

4 DESCRIPTION OF THE HUMAN ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

This section describes the existing conditions of the human environment, preliminary potential impacts of Honua'ula, and preliminary mitigation measures to minimize any impacts.

4.1 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Aki Sinoto Consulting, LLC, completed a revised archaeological inventory survey for the Property in 2008. The resulting archaeological inventory survey report, dated March 2010, was included as an appendix to the the Draft EIS (Sinoto 2010). Revisions to the archaeological inventory survey report were completed in 2012 (Sinoto 2012). Findings of the archaeological inventory survey report, as revised in 2012 (Sinoto 2012), are summarized below. Appendix I contains the complete archaeological inventory survey report dated March 2012.

The area surveyed includes the Property, the area of the Pi'ilani Highway extension ROW that traverses the Property (both the portion owned by the State and the portion owned by 'Ulupalakua Ranch), and the area of the Maui Electric substation. The revised archaeological inventory survey report incorporates the results of two previous surveys together with the results of additional fieldwork. In April 2000, Sinoto & Pantaleo conducted an archaeological inventory within the 190-acre southern third of the Property (Sinoto & Pantaleo, 2000). Subsequently, in 2001, Sinoto & Pantaleo conducted an inventory survey of the northern two-thirds of the Property (Sinoto & Pantaleo, 2001). Multiple field sessions were conducted between August 2003 and June 2008 to supplement the two initial surveys. Additional field work was conducted in February 2012. Findings of the survey work are summarized below. Appendix I contains the complete archaeological inventory survey.

Previous to the archaeological work commencing in 2000, four other archaeological surveys were conducted within the Property; one for the proposed Pi'ilani Highway extension project (Walton, 1972); two for the previously proposed Wailea 670 development (Hammatt, 1979; Kennedy, 1988), and one for a cinder haul road paralleling the southern boundary (Sinoto & Pantaleo, 1993).

In March 2010 the archaeological inventory survey report incorporating all previous surveys and included as an appendix to the Draft EIS (Sinoto 2010) was submitted to the State Historic Preservation Division (SHPD) for review.

On June 22, 2010 the Maui Planing Commision held a meeting to discuss the Draft EIS. At this meeting Lucienne De Naie, testifying on behalf of Maui Tomorrow, and Clare Apana, testifying on behalf of Maui Cultural Lands, stated that they thought the archaeological inventory survey report in the Draft EIS was inadequate that there are more archaeological

sites on the Property than were recorded in the archaeological inventory survey report. Clare Apana also provided to the Commission a copy of a letter from Daniel Kanahele addressed to SHPD explaining what he considered were the inadequacies of the archeological inventory survey. In their comments on the Draft EIS the Maui Planning Commission directed Honua'ula Partners, LLC's representative Charlie Jencks to: "Work with people that have provided comments regarding the archaeology of the site to clarify findings".

In response to the Maui Planning Commission's directive, on August, 26, 2010 Honua'ula Partners, LLC's representative Charlie Jencks, consultant archaeologist Aki Sinoto, and consultant cultural advisor Kimokeo Kapahulehua participated in a site visit of the Honua'ula Property with several community members and SHPD staff. SHPD staff present were archaeologist Morgan Davis and cultural historian Hinano Rodrigues. Community members present included: Lucienne de Naie, Daniel Kanahele, Janet Six, Elle Cochran, U'ilani Kapu, Ke'eaumoku Kapu, Lee Altenberg, and 'Ekolu Lindsey. Some of the community members had previously: 1) presented testimony, or were present, at the Maui Planning Commission meeting on June 22, 2010 at which the Honua'ula Draft EIS was discussed; 2) submitted information to SHPD claiming that they had found archaeological sites on the Property that had not been included in the archaeological inventory survey dated March 2010 included in the Draft EIS; and 3) submitted written comments on the Draft EIS expressing concerns regarding archaeological sites on the Property.

Subsequent to the site visit, SHPD issued a letter dated September 8, 2010 stating that no significant unrecorded sites were noted at that time (i.e. during the August, 26, 2010 site visit). The letter also provides SHPD's review of the archaeological inventory survey (dated March 2010) and requested revisions, including: 1) editorial changes; 2) that the total number of survey man-hours and the spacing of survey transects be noted; and 3) a large plan map of the survey area with sites and features plotted be included. In addition, the SHPD letter states: "This report presents a comprehensive summary of past archaeological work in this area and nicely incorporates previous surveys in the discussion of current findings."

In response to SHPD's September 8, 2010 letter commenting on the archaeological inventory survey (dated March 2010), archaeologist Aki Sinoto: 1) revised the archaeological inventory survey report to address SHPD's concerns; and 2) submitted the revised archaeological inventory survey report to SHPD in April 2011.

