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Written Rebuttal Testimony of Dennis Gossler

I. Background of Witness and Scope of Rebuttal Testimony

A. Education, Experience, and Qualifications:

I am Dennis Gossler, Senior Archaeologist at Pacific Consulting Services, Inc. (“PCSI”), where I have worked since 2003. I received a B.A. degree (Anthropology major) from San Francisco State University in 1991, a M.A. in Anthropology from Brigham Young University in 1994, and studied for a Ph.D in Anthropology at Arizona State University between 1994 and 2008. I worked as an archaeologist at the Bernice Pauahi Bishop Museum from 1988 until 1994; I held positions there as a field crew member and project director. Between 1999 and 2003, I worked as a Senior Archaeologist and Principal Investigator for Ogden Environmental and AMEC in Honolulu. Between 2003 and 2006 and since 2011 I have worked as a Senior Archaeologist and Principal Investigator for Pacific Consulting Services, Inc. Between 2006 and 2011 I worked as a Senior Archaeologist for Coastal Carolina Research, Inc.

I am a qualified archaeologist who meets the standards of the Secretary of the Interior at 36 CFR Part 61, and the requirements of the State of Hawai‘i at Hawai‘i Administrative Rules (“HAR”) 13-281-3. A copy of my curriculum vitae is provided as Exhibit A-45 in this proceeding.

B. Scope of Rebuttal Testimony:

My testimony will deal with the following areas in which PCSI has been involved with concerning historic preservation within the three UH Management Areas on Mauna Kea:

- Specifically, the adequacy and efficacy of PCSI's Archaeological Inventory Survey of the Astronomy Precinct in the Mauna Kea Science Reserve;

- Generally, the adequacy and efficacy of PCSI's Archaeological Inventory Surveys in other areas of the three UH Managed areas on Mauna Kea; and
- PCSI's long-term historic property monitoring program conducted within the three UH Management Areas between 2012 and 2016.

II. The adequacy and efficacy of PCSI's Archaeological Inventory Survey of the Astronomy Precinct in the Mauna Kea Science Reserve

In 2005, PCSI, under contract with OMKM, initiated systematic pedestrian survey of the 525-acre Astronomy Precinct, which includes the footprint of Area E of the proposed TMT. In 2005, Area E was not a specified or targeted focus of the inventory survey. Portions of the Astronomy Precinct had been previously investigated by Patrick McCoy (co-Principal Investigator of the Astronomy Precinct survey) during earlier survey projects. Resurvey of these areas was undertaken as part of the 2005 survey.

The methodology used to survey the Astronomy Precinct involved a four-person team systematically transecting (walking) at set intervals within the Precinct boundaries. When historic properties were found, they were recorded with drawings and photographs, and located using GPS. Six archaeological sites and one previously documented traditional cultural property were recorded. One feature recorded as an archaeological site was later determined, through archaeological excavations, to be a natural gelifluction terrace (gelifluction is a geological event by which material is moved, over time, by freeze-thaw processes).

All of the historic properties recorded within the Astronomy Precinct were determined to be significant based on criteria established by DLNR and the SHPD. The distribution and formal types of historic properties found within the Astronomy Precinct are similar to and consistent with other areas within the MKSR. The Archaeological Inventory report was accepted by SHPD:

McCoy, Patrick C., Richard Nees & Stephan D. Clark. January 2010. *Archaeological Inventory Survey of the Astronomy Precinct In the Mauna Kea Science Reserve Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i TMK: (3) 4-4-015: 09 (por.)*. Exhibit A-55; (Exhibit A-5, Appendix I).

III. The adequacy and efficacy of PCSI's Archaeological Inventory Surveys in other areas of the three UH Managed areas on Mauna Kea:

Since 2005, PCSI has conducted archaeological inventory surveys (“AIS”) on and adjacent to the Mauna Kea Science Reserve (“MKS”), including all lands leased to the University of Hawai'i on Mauna Kea by the State of Hawai'i. Final AIS reports for the following areas have been completed and approved by the SHPD:

McCoy, Patrick C., Richard Nees & Stephan D. Clark. January 2010. *Archaeological Inventory Survey of the Astronomy Precinct In the Mauna Kea Science Reserve Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i TMK: (3) 4-4-015: 09 (por.)*. Exhibit A-55; (Exhibit A-5, Appendix I). Approved by SHPD on December 28, 2009. Exhibit A-53.

