

# An Archaeological Preservation Plan for Sites 29272, and 29273 within NELHA HOST Park

TMK: (3) 7-3-043:073 por.

Kalaoa 5<sup>th</sup> and 'O'oma 1<sup>st</sup> *ahupua'a*  
North Kona District  
Island of Hawai'i

DRAFT VERSION



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ASM Project Number 26430.01



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## 1. INTRODUCTION

At the request of WSP Parsons Brinckerhoff on behalf of Natural Energy Laboratory Hawai‘i Authority (NELHA), ASM Affiliates has prepared this preservation plan for two State Inventory of Historic Places (SIHP) sites (Sites 29272 and 29273) located within a portion of the NELHA Hawai‘i Ocean Science and Technology Park (HOST Park) in Kalaoa 5<sup>th</sup> and ‘O‘oma 1<sup>st</sup> *ahupua‘a*, North Kona District, Island of Hawai‘i (Figures 1 and 2). NELHA plans to construct a roughly 50-foot wide by 4,400-foot long access road that crosses two current Tax Map parcels (TMKs: (3) 7-3-043:072 and 073). The new access road will create a four-way intersection with traffic signal at Kaiminani Drive and Queen Ka‘ahumanu Highway, which will allow for both right and left turns. The new road will extend westward for a short distance then turn southward and parallel Queen Ka‘ahumanu Highway extending to the current NELHA access road (Makaka Bay Drive). Once the four-way intersection at Kaiminani Drive and Queen Ka‘ahumanu Highway has been completed, Makaka Bay Drive will be converted to a right-in and right-out only road. The proposed development of the new roadway will involve ground disturbance in the right-of-way to the north of the Makako Bay Drive for a distance of roughly 1,340 meters (4,400 feet).

NELHA’s stated mission is to develop and diversify the Hawai‘i economy by providing resources and facilities for energy and ocean-related research, education, and commercial activities in an environmentally sound and culturally sensitive manner. To that end, a 2011 Master Plan prepared by Group 70 International, Inc. set forth several cultural objectives (codified in the Strategic Plan adopted by the NELHA management in 2012) for future development of the lands administered by NELHA, including:

- (1) Respect the cultural resources, Hawaiian cultural practices, and significance of archaeological sites at NELHA throughout the planning process;
- (2) Protect and manage cultural sites in a sustainable manner;
- (3) Protect the opportunities for individuals and groups to engage in cultural practices;
- (4) Define areas, criteria and support facilities for cultural resources and practices, as applicable, to allow for integrated planning and management; and
- (5) Preserve the cultural landscape to enhance meaning, relationships, and resources for modern appreciation, research, and practice (2011:1-2).

In 2012, an Archaeological Inventory Survey (AIS) of a larger proposed roadway network, which included the current project area, was completed by Rechtman and Clark (2012). The Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) approved AIS (Rechtman and Clark 2012) contained a recommendation for limited preservation measures to ensure the continued protection of two trail segments (Sites 29272 and 29273) located within Parcel 073, which necessitated the preparation of the current preservation plan in compliance with HAR 13§13-277.

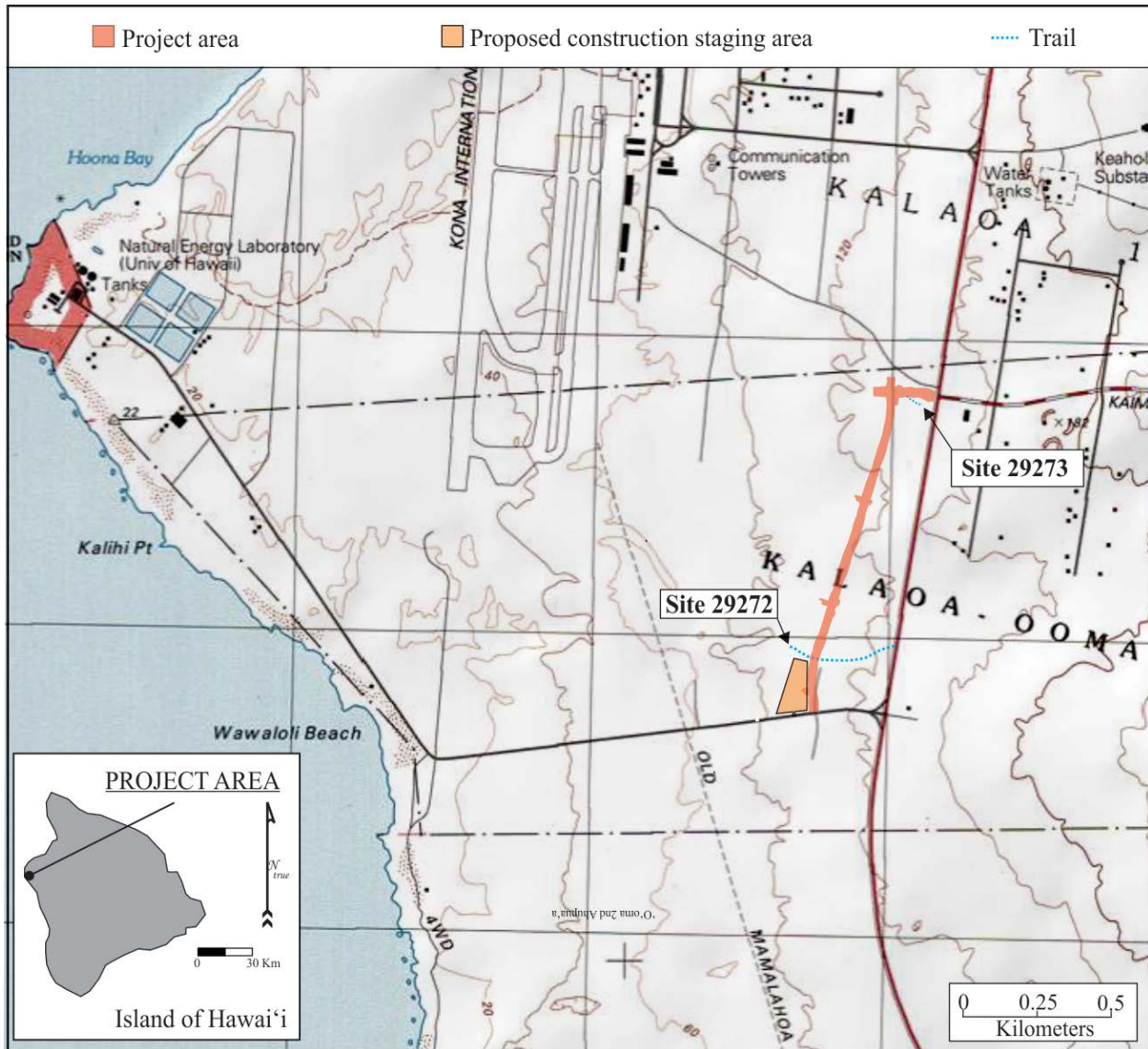


Figure 1. Portion of 1996 U.S.G.S. Keāhole Point 7.5 minute quadrangle showing the locations of Sites 29272, and 29273 within the current project area.

