Gagree, and Olovalu was controlled by High Chief 'Amituana'i. The current 'Amituana'i gained his title from his maternal side.

Itulagi, the marshy western half of Malaeaoa valley, is also called Fanua Sa (sacred land) and is off limits for construction or agriculture. There is also a noon hour curfew in effect for the whole valley. According to HC 'Amituana'i, the restrictions are respect for his family ghost Fala. Fala ('pineapple') was a member of the 'Amituana'i family, he lived on their land in Foganga. Fala went to Western Samoa on a ship, but was thrown overboard during the journey. Fala returned to Malaeaoa as an aitu ('ancestral spirit') and told the family to dig a grave for him on Foganga ridge. He protects the plantations on the ridge, in Sigaloo, and Olovalu and prevents people from littering, breaking curfew, or pilfering breadfruit and pineapples.

According to Eneliko Tuli however, the Fanua Sa is associated with the Tui Fiji ('the king of Fiji') and his son Tui Feai ('cannibal chief'). The Fanua Sa was chief Tui Feai's land in the 3rd century AD when the Fijian king's son controlled the land north and west of our project area in Malaeaoa. Tui Feai was a very powerful chief and the villagers would appease him with human gifts for food. Tui Feai had five sons: Tui Tasi, Tui Lefano, Tui Leata, Tui Agamoai, and Tui Lemotu. Tui Lefano is also the name of the chief that currently controls the Fanua Sa.

The people of Malaeaoa still respect the sacred land, whether they believe that it is home to Tui Feai or Fala. There is a daily curfew in the valley from noon until 1 p.m., when the aitu walks around his land. During this time, fieldwork is prohibited, as is making too much noise. If the curfew is not respected, the people of Malaeaoa believe that Tui Feai will take the form of a dog or a white owl and will attack the offending individual. According to Letiitia Peau's aunt, Mesepa Panana, the retaining area for the people who were sacrificed to Tui Feai is in Aolo'au. There is a terrace and fale platform above her family's land where the faga (detention area) is located. From her land, one can see the path leading up from Malaeaoa, where the victims were brought. Each family had to contribute one person every day to feed Tui Feai.
SAMOA BIBLIOGRAPHY


1993 Prehistoric Settlement System in Eastern Tutuila, American Samoa. 
Coastal Zone Management
Management, American Samoan Government, and Dept. of Geography, 
University of Hawaii.
Coulter, J.W.
1941 Land Utilization in American Samoa. Bernice P. Bishop Museum Bulletin 
Davidson, Janet
1969 Settlement Patterns in Samoa before 1840. Journal of the Polynesian 
Society 78:44-82.
Emory, Kenneth P., and Yoshihiko Sinoto
Fieldwork in the Society and Tuamotu Islands, French Polynesia, and 
Museum, Fox, James W., and Kenneth B. Cumberland (eds)
1962 Western Samoa. Land, Life, and Agriculture in Tropical Polynesia. 
Christchurch: Whitcombe and Tombs, Ltd.
Frost, Janet O.
1978 Archaeological investigations on Tutuila, American Samoa. Unpub. Ph.D. 
Golson, J.
1959 * Preliminary Research: Archaeology in Western Samoa, 1957. In 
Archaeology in Western Samoa, Vol. 1., R. Green and J. Davidson, eds., 
Gratton, F.J.H.
(Orig. edition 1948).
Green, Roger C.
1967 Settlement Patterns: Four Case Studies from Polynesia. In Archaeology at 
the Eleventh Pacific Congress. Asian and Pacific Archaeology Series, 
No. 1. W. Solheim, II, ed. Honolulu: Social Science Research Institute, 
Univ. of Hawaii.
1968 West Polynesian Prehistory. In Prehistoric Culture in Oceania. A 
Symposium, 11th Pacific Science Congress, I. Yawata and Y. Sinoto, 
1969a Excavations at Su-Va-2. In Archaeology in Western Samoa. Vol. 1., 
Auckland Institute and Museum, No. 6.

Green, Roger C., and Janet M. Davidson

Handy, E.S.C., and W.C.

Henry, Brother Fred

Herdrich, D.J.

Hunt, Terry L., and Patrick V. Kirch

Jennings, Jesse D., Richard N. Holmer, Joel Janetski, and Howard L. Smith

Jennings, Jesse D., and Richard N. Holmer (eds)

Kikuchi, William K.

Kirch, Patrick V., and Terry Hunt
1993 The To'aga Site: Three Millennia of Polynesian Occupation in the Manu'a
Islands, American Samoa. Contributions of the University of California Archaeological Research Facility, No. 51. Berkeley.

Kirch, P.V., T.L. Hunt, L. Nagaoka, and J. Tyler

Kramer, Augustin
1906 Hawaii, Ostmikronesien, und Samoa. Stuttgart:

Leach, H.M.

Leach, H.M. and R.C. Green

MacDonald, G.A.

McDougal, I.

Scott, Stuart D.

Setchell, W.A.

Sheppard, Peter J., R.G.V. Hancock, L.A. Pavlish, and R. Parker

Sinoto, Yoshihiko, and William K. Kikuchi
1964 *

Spriggs, Matthew
1985
Stair, John B.


Stearns, Harold


Sterndale, R.A.


Terrell, John


Thompson, Andrew


Turner, Rev. G.A.