In July and August of 2011, Daniel Kanahele of Maui Cultural Lands submitted letters to Honua'ula Partners, LLC's representative Charlie Jencks and SHPD providing additional comments on the archaeological inventory survey (dated March 2010) that was included in the Draft EIS. Honua'ula Partners, LLC's representative Charlie Jencks, consultant archaeologist Aki Sinoto, and consultant cultural advisor Kimokeo Kapahulehua responded to these letters in writing. In the summer of 2011 Maui Cultural Lands members also made a presentation to SHPD regarding their inspections of the Property.

In response to the concerns Maui Cultural Lands members expressed to SHPD in the summer of 2011, on September 23, 2011 archaeologist Aki Sinoto and cultural advisor Kimokeo Kapahulehua met with SHPD archaeologist Morgan Davis and SHPD cultural historian Hinano Rodrigues at SHPD's Maui office. Subsequently, as recommended by SHPD, Honua'ula Partners, LLC's representative Charlie Jencks, consultant archaeologist Aki Sinoto, and consultant cultural advisor Kimokeo Kapahulehua met with members of Maui Cultural Lands and other community members at Maui Community College on November 17, 2011. Maui Cultural Lands members and other community members present at the November 17, 2011 meeting included: Daniel Kanahale, Janet Six, 'Ekolu Lindsey, Lucienne De Naie, Jocelyn Costa, and Clifford Ornellas. Others present at the meeting included Stanley Solamillo, a cultural resource planner with the Maui Planning Department, and Tanya Lee Greig, the director of Cultural Surveys Hawaii's Maui office.

As a result of the November 17, 2011 meeting, the archaeological inventory survey report was further revised to: 1) recommend preservation of a section of a post-contact agricultural wall documented in the archaeological inventory survey but not previously recommended for preservation; 2) add descriptive narrative information for two post-contact agricultural walls; and 3) revise pertinent map figures in the report. Archaeologist Aki Sinoto submitted the further revised archaeological inventory survey report to SHPD in March 2012. Since the SHPD Maui archaeologist had recently resigned, copies of the revised archaeological inventory survey report were transmitted to SHPD's main office in Kapolei and to Dr. Theresa Donham, the interim SHPD chief of archaeology in Hilo. In April 2012, Dr. Donham notified archaeologist Aki Sinoto that the report was forwarded to the SHPD Maui office for review due to the hiring of replacement personnel. As of May 2012, SHPD has not completed its review of the revised (March 2012) archaeological inventory survey. Appendix I contains the complete archaeological inventory survey report dated March 2012.

In addition to the revised archaeological inventory survey for the Property (Sinoto 2012), Aki Sinoto Consulting, LLC, completed archaeological surveys for the areas of: 1) the wastewater transmission line alignment for possible connection to the Mākena Resort WWRF; and 2) the off-site wells, waterline, and storage tank. Figure 2 shows the locations of these utility areas. Appendix I contains the complete archaeological inventory surveys.

Regarding the Pi'ilani Highway widening area from Kilohana Drive to Wailea Ike Drive and the area of the Wailea Ike Drive and Wailea Alanui Drive intersection improvements, the State Historic Preservation Division has determined that an archaeological inventory survey of these areas is not required given that the work will be within the existing highway right-of-way or adjacent to previously disturbed land; however archaeological monitoring plans will be prepared and a qualified archaeological monitor will be present during all ground altering disturbances. For more information on the widening of Pi'ilani Highway see Section 4.4 (Roadways and Traffic) and Appendix R, which contains the complete Pi'ilani Highway Widening Project Final EA. Appendix G of the Final EA contains the SHPD letter regarding the need for archaeological monitoring plan for the Pi'ilani Highway widening area. For more information on the Wailea Ike Drive and

Wailea Alanui Drive intersection improvements see Section 4.4 (Roadways and Traffic) and Appendix S, which contains the complete Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA. Appendix G of the Final EA contains the SHPD letter regarding the need for archaeological monitoring plan for the Wailea Ike Drive and Wailea Alanui Drive intersection improvements.

Settlement Patterns

The earliest prehistoric settlement on Maui is postulated to have occurred between A.D. 300-600 along the windward regions where abundant rainfall and fertile soil supported crop cultivation and human populations (Kirch 1985, Cordy and Athens 1988, Gosser et al. 1997). Population expansion into the drier, leeward areas of Kīhei, Wailea, and Mākena, likely took place by A.D. 1000-1200 (Cordy 1974, Kirch 1985) although localized areas of earlier permanent occupation appear to have been present (Gosser et al. 1997).

The Honua'ula Property is located along the southwestern slopes of Haleakalā, within the *moku* (traditional district) of Honua'ula (currently subsumed into the Makawao District) and includes portions of three *ahupua'a*: Paeahu in the north, Palaua in the middle, and Keauhou in the south.