## PROJECT AREA DESCRIPTION

The current project area is situated within the Kekaha region of North Kona, where the principle environmental features consist of a hot, dry climate, and extensive lava fields with little to no soil accumulation. This region receives roughly 10 inches of rain per year and has a mean annual temperature of 70 to 76 degrees Fahrenheit (Donham 1987). Elevation across the project area ranges from 75 to 140 feet above sea level, and the terrain is characterized by weathered *pāhoehoe* and *'a'ā* flows that emanated from Hualālai between 3,000 and 5,000 years ago (Wolfe and Morris 1996). The dominant vegetation is fountain grass (*Pennisetum setaceum*) with an occasional *'ilima* (*Sida fallax*), *noni* (*Morinda citrifolia*), Christmas-berry (*Schinus terebithifolius*), and *maiapilo* (*Capparis sandwichiana*).



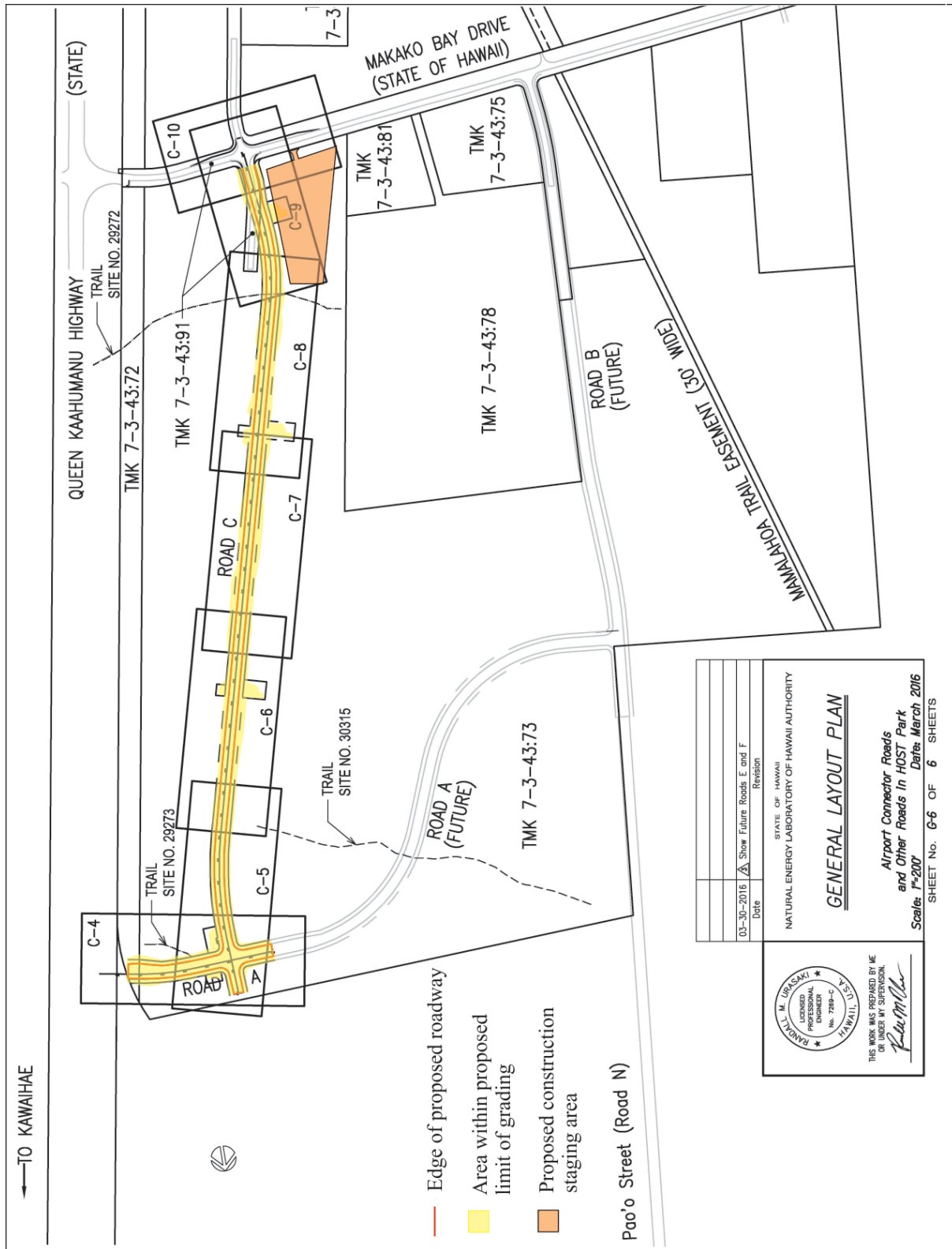


Figure 2. General layout plan for the proposed roadway construction showing grading area and locations of Sites 29272 and 29273.



Figure 3. August 21, 2014 satellite image showing the location of Sites 29272 and 29273 with the current project area shaded blue.



Figure 4. Typical *pāhoehoe* ground surface within the project area, view to the southwest.



Figure 5. Typical vegetation within the project area, view to the west.

## 2. SITE DESCRIPTIONS

Sites 29272 and 29273 were previously documented within the project area by Rechtman and Clark (2012) and more recently updated as part of a larger (210-acre) AIS conducted by Clark et al (2016). A general discussion of the trails and roads of Kekaha is presented below followed by detailed descriptions of the sites themselves. For an in-depth discussion of the culture-historical background for the project area and greater Kekaha region, the reader is directed to the AIS report (Clark et al. 2016).

Trails were (and still remain) an integral part of the cultural landscape of Hawai'i that provided access for local and regional travel, subsistence activities, cultural and religious purposes, and for communication between extended families and communities. Along the trails of Kekaha are found a wide variety of cultural resources, including, but not limited to residences (both permanent and temporary), enclosures and exclosures, walls, alignments, agricultural complexes, resting places, shelters, storage areas, resource collection sites, ceremonial features, *ilina* (burial sites), petroglyphs, secondary trails, and other sites of significance that were important to those who once lived and travelled in the region (Rechtman and Maly 2003). The trail segments identified within the current project area are indicative of general travel and settlement patterns of the wider Kekaha and North Kona regions that range from initial peopling and subsequent population expansion of the Precontact Period, through the Historic Period, and into modern times.

Most trails in ancient Hawai'i began as unplanned, informal pathways that formed over time, as a result of frequent use (Hommon 2013), as the first settlers of an area established residency, sought out the diverse resources of their newly settled lands, and expanded. Eventually, the resulting network of trails included lateral trails (*alaele*) that followed the shore linking the various communities and *ahupua'a* of each region, and *mauka/makai* trails. *Mauka/makai* trails were typically found within each *ahupua'a*, and they connected the coastal communities with upland settlement, agricultural, and resource areas. Within the current project area, Site 29272 in 'O'oma 1<sup>st</sup> Ahupua'a is an example of a primary *mauka/makai* trail. While Site 29273, a short section of trail that also extends *mauka/makai* within the current project area in Kalaoa 5<sup>th</sup> Ahupua'a, may have been a secondary route used for local travel or the extraction of local resources. As the various trail networks expanded throughout the Precontact Period, regional thoroughfares (*alaloa*) were established that linked diverse communities around the entire island. In Kekaha, at the time of Western contact, two traditional trails were of regional importance – the near shore *alaloa*, and the upland route of *Kealaehu* (the path of Ehu; Rechtman and Maly 2003). The *alaloa* across 'O'oma and Kalaoa *ahupua'a* followed the coast *makai* of the current project area.