McCoy, Patrick C., Richard Nees & Melanie Mintmier. February 2010. *Archaeological Inventory Survey of the Mauna Kea Access Road Management Corridor, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i*. Exhibit A-56. Approved by SHPD on February 21, 2010. Exhibit A-57.

McCoy, Patrick C. & Richard Nees. January 2010. *Archaeological Inventory Survey of the Mauna Kea Science Reserve, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i, TMK: (3)4-4-015:009 (por.)*. Exhibit A-97. Approved by SHPD on May 26, 2010. Exhibit A-63.

McCoy, Patrick C. & Richard C. Nees. August 2013. *FINAL REPORT. Archaeological Inventory Survey of the Mauna Kea Ice Age Natural Area Reserve Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i*. Exhibit A-122.

The above archaeological surveys completed by PCSI have adequately covered the areas within the University's managed lands on Mauna Kea impacted by the Thirty Meter Telescope (“TMT”) and followed similar methodologies as described above; each report has been accepted by the SHPD.

Although colleagues at PCSI have also authored additional compliance-related reports for OMKM and other clients, I was not involved in the preparation, development, or implementation of these documents. These other documents include the following:

Collins, Sara, Ph.D. Final Report, September 2012 *Historic Preservation Mitigation Plan in Support of Construction of the Thirty Meter Telescope in the Astronomy Precinct on Mauna Kea, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i, TMK: (3)4-4-015:009 (por.)* Exhibit A-141.

McCoy, Patrick C., Sara Collins, Stephan D. Clark & Valerie Park. 2009. *A Cultural Resource Management Plan for the University of Hawai'i Management Areas on Mauna Kea, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i. TMK: (3) 4-4-012, 015. A Sub-Plan for the Mauna Kea Comprehensive Management Plan.* Exhibit A-11.

Collins, Sara, McCoy, Patrick C. & Clark, Stephan D., *Final Report*, May 2013, *Archaeological Monitoring Plan in Support of Construction of the Thirty Meter Telescope in the Astronomy Precinct on Mauna Kea, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i, TMK: (3)4-4-015:009 (por.)* Exhibit A-142. Approved by SHPD on April 24, 2013 Exhibit A-143.

Collins, Sara, McCoy, Patrick C. & Clark, Stephan D., *Final Report*, May 2013, *Burial Treatment Plan for Burial Sites in the Mauna Kea Science Reserve and Mauna Kea Access Road Corridor, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i, TMK: (3)4-4-015:009 (por.) and (3)4-4-015: 001 (por.)*. Exhibit A-138. Approved by SHPD on July 11, 2014 Exhibit A-126.

Pacific Consulting Services, Inc., (Walden and Park), *Final report*, February 2010, *Architectural Inventory Survey of Hale Pohaku Rest Houses 1 and 2 and Comfort Station, Ka'ohē Ahupua'a, Hāmākua District, Hawai'i Island, Hawai, TMK: (3) 4-4-015: 12 (por.)* Exhibit A-123.

I believe that the AIS fieldwork was carried out in accordance with prevailing professional standards. I can further testify that all of the AIS reports have been prepared in compliance with HRS § 6E and its' implementing regulations at HAR 13-275 through 13-282. The SHPD and DLNR have reviewed all reports and plans, concurred with their findings and recommendations, and approved them as final. Moreover, the December 1, 2010 memorandum from SHPD to DLNR regarding its comments on the historic preservation review of CDUA HA-

3568 confirms that there was adequate documentation of cultural resources with the UH managed lands on Mauna Kea. Exhibit A--8, p. 181-182; Exhibit A-137.

IV. PCSI's long-term historic property monitoring program conducted within the three UH Management Areas between 2012 and 2016.

The long-term historic property monitoring program (Gosser et al. 2014) was developed in accordance with Management Action CR-10 of the Board of Land and Natural Resources-approved (BLNR) Comprehensive Management Plan (CMP) for the UH Management Area on Mauna Kea. Likewise, Management Action 6 of the Cultural Resources Management Sub-Plan for the UH Management Area (CRMP; McCoy et al. 2009) also mandates the preparation and implementation of a long-term historic property monitoring plan to assist OMKM in its effort to manage and preserve the significant historic properties present in the UH Management Area.