The inhabitants of Honua'ula *moku* subsisted mainly on fish and sweet potatoes, a common diet of those who lived in the dry leeward areas of Maui (Barrere 1975). The early French navigator La Perouse noted, while anchored at Keone'ō'io Bay that "This part of the coast was altogether destitute of running water. The inhabitants had no drinking water but a brackish water obtained from shallow wells" (La Perouse 1798). Due to the lack of running water, agricultural production in leeward Maui was limited to dryland taro in the upland areas in pockets of moist soil where rainfall was greater, while sweet potatoes were grown at the lower elevations (Handy 1940).

The general pattern of occupation within the Honua'ula *moku* suggested by previous archaeological research consists of seasonal settlements occurring along the coastal areas to exploit marine resources, while permanent settlements occupied the upland areas to utilize forest products and cultivate agricultural resources. Between these settlements was an arid area used for cultivating sweet potatoes and for transit on mauka-makai trails. Upland populations exchanged taro, bananas, and sweet potatoes with the coastal populations for ocean resources (Handy 1940).

Chapman and Kirch (1979) proposed that a pattern of transience existed between coastal and inland areas. Inhabitants of the upland agricultural region may have utilized the coastal shelters as temporary or seasonal bases for expanding the range of resource exploitation. Trails linked these permanent upland habitation areas to coastal areas. Temporary habitation sites, located along trails linking upland and coastal settlements were used by travelers from upland residences to the coast to gather seasonal marine resources.

The late prehistoric/early historic settlement was characterized by permanent habitation along the coast and limited agricultural expansion into harsher, more ecologically marginal regions (Kirch 1977). Sites over a quarter-mile inland were used for temporary habitation and agriculture, although scattered permanent habitation extended as far as a half-mile inland in certain localities (Schilt 1988). The presence of earlier permanent settlements on the coast has been recently discovered as well (Donham 1986 and Fredericksen 1999).

As the archaeological knowledge base has progressively grown, traditionally held perceptions that the region was marginal and sparsely occupied until the latter phases of the prehistoric period have been changing. Similarly, the interpretation that the “intermediate” zone between the coastal areas and the forested upland zones was barren, used only during transit between the two loci, and lacked any consequential occupation, has also recently come into question. Recent studies of the intermediate zone (Gosser et al. 1993 & 1997, Sinoto & Pantaleo 2008) highlight: 1) the importance of the intermediate zone in specific areas of the region; and 2) a range of site types representing various activities in the intermediate zone.

Identified Sites

A total of 40 archaeological sites comprised of 60 component features have been recorded within the Property. No burials or human remains have been found. The recorded site types include: small enclosures, modified overhang shelters, modified outcrop platforms and terraces, steppingstone trail segments, long walls, and multiple feature complexes. The majority of the sites/features appear to primarily represent prehistoric-period semi-permanent and temporary habitation functions associated with marginal intermediate inland-zone agricultural pursuits and/or mauka-makai transits between coastal and inland permanent habitation zones. A few sites, such as a complex of meandering free-standing walls, may represent historic period activities, most likely associated with ranching.

Only one site was recorded in the northern two-thirds of the Property. Although there is evidence that the area had previously undergone extensive disturbances, the scarcity of archaeological sites is remarkable especially when compared to the southern third of the Property, which contains 97.5 percent of the recorded sites. A large wall, trending east to west, demarks a physical division between the northern two-thirds of the Property and the southern third. The southern portion of the Property consists of large areas of a'ā flows with intermittent pahoehoe flow ridges. Due to the rough terrain, it appears that earlier historic ranching activities attempted to keep cattle out of this southern area and did not encroach south of the large wall until a later phase of ranching activities.

The presence of a steppingstone trail in the a'ā flows (in the southern third of the Property) and small, isolated features support the argument that this mid-elevation zone was primarily used for temporary transit stops during travel between the coast and inland areas. Based on results of previous research in the region, the dispersed, isolated

occurrence of small, crudely constructed, structural features; such as C-shapes, modified outcrops and overhang shelters; can be indicative of temporary habitation. These feature types are well-represented in the neighboring areas and have been interpreted as temporary habitation sites, most with intermediate to late prehistoric period origins. The frequency of platform features as well as two multiple feature complexes—composed of more substantial structural features in terms of variety, size, numbers, and construction—suggest more intensive, if not permanent, occupation in the area. Further work, especially age determinations for specific sites, is needed to clarify the nature of these sites.