In ancient Hawai'i, trails were maintained solely for foot travel (Kirch 1985). Their design was typically determined by the environmental zone and the natural topography of the land, and tended to meander following the easiest terrain between two points of travel. Owing to the varied terrain of Kekaha, the trails of this area exhibit a variety of construction methods, including the making and marking of cleared, worn paths on *pāhoehoe* or 'a'ā lava surfaces (such as at Site 29272), cobble or slab stepping-stones across 'a'ā flows (such as at Site 29273), and trails across sandy shores and dry rocky soils. Coral was sometimes placed along trail routes to help nighttime travelers find their way in the moonlight (Hommon 2013). A few instances of kerbstone or coral-cobble lined trails were also found in Precontact Hawai'i, but as Apple (1965) relates most trails lined with kerbstones were built or modified for horse travel during the nineteenth century, after Western contact.

By the mid-nineteenth century, as wheeled carts and draft animals became more common in the Kona District, portions of the nearshore *alaloa*, the upland route of *Kealaehu*, and the less widely used *alaele* connecting them were realigned (straightened out), widened, and smoothed over, while other sections were simply abandoned for newer more direct routes (Rechtman and Maly 2003). These modified trail routes became a part of a system of "roads" called the *Alanui Aupuni*, or Government Roads. SIHP Site 2 is the designation for the *makai* Government Road through Kekaha (built in ca. 1847), an alignment that later become known as the Māmalahoa Trail or King's Highway. In establishing this road, portions of the nearshore *alaloa*, including the section across the *ahupua'a* of 'O'oma and Kalaoa, were abandoned and the new road was realigned far enough inland to make a straight route across the landscape, and thus cut down on travel times to and from Kailua (or points in between). By the middle to late 1800s, the *kula* lands, from around the 900-foot elevation to the shore, were primarily used for goat, cattle, and donkey pasturage. The upland residents regularly traveled to the coast via trails to go fishing, or to round up cattle, goats, or donkeys (Rechtman 2006).

Oral history interviews with *kama'āina* of the Kekaha region (in Rechtman and Maly 2003, and Rechtman 2006) describe continued travel between the uplands and coastal lands of 'O'oma and Kalaoa, and between other *ahupua'a* of the region throughout the twentieth century. During the first half of the twentieth century, the primary method of travel was by foot or on horse or donkey, and those who traveled the lands were generally residents of the area. The use of some trails may have been discontinued around this time as the population of Kekaha dwindled and other travel routes were improved. The 1924 U.S.G.S. Keāhole Point quadrangle (Figure 6) shows a trail/road, labeled "Kauhini Road" descending from the uplands of Kalaoa 4<sup>th</sup>/5<sup>th</sup>, which crosses the current project area to Wawaloli (beach/pond) at the shore of 'O'oma 1<sup>st</sup>, and corresponds with the location of Site 29272. The full extent of Kauhini Road, from Wawaloli at the coast of 'O'oma 1<sup>st</sup> Ahupua'a, appears on a 1930 Treasury Department map of a portion of North Kona (Figure 7).

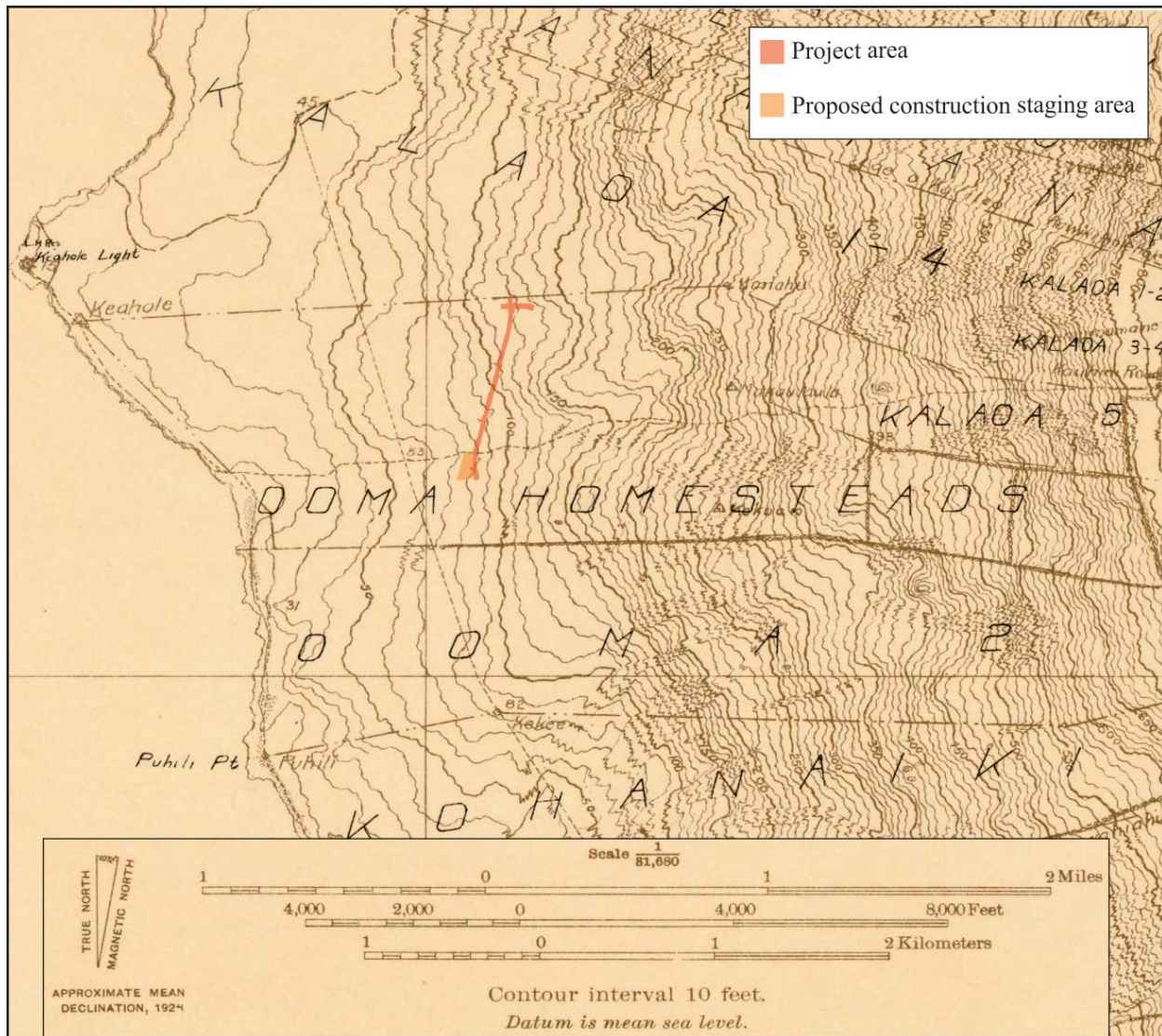


Figure 6. Portion of the 1924 U.S.G.S. Keāhole Point quadrangle showing the current project area shaded red, crossed by Kauhili Road near its southern end.



