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Nick Azari, Ph.D., CEO & President
Arion Energy
500 Ala Moana Blvd. Suite 7400
Honolulu, HI 96813
email: nick.azari@arionenergy.com *via email*

Re: Updated preliminary archaeological and cultural considerations with respect to the proposed development of five potential community solar sites on TMKs: (3) 9-3-004:027, 028, 034, and 040, Mohowae, Waiopua, Keaa 1st and 2nd *ahupua'a*, Ka'ū District, Island of Hawai'i.

Dear Nick:

At your request, on behalf of Arion Energy, ASM Affiliates (ASM) conducted background research with respect to the proposed development of five potential community solar sites on TMKs: (3) 9-3-004:027, 028, 034, and 040, Mohowae, Waiopua, Keaa 1st and 2nd *ahupua'a*, Ka'ū District, Island of Hawai'i (Table 1 and Figure 1). This research included an archival review of existing archaeological reports and historical maps, as well as a review of traditional cultural information relative to the current study area. ASM also conducted a brief field inspection of each of the potential solar sites.

Table 1. Potential South Point Community Solar Sites.

Solar Site No.	*TMK: (3) 9-3-004:*	*Grant No.*	*Ahupua'a*
1	027	2905	Mohowae and Waiopua
2	028	2905	Mohowae and Waiopua
3	034	6182	Waiopua
4	040	1371	Keaa 1st and 2nd
5	040	1371	Keaa 1st and 2nd

Regarding the cultural significance of the potential solar sites and any ramifications such significance may have with respect to the proposed solar developments, I am providing a brief culture-historical context, which includes the results of prior archaeological studies conducted in the vicinity of the sites. The proposed community solar sites include four adjacent *ahupua'a* (Mohowae, Waiopua, Keaa 1st and 2nd) situated within the District of Ka'ū near the southern tip of Hawai'i Island. As noted by early Western explorers to the South Point region, and described by Handy and Handy (1991:578-584), the fertile plain in the vicinity of the study area was once extensively and intensively planted with traditional subsistence crops such as *kalo* (taro) and *'uala* (sweet potato). The archaeological remains of the former field infrastructure, referred to by archaeologists as the Ka'ū Field System, are still evident in aerial photographs across large swaths of land in the vicinity of the subject parcels. In addition to being agriculturally productive, the land of Mohowae is also remembered as a level area famous for sport, where according to Handy and Handy (1991:582), "contests and games of strength and skill were held."

During the *Māhele ʻĀina* of 1848, the four *ahupuaʻa* containing the areas proposed for the potential community solar development were relinquished to the Government (in lieu of commutations on various other lands they received) by their royal claimants: Mohowae by Ane Keohokālole, Waiopua by Loe, Keaa 1st by William Pitt Leleiohoku, and Keaa 2nd by Kahanaumaikai. Five *kuleana* parcels were awarded to native tenants living in the vicinity of the potential solar sites as a result of the *Māhele ʻĀina* of 1848 (LCAw. 9845 to Napahoa, LCAw. 9846 to Poohina, LCAw. 9847 to Paaeae, LCAw. 9848 to Kinoulu, and LCAw. 9849 to Kapule). All five are listed as being within Waiopua Ahupuaʻa. Napahoa's land section, situated within the *ʻili* of Napahuewalu, was received from Loe in 1838; Poohina's land section, situated within the *ʻili* of Popolohaunui, was received from Nakahoa in 1838; Paaeae's land section, situated within the *ʻili* of Popolohaunui, was received from Poohina in 1838; Kinoulu's land section, situated within the *ʻili* of Waialaa, was received from Napahoa in 1840; and Kapule's land section, situated within the *ʻili* of Waialaa, was received from Nakahoa in 1838. The native testimonies provided for four of these *kuleana* are silent regarding the specific use of the land, but LCAw. 9847 to Poaeae, was claimed as a *kīhāpai* (field), indicating that the awards within the study area were all likely cultivated sections as well.

Following the *Māhele ʻĀina* of 1848, large parcels of land within Mohowae, Waiopua, Keaa 1st and 2nd *ahupuaʻa* (those not awarded as LCAw.) were sold by the Hawaiian Government as Royal Patent Grants. Four of the five potential community solar sites (Sites 1, 2, 4, and 5; see Table 1) are located within former grant parcels (Grant Nos. 1371 and 2905). Grant No. 1371, sold to W. I. M. Koma on March 21, 1854, is located in Keaa 1st and 2nd *ahupuaʻa*; Grant No. 2905, sold to Kamananui on January 27, 1863, is located in Mohowae and Waiopua *ahupuaʻa*. A map included with Grant No. 1371 to Koma shows an *alanui* (road) crossing a portion of that parcel in a *mauka*/*makai* direction.