Of the 40 total sites recorded, ~~33~~ 34 are considered to be significant based on at least one Hawai'i Register criterion: the potential to yield information. ~~Several of the Six~~ sites—such as the multiple feature complexes, steppingstone trail segments, and the long walls—are considered significant based on multiple criteria. ~~Seven~~ Six sites are considered no longer significant. For resources to be significant they must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following criteria:

Criterion A – specifies association with events or broad patterns important to the prehistory or history of a region, island, or Hawaii in general;

Criterion B – reflects association with persons important to the prehistory or history of a region, island, or Hawaii in general;

Criterion C – applies to sites that reflect architectural achievements or are excellent examples of a specific type of site;

Criterion D – specifies that the site has yielded or has the potential to yield information significant to the understanding of traditional culture, prehistory, history, and/or foreign influences on traditional culture and history of a region, island, or Hawaii in general; and

Criterion E – applies to sites or places perceived by the contemporary community as having traditional cultural value.

Off-Property Areas

No surface structural remains or any other features indicative of prehistoric period or traditional Hawaiian cultural activities were encountered in the areas of: 1) the wastewater transmission line alignment for possible connection to the Mākena Resort WWRF; and 2) the off-site wells, waterline, and storage tank.

The Pi'ilani Highway widening area from Kilohana Drive to Wailea Ike Drive is within the existing highway ROW or adjacent to previously disturbed land. The area of the Wailea Ike Drive and Wailea Alanui Drive intersection improvements is also within an area of previously disturbed land. The State Historic Preservation Division has determined that

archaeological inventory surveys of the areas of the Pi'ilani Highway widening and the Wailea Ike Drive and Wailea Alanui Drive intersection improvements are not required; however archaeological monitoring plans will be prepared and a qualified archaeological monitor will be present during all ground altering disturbances.

POTENTIAL IMPACTS AND MITIGATION MEASURES

The archaeological inventory survey recommends placement of the recorded sites on the Property into three categories: *in situ* preservation, data recovery, and no further work. Permanent *in situ* preservation is recommended for ~~45~~ 16 sites. Data recovery is recommended for 18 sites. No further work is recommended for ~~seven~~ six sites which correspond to those sites which were evaluated to be no longer significant (NLS). Table 3 presents a summary of the significance and treatment for all 40 sites.

~~Fourteen~~ Fifteen of the ~~45~~ 16 sites recommended for permanent *in situ* preservation are in the southern portion of the Property. Eleven of these are within the Native Plant Preservation Area (4) ~~and the Native Plant Conservation Areas (7), areas that will not be graded or disturbed so that existing native vegetation can be conserved and protected~~ dedicated in perpetuity to the conservation of native Hawaiian plants and significant cultural sites (see Section 3.6 (Botanical Resources)). The ~~three~~ four remaining sites recommended for permanent *in situ* preservation in the southern portion of the Property that are not in the Native Plant Preservation Area ~~or the Native Plant Conservation Areas~~ will be preserved as isolates in historic preservation easements. The single site in the northern two-thirds of the Property recommended for permanent preservation will be preserved *in situ* within an existing gulch, which will remain as an open area.

In addition to the ~~45~~ 16 sites recommended for permanent *in situ* preservation, there are opportunities to retain additional sites designated for data recovery within the ~~approximately 143 acres of the~~ Native Plant Conservation Areas. There are further opportunities to retain sites within golf course areas not requiring grading. In addition, the Native Plant Conservation Areas will enhance the natural setting in which archaeological and cultural preservation is implemented.

In compliance with County of Maui Ordinance No. 3554 (Condition 26), Honua'ula Partners, LLC, will provide an archaeological preservation/mitigation plan, pursuant to Chapter 6E, HRS, to the State Historic Preservation Division (SHPD) and the Office of Hawaiian Affairs (OHA) for approval, prior to Project District Phase II approval. In accordance with SHPD requirements, Honua'ula Partners, LLC, will also provide a data recovery plan to SHPD for review and approval.