Figure 7. July 1930 Territory of Hawaii Treasury Department Taxation Maps Bureau map showing the current project area crossed by Kauhini Road (ca. July 1930).

After World War II, retired military vehicles became available to the public, and after that time, the Alanui Aupuni and some of the smaller trails along the shore were modified for vehicular traffic (Rechtman and Maly 2003). The *mauka/makai* trail to Wawaloli (Site 29272; Kauhini Road) continued to be used to access the coastal lands by residents of Kekaha throughout this period (Rechtman and Maly 2003). The 1959 U.S.G.S. Keāhole Point quadrangle (Figure 8) shows that Kauhini Road and the near shore *alaloe* were modified into “Jeep Trails” by this time. It was not until the Queen Ka’ahumanu Highway opened in ca. 1973, however, that travel across the *kula kai* (shoreward plains) was once again made possible for the general public. The portion of the jeep trail to Wawaloli *makai* of the highway may have seen continued use for coastal access until the late 1970s when the existing NELHA access road (Makako Bay Drive) was constructed. It is within this culture-historical context that the physical remains of Sites 29272 and 29273, which are located partially within or adjacent to the proposed new NELHA access road are described below. The locations of the sites in relationship to extant roads are depicted in Figure 9, and detailed descriptions of each site as recorded during the AIS conducted by Clark et al. (2016) are presented below.



Figure 8. Portion of the 1959 U.S.G.S. Keāhole Point quadrangle showing project area shaded red crossed by a “Jeep Trail”.

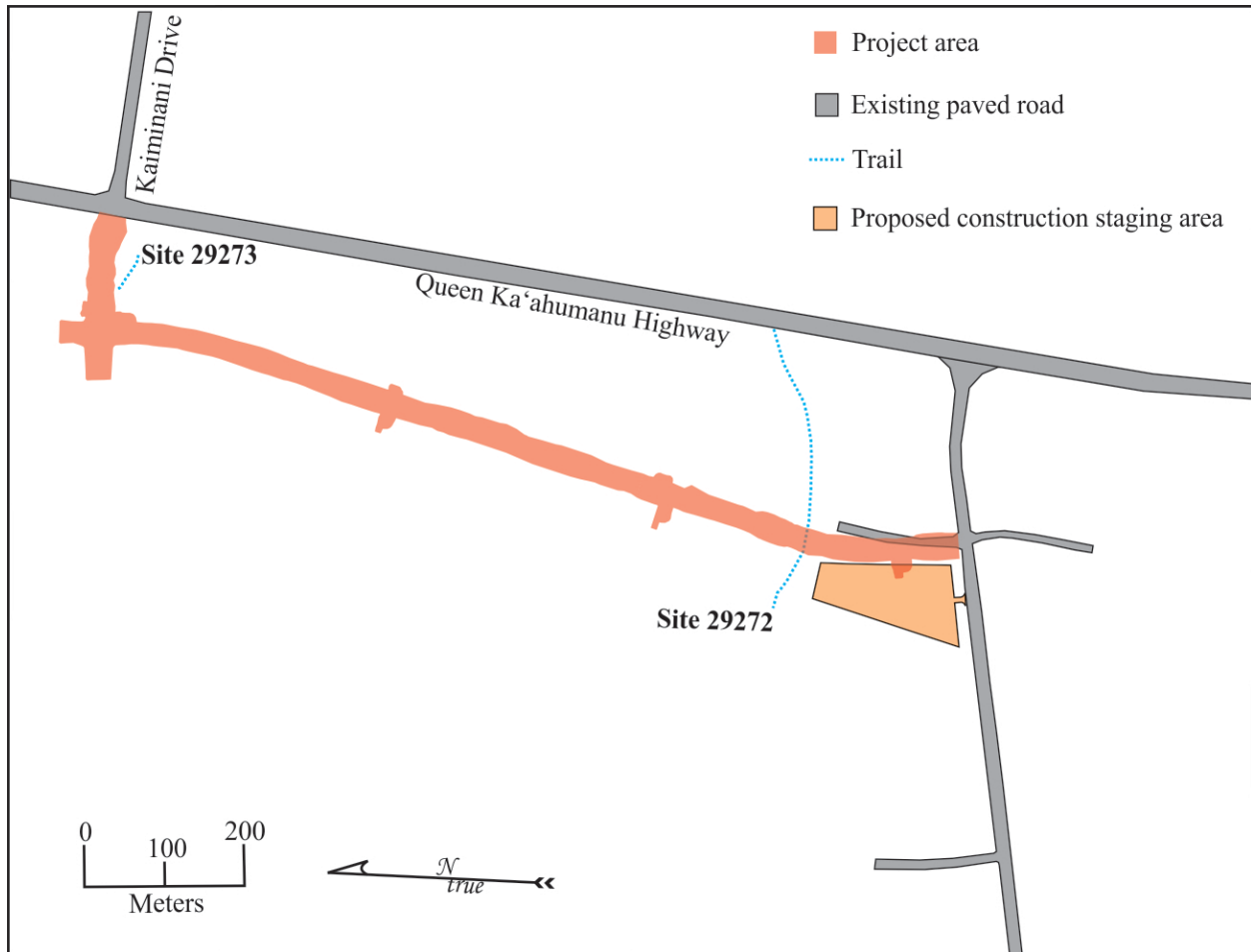


Figure 9. Locations of Sites 29272 and 29273 and current project area shaded red (after Clark and Rechtman 2016).

### SITE 29272

Site 29272, is a trail/road that extends east-west across the current project area near the southern end of the proposed roadway, roughly 200 meters north of Makako Bay Drive (Figure 10). As previously discussed, this trail/road appears on several late nineteenth century and early twentieth century maps extending from Wawaloli at the coast of ‘O‘oma 1<sup>st</sup> Ahupua‘a to the Upper Government Road in Kalaoa 4<sup>th</sup> Ahupua‘a (see Figures 6 and 7). Site 29272 likely began as a Precontact Period *mauka/makai* trail route that was later converted to a jeep road (possibly during the 1940s) and used until the mid-1970s for 4WD coastal access. The trail appears labeled as “Kauhini Road” on the 1924 U.S.G.S. Keāhole Point quadrangle (see Figure 6) and as a “Jeep Trail”. The road, which seems to have originated from an earlier Precontact, *mauka/makai* trail route, was likely named by J.S. Emerson after Kauhini, the 1855 recipient of more than 1,800 acres of land (Grant No. 1590) in the upper portions of ‘O‘oma and Kalaoa *ahupua‘a* through which the *mauka* portion of the trail passes. Kauhini’s grant was never patented, however, and was later divided up and sold as several smaller grant parcels

Rechtman and Clark (2012) first recorded the section of Site 29272 that crosses the current project area, located to the north of the existing termination of Kahilihili Street as part of an AIS conducted in support of an earlier iteration of the current proposed roadway construction. Monahan et al. (2012) documented another short section of the trail located between Queen Ka‘ahumanu Highway and the *mauka* boundary of the NELHA-HOST Park property. Monahan et al (2012) excavated three test units in the surface of the bulldozed road bed, but did not recover any cultural material. Neither of these previous studies identified this trail as the former route of Kauhini Road. However, as a result of the more recent study conducted by Clark et al. (2016), two sections of Site 29272 (included the section previously recorded by Rechtman and Clark 2012) were recorded and a correspondence was discovered between the Kauhini Road alignment and that of Site 29272.