In 1868, an eruption of Mauna Loa drastically altered the cultural and physical landscape of Kaʻū in the vicinity of the current study area. The roughly two-week long eruption included a massive earthquake (on April 2, 1868) that knocked down most of the stone walls and buildings in the district, triggered a *tsunami* that swept away many of the coastal villages and drowned 46 people, and caused a landslide that buried another village along with 31 of its inhabitants. On April 7, 1868 a fissure opened along the southwest rift zone of Mauna Loa (just above the potential solar sites), and emitted a lava flow that reached the sea, crossing a distance of roughly 13 kilometers, in only three and a half hours. The lava flow continued for four days, and by the time it ceased on April 11, 1868, it had covered a large area in the vicinity of the potential community solar sites with a fresh layer of *ʻaʻā* lava.

Historic maps created following the 1868 lava flow record a named place called Haunakalii located nearby potential solar sites 4 and 5. The meaning of the name Haunakalili, literally meaning "stench [of] the jealousy," was recorded in the field book of the surveyor, Kaelemakule, who wrote:

> The Haunakalili hole is about 30 ft. deep and 30 ft. in diameter. Meaning - Bad odor of jealousy. The people of the coast and the cultivators of the soil fought on account of jealousy. Starvation killed the vanquished who were thrown in hundreds into this hole. The hole has a stone wall about it to keep the cattle from falling in. Flow of 1868 came to the edge of this hole and a little went into it. (Field Book, Hawaiʻi Registered Map No. 517:38)

A map prepared in 1903, when the unsold portions of the study *ahupuaʻa* and neighboring Government Lands were divided into the Kiolakaa-Keaa Homestead Lots (Hawaiʻi Registered Map No. 2176), depicts Haunakalili hole within a *kīpuka* (an area flowed around by the 1868 lava flow) near the *mauka* boundary of Grant No. 1371 to W.T.M. Koma. On later maps this *kīpuka* is labeled Kīpuka Auna (or Mana) o Ka Lili, literally meaning the flock (or spirit) of jealousy *kīpuka*).

One of the potential community solar sites (Site 3) is located within a former lot of the Kiolakaʻa-Keaʻā Homesteads, which were created in 1903 and then sold at auction to the highest bidder during subsequent years (Gastilo and Clark 2019). Site 3 is situated within Lot 35 of the homesteads, purchased by Kele Pinao in 1914 as Grant No. 6182. The 1903 survey notes for Lot 37 mention a stone wall along the boundary of Grant No. 2905 to Kamanawai and a trail crossing an *ʻaʻā* lava flow nearby.

Aerial photographs taken during the second half of the 20th century indicate much of the land encompassed by all five potential solar sites (areas not covered by the 1868 lava flow) was mechanically cleared for pasture and modern agriculture. Sites 1 and 2 are located within the former citrus fields of the Kaʻū Gold Orange company, which was founded in 1979, and by 2001 had grown to include 18,000 orange trees on 150 acres of land, representing 95% of the State's citrus crop (Kaʻū Calendar 2011). Kaʻū Gold Orange went out of business in 2011, but the former processing plant and laborer's quarters are situated very near one of the potential solar sites (Site 2), and the rows of citrus trees, interspersed with windbreaks, are still growing within both the Site 1 and 2 areas.

Our archival research indicates that none of the five potential community solar sites have undergone prior archaeological investigation, although nearby studies conducted in the general vicinity of the sites have documented significant archaeological and cultural resources (c.f. Landrum 1984; Clark and Rechtman 2004; Clark et al. 2004; Gastilo and Clark 2019). A brief field inspection of the five community solar sites conducted by ASM on January 5, 2021, however, indicates that the likelihood of encountering such resources within any of potential solar development areas is extremely limited. All five of the potential solar sites have been subject to prior mechanical disturbance and/or are situated in areas covered by the 1868 lava flow, and no cultural resources were identified within any of the potential sites during the recent field inspection. Historic properties noted in the general vicinity of the potential solar sites were limited to stone walls along the boundary of Grant No. 5229 in the vicinity of Sites 1 and 2 (both of which have been previously graded), and along the boundary of Grant No. 1327 in the vicinity of Site 3 (which has been previously grubbed). These walls, which were built as boundary markers, likely date to the late 19th or 20th century. No historic properties were noted within the Site 4 and 5 areas (both which are situated primarily on the 1868 lava flow and have undergone limited prior mechanical disturbance), but Gastilo and Clark (2019) previously documented the Haunakalili pit nearby an already approved community solar project located between Sites 1 and 2.