Three goals have been outlined for the program: 1) to allocate the appropriate amount of resources to ensure the preservation of significant historic properties and to evaluate the effectiveness of that allocation over time; 2) to provide evaluation tools that are applied consistently to the monitoring process over time; and 3) to initiate remedial actions (if necessary) at significant historic properties requiring additional protection, conservation, or mitigation. The 271 historic properties were initially categorized into three visitation groups: 1) sites evaluated annually, which included historic properties near roads and other publically accessible points; 2) sites evaluated every three years, which included more remotely located historic properties with evidence of visitation or disturbance; and 3) sites visited every five years, which included historic properties remotely located, in stable condition, and with no evidence of visitation or disturbance.

The monitoring plan has been reviewed and accepted by SHPD and the annual field reports are being reviewed by OMKM and SHPD.

With regard to the Thirty Meter Telescope (“TMT”) Observatory Project, the TMT Observatory site, the Access Way, and the Batch Plant Staging Area are all within the Mauna Kea Summit Region Historic District – Statewide Inventory of Historic Places (“SIHP”) No. 50-10-23-26869 – as previously defined in the SHPD’s Mauna Kea Historic Preservation Plan Management Components (SHPD 2000). (Appendix F to the Mauna Kea Master Plan, Exhibit A-48). The District includes a concentration of significant historic properties that share a physical setting, historic use, traditional associations, and ongoing cultural practices. The properties include shrines, adze quarry complexes and workshops, human interments, stone markers/memorials, temporary shelters, historic campsites, traditional cultural properties (“TCPs”), a historic trail, and sites of unknown function. All of these types of historic sites are contributing properties to the Historic District. Exhibit A-55 (McCoy & Nees 2010, pp 7-1 – 7-3). The Historic District has been determined by the SHPD to be significant under all five criteria (A, B, C, D and E), as defined in HAR § 13-275-6. All of the historic properties within the TMT project areas have been visited as part of the long-term monitoring program.

The TCPs that are contributing properties to the Mauna Kea Summit Region Historic District include Pu‘u Kūkahau‘ula, Pu‘u Waiiau (which encloses Lake Waiiau), and Pu‘u Līlīnoe. Specific information on these historic properties are described in the following:

- Pu‘u Kūkahau‘ula (SIHP No. -21438) encompasses the three *pu‘u* that form the highest portion of Mauna Kea’s summit, Pu‘u Hau‘oki, Pu‘u Kea, and Pu‘u Wekiu, all three of which are recent geographic names for these landmarks. Established by the SHPD in 1999 as TCP, Pu‘u Kūkahau‘ula bears the name of a legendary figure that appears in Hawaiian traditions and is particularly associated, by name, with legends about Mauna Kea. Kūkahau‘ula variously appears as the husband of Līlīnoe, a suitor or husband of Poli‘ahu, and as an *‘aumakua* of fishermen. Exhibit A-55 (McCoy, Nees & Clark 2010: pp 5-15 – 5-20). The Access Way leading to the TMT Observatory would

intersect the northwestern edge of Pu‘u Kūkahau‘ula for approximately 800 feet.

- SHPD designated Pu‘u Līlīnoe as SIHP No. -21439; at the same time, SHPD designated Lake Waiau and the adjacent Pu‘u Waiau as the Waiau Site (SIHP No. -21440). The Waiau Site is located outside the MKSR to the south and actually lies within the Mauna Kea Ice Age Natural Area Reserve while Pu‘u Līlīnoe is within the MKSR, southeast of Pu‘u Kūkahau‘ula. No portion of the current project area is in or near Pu‘u Līlīnoe or the Waiau Site.