2. Site Descriptions

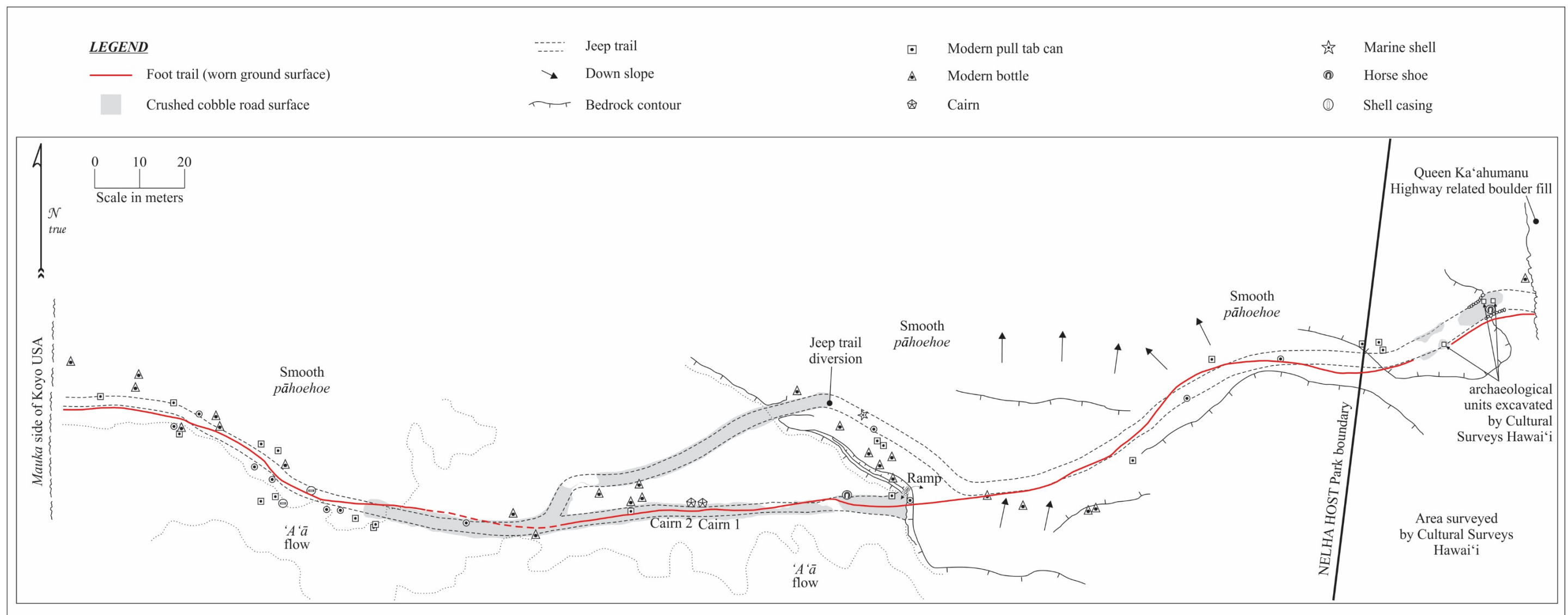


Figure 10. Plan view of Site 29272 showing portion of the current project area (after Rechtman and Clark 2012).

## 2. Site Descriptions

The section of Site 29272 that is extant within and beyond the current project area meanders east-west for roughly 330 meters across TMKs: (3) 7-3-043:072 and 073, over varied terrain. The trail continues *makai* of the proposed roadway to where it terminates at the Koyo facility, and extends *mauka* to the Queen Ka'ahumanu Highway right-of-way, however the *mauka* portion of the trail is more difficult to discern. The varied terrain crossed by the trail consists of areas of gently sloping, smooth *pāhoehoe*, rough slabby *pāhoehoe*, and raised 'a'ā flows. The foot trail is characterized by a relatively dark (50 to 80 centimeters wide) worn path in areas where it crosses smooth *pāhoehoe*, and by a cleared, slightly sunken (50 to 80 centimeters wide) path with a linear growth of fountain grass at its center in areas where it crosses 'a'ā (Figures 11 and 12).

The Historic/Modern Jeep road was created by a small bulldozer that was used to break up undulations in the lava in order to make vehicular access easier, and in some cases possible, across the varied terrain of the study area. Where smooth, level *pāhoehoe* is present, the only evidence of the Jeep road is a single set of closely spaced bulldozer tracks. The Jeep road primarily straddles or extends alongside the worn foot path with the exception of a 100-meter long portion of the road, in the central portion of the trail, where the Jeep road veers to the north of the foot trail to avoid a nearly vertical *pāhoehoe* flow edge with a 1.3-meter tall drop-off along one side (see Figure 10). Cobbles are placed along the edge of the Jeep road or in low spots to “bridge” them, which indicates hand modification of the horse trail or Jeep road (Figure 13). Approximately 3 meters north of the bedrock contour drop-off that the footpath descends is a constructed alternate route (see Figure 10). This Jeep road diversion was constructed by filling a wide crack in the bedrock contour with medium to large cobbles, which created a level middle landing area (Figure 14). In addition, a stacked retaining wall that spans the 1-meter wide void stands 1.2 meters tall on the western exposed edge of the filled area (Figure 15).

Two cairns (Cairns 1 and 2) are present along the foot trail near the Jeep road diversion (see Figure 10). Cairn 1 consists of a total of four slabs, three of which are leaning, and have collapsed from a vertical stack, located on the north side of the trail (Figure 16). This cairn measures 70 centimeters long (east-west) by 30 centimeters wide (north-south) and stands 25 centimeters tall. Cairn 2 consists of two stacked medium slabs located on the north side of the trail in the *mauka* section, 2 meters west of Cairn 1. Cairn 2 measures 30 centimeters long (east-west) by 20 centimeters wide (north-south) and stands 20 centimeters tall (Figure 17).