Although the likelihood of encountering cultural resources within any of the five potential community solar sites is extremely limited, given the current regulatory environment, it is most probable that the State Historic Preservation Division will require that an Archaeological Inventory Survey (AIS) in accordance with Hawai'i Administrative Rules (HAR) §13-284 be conducted in conjunction with any Hawai'i Revised Statutes (HRS) Chapter 6E action associated with their development. While significant historic properties are present near the solar sites, they are not widespread, and are actually relatively infrequent on both the 1868 lava flow and within areas of previously grubbed pasture. If carefully selected, the proposed locations for the solar development can avoid impacting historic properties altogether. If there is an element of the proposed solar project that triggers compliance with HRS Chapter 343, this will necessitate the preparation of a Cultural Impact Assessment (CIA) as a part of the Environmental Assessment process. Based on what we know to date, I do not anticipate that a CIA will result in the identification of significant cultural impacts.

Should you have any additional questions, or if you would like further information please feel free to contact me.

Sincerely,

Matthew R. Clark, M.A.
Senior Archaeologist – Director ASM Hilo

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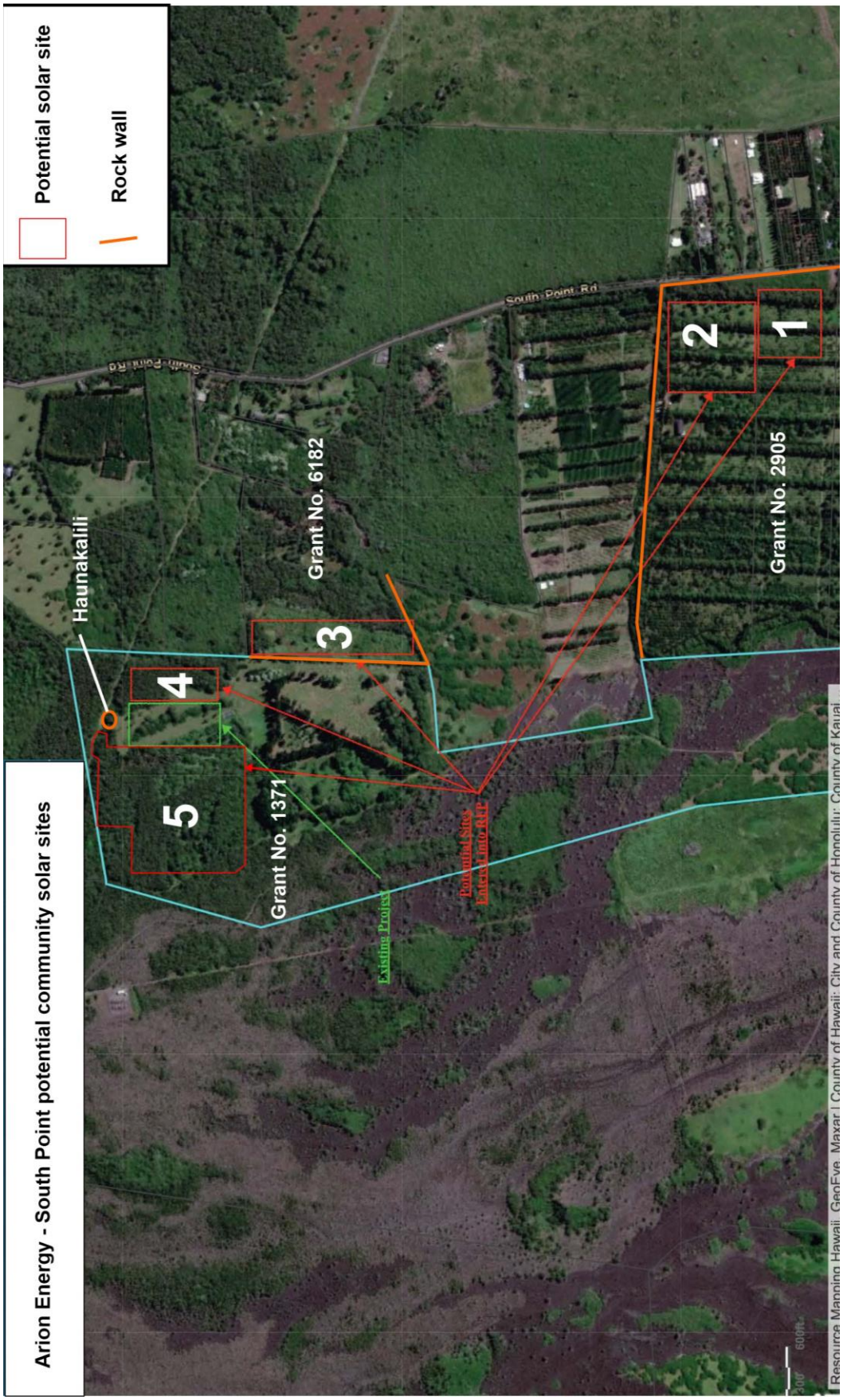

Figure 1. South Point potential community solar sites.