1884  Samoa a Hundred Years Ago and Long Before. London: Macmillan.

Wilkes, Charles N.


F-T1 Foaga (50x50cm) rock in Alignment of Terrace F-T6

\[\text{electrical cord (pre 1986)}\]

Nm cocoa tree

50cm

Fig. 3

Ososi, Cheryl, Chris & Nia
Lithic Scatter (AS-32-006-F4)

- Adz Preform
- Basalt Core
- 1-3 Flakes
- 4-9 Flakes
- 10-14 Flakes
- 15-25 Flakes
- 26-35 Flakes
- + 36 Flakes

North

1 meter
Total counts of surface basalt flakes at AS-32-006-Feature 4

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>15</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>14</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>9</td>
<td></td>
<td>31</td>
<td>9</td>
<td>13</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>5</td>
<td></td>
<td>77</td>
<td>86</td>
<td>37</td>
<td>18</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>22</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>11</td>
<td>14</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>32</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>13</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td>13</td>
<td>24</td>
<td>40</td>
<td>5</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>19</td>
<td>25</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig 5a
matrix2.xls 1 December 2000
Total weights of surface basalt flakes at AS-32-006-Feature 4

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>72.3</td>
<td>13.1</td>
<td>3.1</td>
<td>27.5</td>
<td>0</td>
<td>0</td>
<td>65.4</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>28.7</td>
<td>35.7</td>
<td>32.6</td>
<td>9.9</td>
<td>0</td>
<td>0</td>
<td>43.1</td>
<td>5.8</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>96.4</td>
<td>32.9</td>
<td>28.1</td>
<td>0</td>
<td>0</td>
<td>91.6</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>4.4</td>
<td>51.1</td>
<td>0</td>
<td>19.3</td>
<td>0</td>
<td>40.5</td>
<td>52.6</td>
<td>72.9</td>
<td>136</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>0</td>
<td>17.7</td>
<td>3</td>
<td>0</td>
<td>1.6</td>
<td>18.8</td>
<td>3.7</td>
<td>0</td>
<td>56</td>
<td>97.8</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>0</td>
<td>26.6</td>
<td>1.3</td>
<td>77.9</td>
<td>23.4</td>
<td>0</td>
<td>52.1</td>
<td>43.6</td>
<td>0</td>
<td>78</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40.3</td>
<td>9.8</td>
<td>0</td>
<td>20.1</td>
<td>37.8</td>
<td>29.7</td>
<td>53.5</td>
<td>62.3</td>
</tr>
</tbody>
</table>

**Fig 5b**
Matrix.xls 1 December 2000
Appendix III. AS 32-006 Asiapa Artifacts

<table>
<thead>
<tr>
<th>Artifact Type</th>
<th>Total pieces</th>
<th>Surface pieces</th>
<th>Subsurface pieces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithics (basalt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adz (part or entire)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preform</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Flakes</td>
<td>10993+</td>
<td>1428+</td>
<td>9565</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ceramics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pots</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sherds</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Historic types</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Metal</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Count of miscellaneous surface flakes and analysis incomplete (6/24/01)

Basalt Flake Count from Feature F4-F3 excavation
(AS 32-006-4-F3)

<table>
<thead>
<tr>
<th>Level</th>
<th>Total Flakes</th>
<th>Med Sm</th>
<th>Med.</th>
<th>Lg.</th>
<th>Total Flakes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;1 cm</td>
<td>1-1.5 cm</td>
<td>1.5-3 cm</td>
<td>&gt;3 cm</td>
<td>&gt;1 cm</td>
</tr>
<tr>
<td>Level 1</td>
<td>132</td>
<td>189</td>
<td>689</td>
<td>214</td>
<td>1157</td>
</tr>
<tr>
<td>Level 2</td>
<td>1368</td>
<td>2118</td>
<td>1649</td>
<td>216</td>
<td>4088</td>
</tr>
<tr>
<td>Level 3</td>
<td>462</td>
<td>988</td>
<td>770</td>
<td>72</td>
<td>1858</td>
</tr>
<tr>
<td>Total #</td>
<td>1962</td>
<td>3295</td>
<td>3108</td>
<td>502</td>
<td>7083</td>
</tr>
<tr>
<td>% of Total</td>
<td>22</td>
<td>37.2</td>
<td>35.1</td>
<td>5.7</td>
<td>78</td>
</tr>
</tbody>
</table>
Appendix: Feature 4, STP-2 AS32-006-4

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-30; lab. mult=1)

Laboratory number: Beta-144776

Conventional radiocarbon age: 410±60 BP

2 Sigma calibrated result: Cal AD 1415 to 1640 (Cal BP 535 to 310)

(95% probability)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1455 (Cal BP 495)

1 Sigma calibrated results: Cal AD 1435 to 1510 (Cal BP 515 to 440) and Cal AD 1595 to 1615 (Cal BP 355 to 335)

References:

Database used
INTCAL98

Calibration Database
Editorial Comment

INTCAL98 Radiocarbon Age Calibration

Mathematics

A Simplified Approach to Calibrating C14 Dates

Beta Analytic Radiocarbon Dating Laboratory
4955 S.W. 71st Court, Miami, Florida 33155 • Tel: (305)567-3100 • Fax: (305)567-3102 • E-Mail: beta@radiocarbon.com