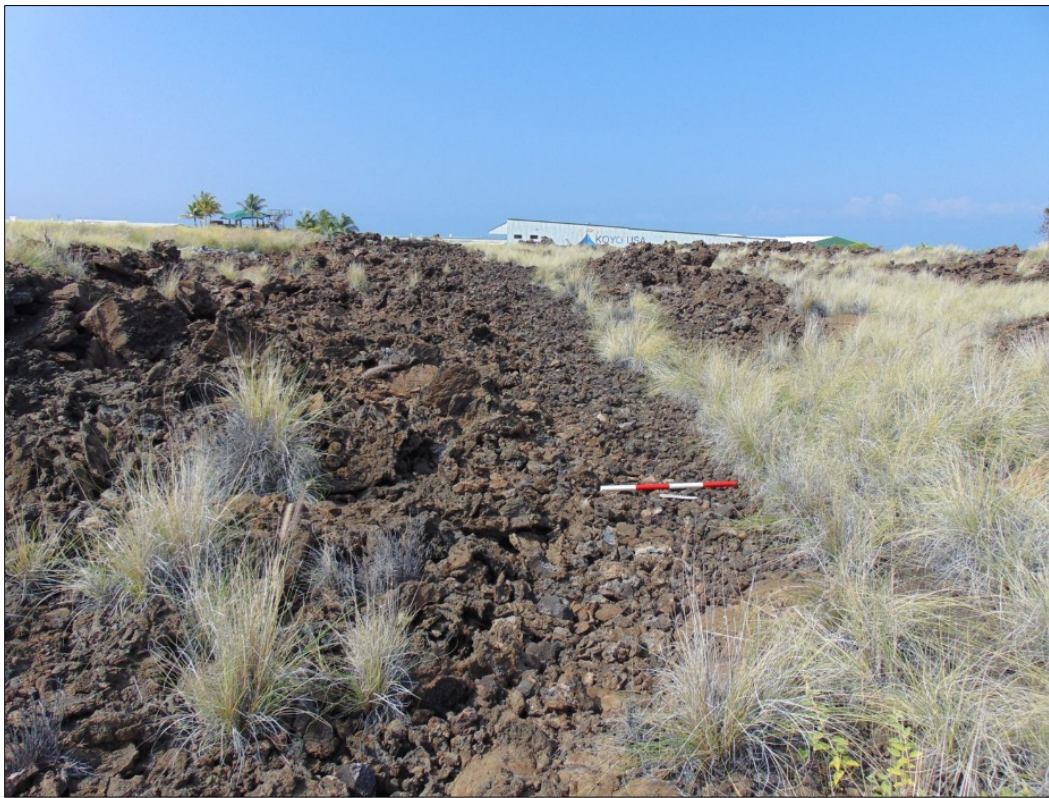


Figure 11. Site 29272 trail over 'a'ā flow with terminus at Koyo facility in background, view to the west.



Figure 12. Site 29272, foot trail transitioning from 'a'ā to pāhoehoe, view to the east.



Figure 13. Site 29272, portion of jeep trail with an aligned cobble edge and infilling of a bedrock low spot, view to the south.



Figure 14. Site 29272, alternate route north of a bedrock drop-off, view to the south.



Figure 15. Site 29272, stacked retaining edge of a filled crack constructed for the alternate route, view to the east.



Figure 16. Site 29272, Cairn 1, view to the southwest.



Figure 17. Site 29272, Cairn 2, view to the west.

## 2. Site Descriptions

Cultural material items observed along the route of Site 29272 are numerous and varied, and date to both the use of the Precontact/Historic foot path and horse trail, and the later Historic/Modern Jeep road. Cultural material items potentially associated with the earliest (Precontact) use of the trail include marine shell fragments (mostly *Cellana* sp.), horseshoes, and coral. Material items seemingly associated with the use of the Jeep road include aluminum pull tab beverage cans, tin cans, glass beer bottles, gallon glass jugs, a muffler, and a few other metal parts such as nuts and bolts from vehicles. Two bullet shell casings were also observed near the western portion of the trail.

### SITE 29273

Site 29273 is a *mauka/makai* trail segment (Figure 18) that skirts an elevated outcrop of rough lava (Figure 19) located in the northern portion of the current project area (see Figure 9). This trail, originally documented by Rechtman and Clark (2012), consists of a single row of *pāhoehoe* slabs set in an 'a'ā and slabby *pāhoehoe* substrate to facilitate ease of walking. There are two relatively intact stepping stone alignments separated by a 25-meter gap where the ground surface is relative smooth *pāhoehoe* (see Figure 18). In the eastern alignment, which extends for 20 meters, the slabs are further apart (Figure 20) as compared to the 37-meter long western alignment where the slabs are more tightly spaced (Figure 21). In both directions beyond the recorded alignments the trail could not be discerned on the relatively smooth *pāhoehoe* ground surface. No additional cultural material was observed at this site. Given the lack of Historic (or Modern) cultural material, it appears as though this trail segment has a Precontact origin. This trail does not appear to have been a “major” transportation route, but may have been part of a localized trail network connecting sites in the shoreward and lower *kula* portions of the Kalaoa-‘O‘oma area.

