

Appendix I: Botanical Study

Appendix I-1: Addendum to Draft EA Botanical Study

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January 28, 2011

Doug Zang and Heather Forester
SSFM International, Inc.
Via e-mail: dzang@ssfm.com and hforester@ssfm.com

Dear Mr. Zang and Ms. Forester:

**Subject: Botanical Survey of Access Management Areas Associated with
Kea'au-Pāhoa Road, Island of Hawai'i**

In response to your request, Dr. Patrick J. Hart and I conducted a botanical survey of the subject areas on January 26, 2011, with the goal of generally characterizing the vegetation, listing any plant species not detected in our earlier survey, and most importantly, determining if any threatened or endangered plant species were present.

The reader is referred to the 2009 report contained in the Kea'au-Pāhoa Road Improvements Environmental Assessment that describes the results of a botanical survey of an approximately 9.5-mile corridor of varying width surrounding State Highway 130 (SR 130, the Kea'au-Pāhoa Road), between the southeastern end of the Kea'au Bypass and the Kapoho Road intersection, for background for the project, the botanical resources, and a full species list:

Terry, R., Hart, P. and Yoshida, L. 2009. *Botanical Survey Proposed Kea'au-Pāhoa Road Improvements Puna District, Island of Hawai'i*. Prep by Geometrician Associates, LLC for SSFM International Inc. and the Hawai'i Department of Transportation.

The access management areas varied between fairly undisturbed native 'ohi'a-uluhe forest and completely disturbed and graded former agricultural land. No threatened or endangered plant species were detected, and given the context, it is extremely unlikely that any would be present. The following presents our findings concerning individual areas.

1. Pōhaku Circle: Approximately 2,600 feet (half mile) of existing paved road, right of way approximately 40 feet wide, to be improved to County Standards for a minor street (50-foot right of way).

We found this area to be generally developed with houses and yards, with little native vegetation and no uncommon species.

2. Connector between Uala (31st Ave.) and Puakalo (30th Ave.): Approximately 750 feet of new paved roadway, 50' right of way to County standards for a minor street through vacant property.

This area had a short-stature (10-20 foot tall) native 'ohi'a-uluhe forest moderately invaded by Melastoma and other non-native plants. In addition to 'ohi'a and uluhe (*Dicranopteris linearis*), other natives include Cretan brake fern (*Pteris cretica*), uki sedge (*Machaerina mariscoides subsp. meyenii*), wawaeiole (*Lycopodiella cernua*), and 'uhaloa (*Waltheria indica*), which is common in disturbed or open areas.

3. Cul-de-sac on Uala (31st Ave.): New cul-de-sac at end of road, approximately 90 feet in diameter. New portion of cul-de-sac appears to be open space.

The area is highly disturbed pocket of vegetation between Highway 130 and Uala Street, dominated by *Cecropia obtusifolia*, strawberry guava (*Psidium cattleianum*), and albizia (*Falcataria moluccana*), all non-native and invasive trees, along with some 'ohi'a (*Metrosideros polymorpha*). Understory is *Sporobolus* sp. grass, *Wedelia trilobata* and broomsedge (*Andropogon virginicus*), all non-natives.

4. Extension of Kaloli Drive to Pōhaku Circle: Approximately 650 feet of new paved roadway, 60 feet in right of way width, following a somewhat curvilinear alignment, across two vacant properties.

This area is heavily invaded by albizia and very few natives remain, although some mature hapu'u tree ferns (*Cibotium glaucum*) were present. It was also lightly infested by the highly invasive *Miconia calvascens*.

5. Improvement of 34th Avenue: Existing gravel road between Orchidland Drive and Ilima Street would be improved to County Standards for a minor roadway, 50 foot right of way. Total length is approximately 7,800 feet, or 1.5 miles.

Land use along 34th Avenue is generally residential or open space. It had slightly more native vegetation than Pōhaku Circle but was generally similar, with no botanical concerns.

6. Extension of Maku'u Drive to 34th Avenue: New paved roadway built to 60-foot right of way width for length of approximately 1,050 feet, crossing portions of three vacant parcels.

This area was variable, with domination by albizia, vegetation purposefully maintained in non-native grasses, and native 'ohi'a-uluhe forest moderately invaded by Melastoma and other non-native plants similar to that described for (2) above.

7. Extension of Orchidland Drive to Uhaloa (32nd Ave.): New paved roadway built to 60-foot right of way width for length of approximately 350 feet through a vacant parcel.

This area had the tallest and thickest *ohi'a-uluhe* forest, though it was heavily invaded by strawberry guava as well. However, the route also appeared to contain a newly graded lot with a foundation and septic tank.

8. Cul-de-sac on Ilima Street. New cul-de-sac just by Kea'au-Pāhoa Road, approximately 90 feet in diameter.

The small portion of the cul-de-sac not within existing roadway is a highly disturbed area dominated by autograph tree (*Clusia rosea*), with some 'ohi'a and uluhe.

9. Improvement of Uhaloa (32nd Ave.): Existing dead-end gravel road extending west from Paradise Drive would be improved to County Standards for a minor roadway, 50 foot right of way. Total length is approximately 1,500 feet.

Land use is generally residential or open space, with some native vegetation but no botanical concerns.

The only species not found in our original survey were the following:

Scientific Name	Family	Common Name	Life Form	Status*
<i>Cassytha filiformis</i>	Lauraceae	Kaunaoa pehu	Vine	I
<i>Miconia calvescens</i>	Melastomaceae	Miconia	Tree	A
<i>Euphorbia pulcherrima</i>	Euphorbiaceae	Poinsettia	Shrub	A

*A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species (none present)

None of these species is of conservation concern. In summary, as with the proposed widening of the highway as a whole, clearing and use for a highway of the access management areas is not expected to have any direct adverse impact on the botanical resources or vegetation of Puna or the island of Hawai'i.

Sincerely,



Ron Terry, Principal
Geometrician Associates

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Appendix I-2: Botanical Study in Draft EA

The Botanical Study from the Draft EA is incorporated here by reference. Consult the Draft EA for the full report.

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