Table 3. Archaeological Sites: Significance and Treatment

No.	*SIHP#	Type	Features	Period	Significance	Treatment
1	200	wall	1	historic?	C,D	Preservation
2	201	complex	5	traditional?	A,D	Preservation
3	204	platform	2	traditional?	D	Preservation
4	205	mod OH	1	traditional?	D	Preservation
5	3156	C-shape	1	traditional?	NLS	No further work
6	3157	wall	1	historic?	NLS	No further work
7	3158	wall	1	historic?	NLS	No further work
8	4945	U-shape	1	traditional?	D	Data Recovery
9	4946	C-shape	1	traditional?	D	Data Recovery
10	4947	mod OH	1	traditional?	D	Data Recovery
11	4948	open area	1	historic?	D	Data Recovery
12	4949	mod OH	2	traditional?	D	Data Recovery
13	4950	C-shape	1	traditional?	D	Data Recovery
14	4951	SS trail	1	traditional?	C,D,E	Preservation
15	4952	platform	1	traditional?	D	Preservation
16	4953	walls	3	historic?	NLS D	No further work Preservation
17	4954	C-shape	1	traditional?	D	Data Recovery
18	4955	mod OH	1	traditional?	D	Data Recovery
19	4956	mod OH	2	traditional?	D	Data Recovery
20	4957	complex	6	traditional?	A,D	Preservation
21	4958	enclosures	2	traditional?	D	Data Recovery
22	4959	SS trail/pits	3	traditional?	C,D,E	Preservation
23	4960	platform	1	traditional?	D	Data Recovery
24	4961	wall seg.	1	historic?	NLS	No further work
**29	**5109	OH	1	traditional	D	Preservation
25	5110	lava blister	1	traditional?	D	Data Recovery
26	5111	platform	1	traditional?	D	Preservation
27	5112	platform	1	traditional?	D	Preservation
28	6794 n/a	cluster	2	traditional?	D	Data Recovery
30	6795 n/a	C-shape	1	traditional?	D	Data Recovery
31	6796 n/a	platform	1	traditional?	D	Data Recovery
32	6797 n/a	trail	1	traditional?	D	Preservation
33	6798 n/a	cluster	2	traditional?	D	Preservation
34	6799 n/a	OH	1	traditional?	D	Data Recovery
35	6800 n/a	platform	1	traditional?	D	Preservation
36	6801 n/a	lava tube	1	traditional?	D	Preservation
37	6802 n/a	wall	1	historic?	NLS	No further work
38	6803 n/a	mod outcrop	1	traditional?	D	Data Recovery
39	6804 n/a	OH	1	traditional?	D	Data Recovery
40	6805 n/a	walls	2	historic?	NLS	No further work

*State Inventory of Historic Places Numbers (Preceded by 50-50-14-)

**Only site in the northern section

Aki Sinoto Consulting, LLC and Hana Pono, LLC prepared a CRPP (see Section 4.2 Cultural Resources and Appendix J) in compliance with County of Maui Ordinance No. 3554 (Condition 13 and Condition 26). The CRPP also serves as the archaeological preservation/mitigation plan discussed above and sets forth (among other things) selection criteria for sites to be preserved and short- and long-term preservation measures, including buffer zones and interpretative signs, as appropriate for each site to be preserved. The CRPP was prepared in consultation with interested and concerned parties, cultural advisors, Nā Kūpuna O Maui, the Maui County Cultural Resources Commission, the Maui/Lāna'i Island Burial Council, the DLNR Nā Ala Hele, SHPD, OHA, and various knowledgeable individuals. In compliance with County of Maui Ordinance No. 3554 (Condition 13) the CRPP ~~will be~~ has been submitted to SHPD and OHA on March 18, 2010 for review and recommendations. Upon receipt of comments and recommendations from SHPD and OHA, the CRPP will be provided to the Maui County Cultural Resources Commission for review and adoption before Project District Phase II approval.

The CRPP includes short-term and long-term preservation measures for each of the 15 sites slated for *in situ* preservation. While the CRPP provides specific preservation measures for each site, summaries of general short- and long-term preservation measures are provided below.

Short-Term Preservation Measures – The identification and implementation of appropriate short-term or interim site protection measures, including an SHPD approved archaeological monitoring plan, ensure that, during construction, inadvertent damage or other adverse impacts do not befall sites slated to be preserved. These include:

- Prior to construction commencement a meeting shall be held to inform all pertinent parties regarding the locations and buffer zones for all sites slated for preservation in or near areas of potential effect and the authority of the archaeological monitor to temporarily halt work in the vicinity of any inadvertent findings;
- The erection of temporary construction fencing (orange plastic) or other visible markings defining no-encroachment buffer zones around the perimeter of sensitive areas;
- The installation of protective supports or covers to better protect the integrity of fragile or delicate features, if warranted;
- Regular monitoring of preservation sites and construction activities; and
- Ensuring transition to permanent preservation measures following completion of construction.

Long-Term Preservation Measures – The identification and implementation of long-term or permanent site protection measures provide for the continued protection of archaeological and cultural resources. The two typical categories of long-term preservation are passive and active preservation, as described below:

- **Passive Preservation** – Sites in this category do not undergo any interpretive development, occur in areas that can be avoided by development, and are left as is. This category is sometimes referred to as “data banking.” Most sites in this category are not intended to be permanently preserved, but are anticipated to undergo data recovery procedures in the future, presumably when improved data gathering techniques and refined analysis technologies are available or on large tracts of land where development is intended to take place in incremental phases; and
- **Active Preservation** – Sites in this category are chosen for their interpretive potential. Their selection may be based on aesthetic, academic, or cultural representation values. Different levels of interpretive development may be undertaken, including: stabilization, partial or complete restoration, and/or reconstruction. Signs may be involved, and details regarding access and protocols need to be worked out.