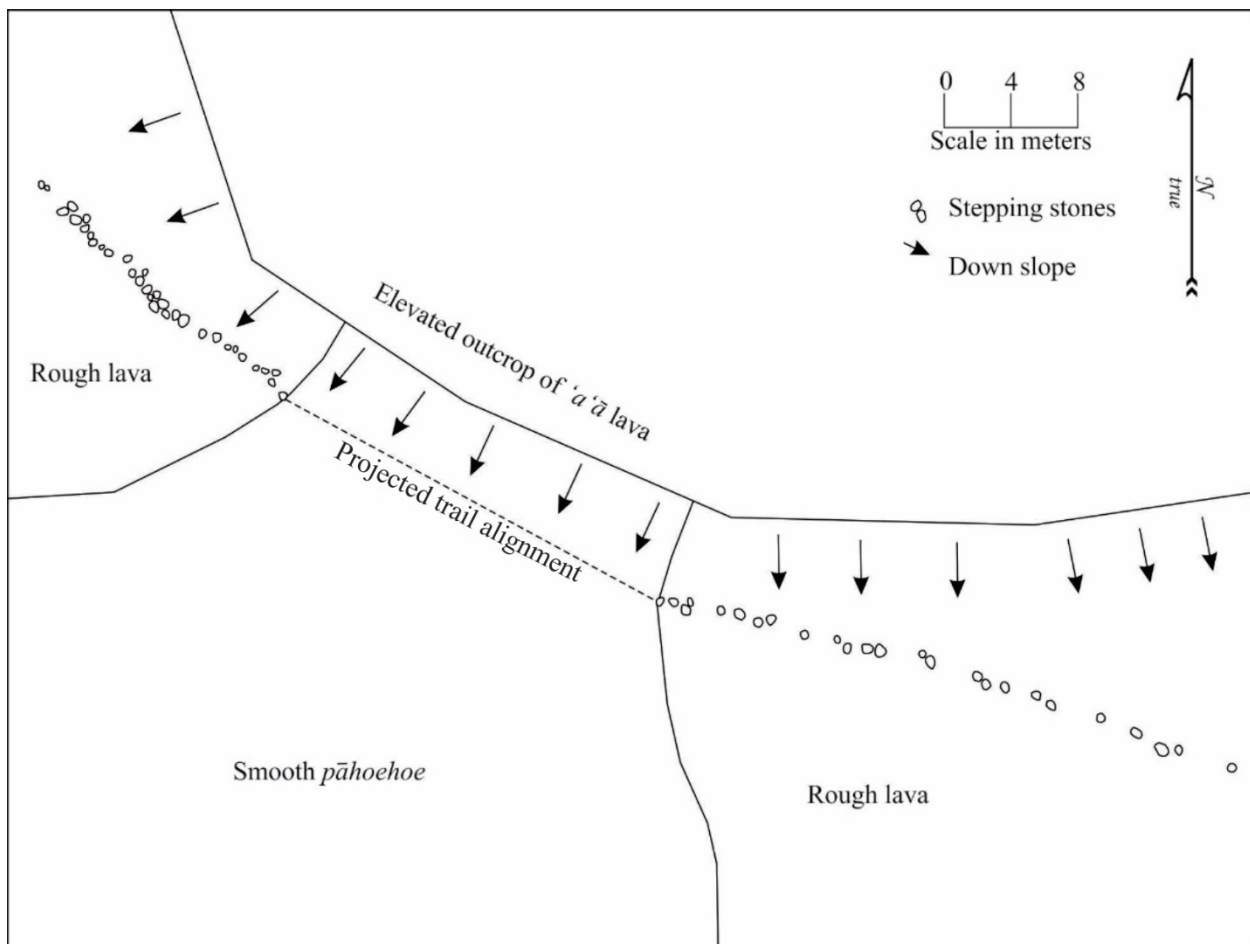


Figure 18. Plan view of Site 29273 from Clark et al. (2016:108).



Figure 19. Elevated outcrop at northern end of the project area.



Figure 20. Site 29273 eastern stepping-stone alignment, view to the east.



Figure 21. Site 29273 western stepping-stone alignment, view to the east.



### 3. PROPOSED TREATMENT

The proposed treatment for both Sites 29272 and 29273 is avoidance and protection (conservation) with a minimal interpretation component. No rehabilitation, restoration, or reconstruction of the trails is proposed. In the case of Site 29272 an allowance for a breach to accommodate the new proposed road will be permitted; and in the case of Site 29273 roughly 16 feet of the *makai* section of the trail will be removed by road construction activity. A legal document describing the location of the sites and their respective preservation areas along with this preservation plan will be recorded with the Bureau of Conveyances. The specific preservation treatment for the sites is described below.

#### CONSULTATION

Site 29272 is considered significant under Criterion e, and as such there was considerable consultation conducted as part of the Queen Ka‘ahumanu Highway Widening Project with respect to the treatment of this site (Monahan et al. 2012; Monahan and Wilkerson 2012; Monahan and Yucha 2012; Schideler et al. 2012). All of the prior consulted parties supported the preservation of the alignment of Site 29272. One of the more involved consultees was Isaac “Paka” Harp. Mr. Harp was contacted with respect to the current preservation proposal and his input was invaluable; he recommended that the alignment of the trail where it will be breached be indicated in the roadway pavement in some form or another. Additionally, a copy of this plan has been sent to the Office of Hawaiian Affairs for their comment.

#### LONG-TERM PRESERVATION MEASURES

For the long-term preservation of Site 29272, a 20-foot (6 meter) preservation buffer will be established on either side of the trail measured from the outer edge of the trail/Jeep road feature, and a single breach of the trail will be permitted for the new roadway that will not exceed 102 feet (31 meters) in width (Figure 22). As part of the construction of the road within the breached area, a ten foot wide representational paving will mark the removed trail alignment. This paving will incorporate *pāhoehoe* slabs or simulated slabs stamped in the roadway pavement. No development activities will be permitted within the boundaries of the buffer zones.

For the long-term preservation of Site 29273, a 20-foot (6 meter) preservation buffer will be established on either side of the trail measured from the trail centerline (Figure 23). The grading plans call for the *makai*-most 16 feet of the site to be impacted.

No maintenance or vegetation clearing measures are proposed for Sites 29272 and 29273. Permanent interpretive signage will be installed to mark the locations of Site 29273 and 29272 along the edges of the new NELHA access road, at points closest to the trails. This signage will match that which has already been approved by DLNR-SHPD and which NELHA has already placed for the other archaeological preservation areas with the HOST Park. These signs will indicate that the location they mark corresponds with SIHP Sites 29272 and 29273, the proposed language for which is as follows:

**SIHP Site 29272**  
***Mauka/Makai* Trail**  
**Kauhini Road**  
**Kalaoa 5<sup>th</sup> Ahupua‘a**

*Mauka/makai* trails are typically found in every *ahupua‘a* throughout the Hawaiian Islands. As an integral part of the cultural landscape, *mauka/makai* trails provided native Hawaiians with access to coastal resources as well as to upland agricultural and residential areas from Precontact times through the middle nineteenth century. In Historic times, this trail was known as Kauhini Road and became a Jeep trail after World War II.

This coastal area contains significant archaeological resources that are protected by state law (HRS Chapter 6E-11). Please refrain from moving or taking rocks from this area. Disturbance to archaeological sites is punishable with fines up to \$20,000. Please report any observed violations to  
DLNR-SHPD (808) 692-8015

**SIHP Site 29273**

***Mauka/Makai Trail***

**Kalaoa 5<sup>th</sup> Ahupua‘a**

This short segment is all that remains of a *mauka/makai* trail formed of cobble or slab-stepping stones placed over ‘a‘ā flows. Secondary trails such as these were used by native Hawaiians for local travel and to access resource procurement areas.

This coastal area contains significant archaeological resources that are protected by state law (HRS Chapter 6E-11). Please refrain from moving or taking rocks from this area. Disturbance to archaeological sites is punishable with fines up to \$20,000. Please report any observed violations to DLNR-SHPD (808) 692-8015

**INTERIM PROTECTION MEASURES**

Prior to development activities, the project’s Principal Archaeologist and the primary archaeological monitor will conduct an on-site pre-construction briefing with NELHA representatives and the construction firm. High visibility orange plastic fencing will be installed along the edges of the permanent buffer zones prior to the initiation of construction activities for the protection of Sites 29272 and 29273 during the proposed road construction. In addition, a qualified archaeological monitor(s) will be on-site to observe ground disturbing activities as per an archaeological monitoring plan (Rechtman and Gotay 2016) recently submitted to DLNR-SHPD for review and acceptance.

These interim protection measures will be established immediately upon DLNR-SHPD acceptance of this plan. Upon completion of the road construction activity, the protective fencing will be removed and the permanent preservation measures as outlined above will be implemented.