Several archaeological sites recorded during recent surveys are known to be present in the vicinity of portions of the current project area. The following sites are known to be in the vicinity of the Access Way and TMT Observatory Site:

- SIHP No. -16172 was recorded as a shrine and consisted of a single upright with several support stones. Exhibit A-55 (McCoy & Nees 2010, p 5-13). First recorded in the early 1980s and subsequently documented during surveys conducted in 1995 and 2005. A Bishop Museum entomologist also reported seeing a crude C-shaped structure and other walls in the vicinity in 1982, however the walls were never observed during archaeological surveys conducted in 1995 or 2005. SIHP No. -16172 is located about 225 feet north of the proposed Observatory site.
- SIHP No. -16167 was recorded as a shrine in 1982 and subsequently documented during surveys conducted in 1995, 1999, and 2007. The site consisted of two uprights placed in a bedrock crack. Exhibit A-55 (McCoy & Nees 2010, pp 5-9 – 5-10). SIHP No. -16167 is located approximately 500 feet east of the proposed Access Road, and about 1,300 feet southeast of the proposed TMT Observatory site.
- SIHP No. -16166 was recorded as a multi-feature shrine with eight, possibly nine, uprights arranged in two groups. Exhibit A-55 (McCoy & Nees 2010, pp 5-6 – 5-9). First recorded in 1982, the shrine underwent further documentation during survey work in 1995, 1999, and 2005. SIHP No. -16166 is approximately 350 feet east of the Access Road and 1,600 feet southeast of the proposed TMT Observatory site.
- SIHP NO. -21449 was believed to be a single terrace constructed of stacked cobbles and small boulders with a surface composed of cobbles, small boulders, and thin flat slabs which were probably brought to the locale by human agency. Test excavations did not yield cultural materials or features and the site’s function is unknown. Exhibit A-55 (McCoy & Nees 2010, p 5-15). SIHP No. -21449 is located approximately 200 feet east of the Access Road and 700 feet south of the proposed TMT Observatory site. This site is considered a natural features.

The Batch Plant Staging Area is adjacent to the southwestern boundary of Pu‘u Kūkahau‘ula (SIHP No. -21438), across the Mauna Kea Access Road. No historic properties are

known to be within this area. Prior survey work recorded two shrines in the general region of the Batch Plant Staging Area, both of which are more than 500 feet to the west:

- SIHP No. -16164 is a shrine composed of two upright features. Feature 1 consists of three (possibly five) upright stones that are positioned along the edges of a low rectangular platform; Feature 2 consists of a single upright placed in a bedrock crack, supported by several cobbles. Exhibit A-55 (McCoy & Nees 2010, p 3-9). First recorded in 1997, the site was subsequently visited in 2007 and found unchanged.
- SIHP No. -16165 consists of two single uprights about 1.4 meters apart along a ridge; each upright is supported by cobbles. Exhibit A-55 (McCoy & Nees 2010, p 3-9). The site was first recorded in 1997 and found unchanged in 2007.

Several features of the Pu‘u Kalepeamoia Site Complex (SIHP No. 50-10-23-16244) are in the general vicinity of HELCO’s Hale Pōhaku Substation; the following site information is drawn from McCoy & Nees, 2010, p 3-13. Exhibit A-55. Two lithic scatters were designated as SIHP Nos. 50-10-23-10310 and -10311. These sites eventually underwent archaeological data recovery after increased erosion made preservation difficult. The data recovery fieldwork demonstrated the presence of both lithic workshops and manufacturing areas for octopus lure sinkers. In addition to the lithic scatters, two shrines are located across the four-wheel drive access road and to the south about 190 feet away from Hale Pōhaku. SIHP No. -10313 is a shrine with three to five upright stones, and SIHP No. -10315 is a single upright shrine. The shrines and lithic scatters are over 1,200 feet from the HELCO substation and from the nearest electrical pull box that will be accessed when the conductors in the existing conduits are replaced. None of the actions required to implement the proposed project will affect these historic properties.

Only one known archaeological site is present near HELCO’s Hale Pōhaku Substation, where transformer swaps will occur. SIHP No. -10320 (also part of the Pu‘u Kalepeamoia Site Complex) is a lithic scatter that lies about 200 feet west of the existing substation. None of the

potential TMT activities in this area will be carried out near this site.

In addition to these archaeological sites, the original buildings of Hale Pōhaku – the “stone cabins” – are historic in age. Two rest houses date to the 1930s and were constructed by participants in the Civilian Conservation Corps; one comfort station dates to 1950. Exhibit A-123. They are over a thousand feet from the work that would be done within the existing HELCO Hale Pōhaku Substation, and will not be used or otherwise affected by the subject Project.