Off-Property Areas

The AIS reports for the off-site water and wastewater infrastructure areas recommend that in view of the negative results, no further pre-construction archaeological procedures are warranted. However, archaeological monitoring of construction-related ground disturbing activities is recommended. When water and wastewater system plans are finalized, archaeological monitoring plans will be prepared and submitted to SHPD for review and approval before commencement of any construction activities. The limited width of the water and wastewater transmission line corridors will facilitate avoidance of any inadvertent discoveries that warrant preservation.

The Pi'ilani Highway widening area from Kilohana Drive to Wailea Ike Drive is within the existing highway ROW or adjacent to previously disturbed land. The area of the Wailea Ike Drive and Wailea Alanui Drive intersection improvements is also within an area of previously disturbed land. The State Historic Preservation Division has determined that archaeological inventory surveys of the areas of the Pi'ilani Highway widening and the Wailea Ike Drive and Wailea Alanui Drive intersection improvements are not required; however archaeological monitoring plans will be prepared and a qualified archaeological monitor will be present during all ground altering disturbances. For more information on the widening of Pi'ilani Highway see Section 4.4 (Roadways and Traffic) and Appendix R, which contains the complete Pi'ilani Highway Widening Project Final EA. Appendix G of the Final EA contains the SHPD letter regarding the need for archaeological monitoring plan for the Pi'ilani Highway widening area. For more information on the Wailea Ike Drive and Wailea Alanui Drive intersection improvements see Section 4.4 (Roadways and Traffic) and Appendix S, which contains the complete Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA. Appendix G of the Final EA contains the SHPD letter regarding the need for archaeological monitoring plan for the Wailea Ike Drive and Wailea Alanui Drive intersection improvements.

Inadvertent Finds

In addition to the protections to be instituted through the CRPP, Honua'ula Partners, LLC and its contractors will comply with all State and County laws and rules regarding the preservation of archaeological and historic sites. Should historic sites such as walls, platforms, pavements and mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be inadvertently encountered during the construction activities, work will cease immediately in the immediate vicinity of the find and the find will be protected. The contractor shall immediately contact SHPD, which will assess the significance of the find and recommend appropriate mitigation measures, if necessary.

4.2 CULTURAL RESOURCES

Hana Pono, LLC prepared a cultural impact assessment for the Honua'ula Property to identify traditional customary practices within the Property and in the vicinity of the Property. The cultural impact assessment was conducted in accordance with the OEQC Guidelines for Assessing Cultural Impacts and includes archival research and interviews with people knowledgeable of Honua'ula and the surrounding area. Findings of the cultural impact assessment and other relevant information are summarized below. Appendix K contains the complete cultural impact assessment.

Hana Pono, LLC also prepared a cultural impact assessment specifically for the widening of Pi'ilani Highway. The cultural impact assessment concluded that no current gathering practices or access concerns occur within the Pi'ilani Highway widening area. For more information on the widening of Pi'ilani Highway see Section 4.4 (Roadways and Traffic) and Appendix R, which contains the complete Pi'ilani Highway Widening Project Final EA. Appendix H of the Final EA contains the cultural impact assessment specifically for the widening of Pi'ilani Highway.

While a specific cultural impact assessment was not prepared for the Wailea Ike Drive and Wailea Alanui Drive intersection improvement area, in a letter dated March 9, 2011 Hana Pono, LLC concluded that the intersection improvements are not expected to impact any cultural resources, access concerns or current gathering practices, as none are known to exist in the area.

In addition, Hana Pono, LLC, completed a review of Honua'ula's off-site water and wastewater infrastructure areas and determined that there are no known cultural resources, access concerns, or current gathering practices occurring in these areas. Figure 2 shows the locations of these off-site water and wastewater infrastructure areas.

4.2.1 Honua'ula Moku

The Honua'ula *moku* was one of 12 ancient districts of Maui Island. The literal meaning of the name is "red earth" or "red land," which may have been in reference to the distinctive red dust of Haleakalā (Handy et al. 1991). There are a number of alternative explanations

for the name. In the cultural impact assessment, Tau'a and Kapahulehua (2009) state that the name connotes sacred earth based on the sacredness of the color red. Sterling (1998), in *Sites of Maui*, includes the following account, by Fornander, of the chief, Mo'ikeha, who brought back companions from his voyage to Tahiti:

His canoes were equipped forthwith under the superintendence of Kamahualele, his astrologer and seer (Kilokilo), and with a goodly company of chiefs, retainers, and relatives, they set sail for Hawaii...The legends differ somewhat to the names of the followers of Mo'ikeha, but they all agree that a number of places in the Hawaiian group were named after such or such companions of Mo'ikeha, who were permitted to land here and there as the fleet coasted along the island shores, and who succeeded in establishing themselves where they landed. Thus were named the district of Honua'ula on Maui.