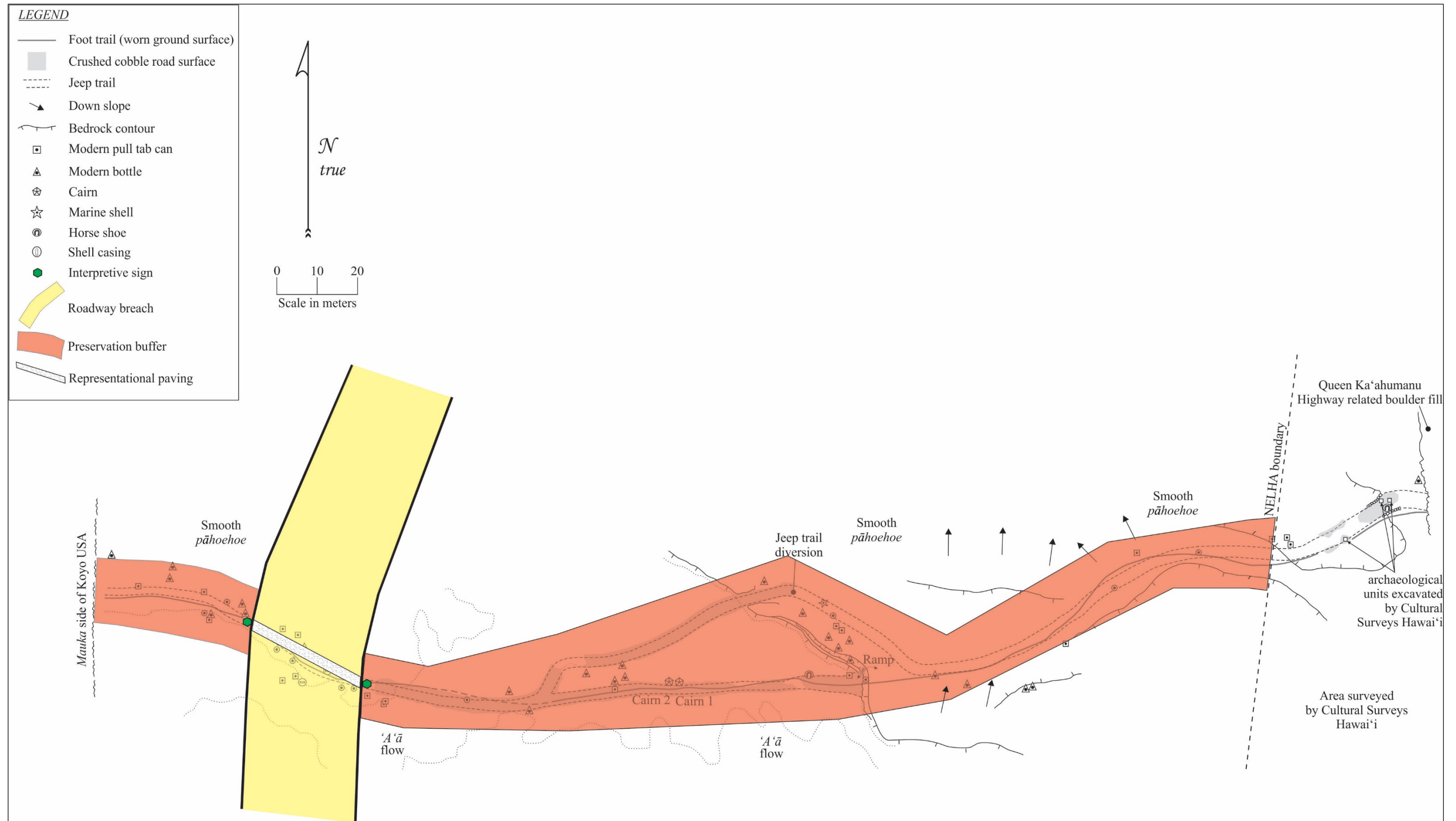


Figure 22. Site 29272 preservation measures (buffer zone and interpretive signs).

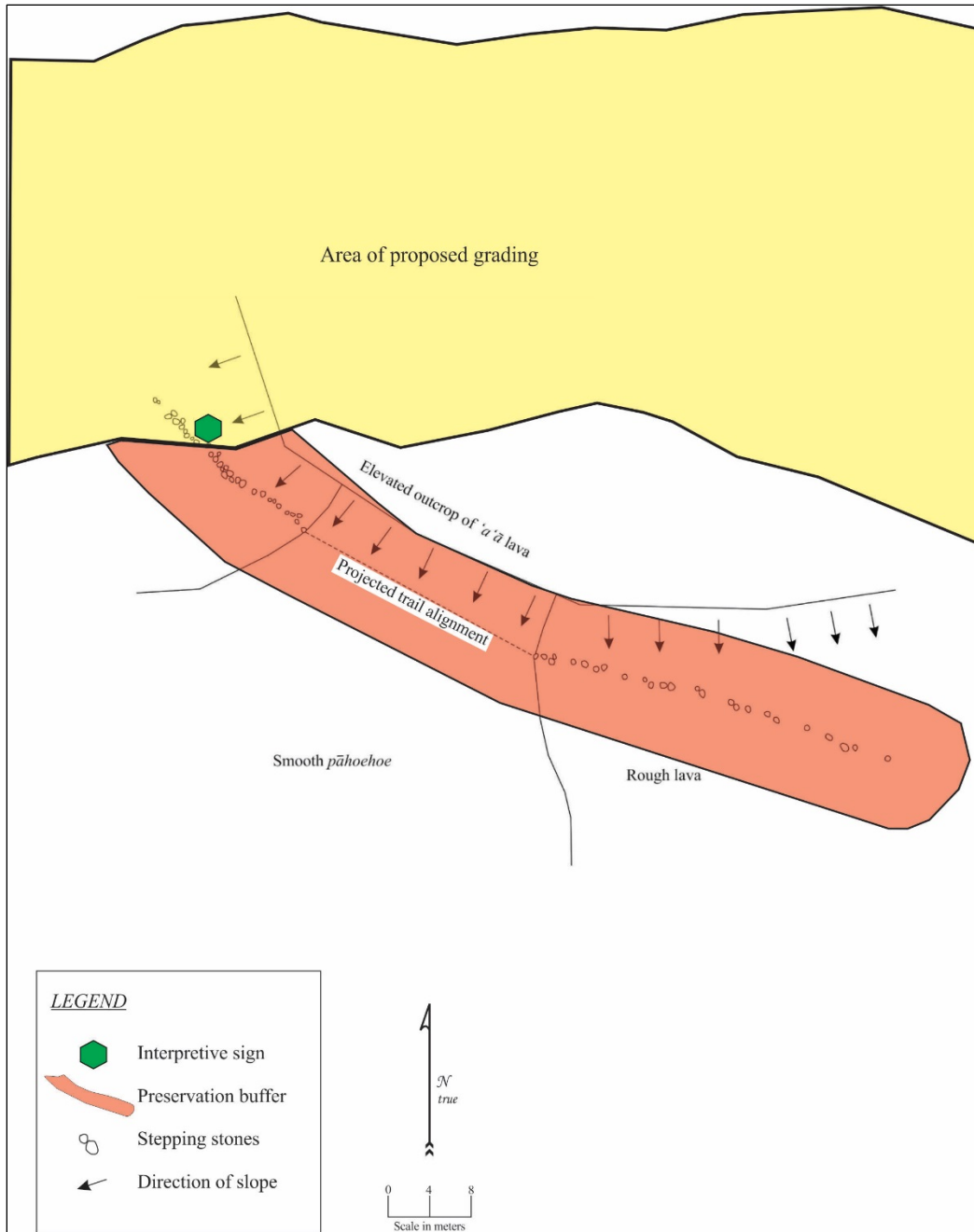


Figure 23. Site 29273 preservation measures (buffer zone and interpretive sign).

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