Two traditional Hawaiian sayings regarding Honua'ula recorded by Mary Kawena Pūku'i (1983) in *'Ōlelo No'eau, Hawaiian Proverbs and Poetical Sayings* speak of the wind of the region and describe the character of the inhabitants as given below:

Honua'ula, e paluku 'ia ana na kahi po'ohiwi e na 'ale o ka Moa'e
Honua'ula whose shoulders are pummeled by the Moa'e wind
(A poetical expression for a person being buffeted by the wind. Honua'ula, Maui, is a windy place.)

Honua'ula kua la'ola'o
Callous-backed Honua'ula
(Said of the people of Honua'ula, Maui, who were hard workers. The loads they carried often caused callouses on their backs.)

There are many historical accounts that specifically mention Honua'ula *moku* in story, chant and oral tradition. One of the earliest accounts that describe the first inhabitants of Honua'ula came from genealogical chant. Between 1100 and 1400 A.D., chants recorded the long voyage of Chief Mo'ikeha from Tahiti to Hawai'i and describe how his travels gradually appropriated the rule over lands in Hawai'i through intermarriage, battles and ritual sacrifices. In his inaugural sail, Chief Mo'ikeha first landed on Hawai'i Island and then on to Maui, where he sailed around the Kaupō coastline until he arrived at the place known today as Honua'ula.

In the years following the Mahele in 1848, various configurations of the 12 *moku* (districts) were implemented and revised. In 1901 and 1932, the current district divisions were established, with Honua'ula incorporated into Makawao. Of these boundary modifications, R. D. King, in Sterling (1998), stated:

Since the advent of legislative government, or from about 1846, many modifications have been made of the ancient district boundaries and there

are many instances where other names have been substituted for the old district names. Some of these changes were made for political reasons and others for convenience, but the principal changes in boundaries were caused by movements in population reflecting new uses of the land areas. These new district boundaries did not always conform to the ahupua`a boundary and there are examples today of an ahupua`a being situated in more than one district where no such condition existed in ancient times

The traditional Honua'ula *moku*, located between Kula to the north and Kahikinui to the east and south, included the following 19 known *ahupua`a* from north to east: Paeahu, Palauea, Keauhou, Kalihi, Waipao, Papa'anui, Ka'eo, Maluaka, Mo'oiki, Mo'oloa, Mo'omuku, Onau, Kanahena, Kualapa, Kalihi, Papaka-kai, Kaunuahane, Kalo'i, and Kanaio. The traditional Honua'ula *moku* crossed several environmental zones that spanned across 18.5 miles of coastline and reached the summit of Haleakalā.

Human settlement of the Honua'ula *moku* dates back to pre-historic times and continues today. The Honua'ula *moku* was a fishing and farming region from the beginning of its occupancy in early Hawai'i. Its shores were rich with an abundance of marine life, which included deep and shoreline fishing of squid, octopus, crab, and shell fish, and an abundance of various seaweeds. The sweet potato or *'uala* was the important agricultural crop of the Honua'ula region and together with the marine resources comprised the staple food of its inhabitants. Handy and Handy (1972) describe the Honua'ula region thus:

On the south coast of East Maui, from Kula to 'Ulupalakua, a consistently dry and lava-strewn country, Mākena and Keone'ō'io were notable for good fishing; this brought many people to live by the shore and inland. There were some patches of upland taro, not irrigated; but this was a notable area for sweet potato, which, combined with the fishing, must have supported a sizable population although it cannot be counted as one of the chief centers.

As explained in Section 4.1 above, previous archaeological research suggests a pattern of transience existed between coastal and inland areas (Chapman and Kirch 1979). Inhabitants of the upland agricultural region may have utilized coastal areas as seasonal bases for expanding the range of resource exploitation. Temporary habitation sites, located along trails linking upland and coastal settlements were used by travelers from upland residences to the coast to gather marine resources. Upland populations exchanged taro, bananas, and sweet potatoes with the coastal populations for ocean resources (Handy 1940).

Kiha-Pi'ilani who reigned in the last half of the 15th century connected the entire island with a network of trails to aide his people in their travels and give the king quick access to all parts of his kingdom. The original trails still exist today from Keone'ō'io to Nu'u. The trails do not intersect the Honua'ula Property; however branching trails extend from the Pi'ilani trail in the Honua'ula *moku*.

During the time of Kamehameha the Great, large quantities of sandalwood were harvested from mauka areas (Kula, Makawao, and Haleakalā) and loaded at Mākena. Kamehameha's invasion of Maui occupied all the shores of Honua'ula to defeat the Maui king Kalanikupule (Sterling 1998). Afterwards, the fishponds of Kalepolepo and Kō'ie'ie were rebuilt. Since Honua'ula did not possess rich waterways from mountain to ocean, sweet potato, sugar cane, and ranching were key activities of the region. The *maka'ainana* (common people) worked the land under the direction of the *konohiki* and occasionally the *ali'i* would drop by enroute to Kaupō, where most of the activities of the chiefs took place.

In post-contact times, Mākena Landing became the second busiest port after Lahaina since cattle and agricultural products from the mauka lands were brought here to load, and the port received goods for residents throughout Central Maui. By the 1800's, traditional settlement patterns underwent major changes throughout the region and the entire island with: 1) the advent of cattle and commercial agricultural enterprises; 2) the introduction of the western concept of private ownership of land; and 3) the development of cart paths, roadways, and harbors.

Following the overthrow of the Hawaiian monarchy, Handy (1940) reported the following changes in the area due to cattle ranching:

In Honuaula, as in Kaupo and Kahikinui, the forest zone was much lower and rain more abundant before the introduction of cattle. The usual forest-zone plants were cultivated in the lower upland above the inhabited area. Despite two recent (geologically speaking) lava flows which erupted from fissures below the crater and only a few miles inland and which covered many square miles of land, the eastern and coastal portion of Honuaula was thickly populated by Hawaiian planters until recent years. A few houses are still standing at Kanaio where the upper road (travelling eastward) ends but only two are now occupied. A number of Hawaiian families whose men are employed at Ulupalakua Ranch have homes near the ranch house. Above these native homes a little dry taro is cultivated. Formerly, there was much dry taro in the forest zone.

Ranching has been blamed for many of the district's environmental problems. Cattle and goats stripped the land of its native flora while destroying ancient Hawaiian temples and other traditional Hawaiian remains

4.2.2 Ahupua'a within the Honua'ula Property

The Honua'ula Property includes portions of three *ahupua'a*: Paeahu, Palauea, and Keauhou from north to south. Most of the northern two-thirds of the Property is within a section of Paeahu *ahupua'a*. Roughly half of the width of Palauea *ahupua'a* is within the Honua'ula Property, with the remainder extending north. The entire width of Palauea *ahupua'a* is within the Honua'ula Property, primarily within the southern third of the

Property. A proportion of the width of Keauhou *ahupua'a* extends from within the southern third of the Property and continues further south.

Paeahu *Ahupua'a* – The Paeahu *ahupua'a* is significant for many reasons. Literal translation of the name is a “row of heaps” (Pūku'i et al. 1974), the heaps refer to *ahu* (a stone mound). Paeahu holds multiple meanings, all having to do with the concept of *ahu*. The area is significant for its connection to Kealaikahiki, the pathway to Tahiti and the voyaging of Hawaiian ancestors. Paeahu signifies a place of embarking on a journey or disembarking after a journey. To this day, Paeahu *ahupua'a* is connected with *wa'a*, the outrigger canoe, and the voyages of Hawaiian people. Traditionally, when fishing or on a sea voyage, but within sight of shore, reference points on land were used to determine the off-shore location or maintain a certain course. This worked much like lining up a set of lights to enter a harbor channel today. Natural landmarks were used, but often, *ahu* or stone mounds were constructed for this purpose. *Ahu* were used to guide travelers on land as well.

The Paeahu *ahupua'a* was part of the lands assigned to Moses Kekaiwa, the eldest son of Kekuana'oa, a powerful governor of O'ahu. However, in 1842, it was included with other Honua'ula *moku* lands that were reclaimed by the government (Barrere 1975). The commutation of lands to the government, in lieu of cash tax payments, was a common practice among the chiefs.

At the time of the Mahele, nine kuleana Land Commission Awards (LCA) in Paeahu ranged in size from 0.22 to 11.68 acres and consisted of shoreline parcels, houselots, and agricultural lands. Banana, dryland taro, and sweet potato were listed as the cultivated crops (Stocker et al. 1992). One of the kuleana awards, LCA 10665 to Piopio, appears to have been located close to, but beyond the northern boundary of the current Property area, probably within the existing Maui Meadows subdivision. The locations of the other LCAs, with the exception of 5220 to Koukaina, located at the coast, are unknown. Most likely, the other parcels were located mauka of the current Property area in the inland agricultural zone. Following 1850, portions of Paeahu *ahupua'a* were sold to foreign businessmen and large acreages changed owners often, until in 1864 when 4,445 acres were sold to James McKee, the founder of Rose Ranch in 'Ulupalakua. Much of the lands passed through McKee to 'Ulupalakua Ranch and Alexander and Baldwin, Ltd. (Kleiger et al. 1992).

Palaeua *Ahupua'a* – The Palaeua *ahupua'a* is a large land section. Literally, the name means “lazy” (Pūku'i et al. 1974). One of the oral traditions passed down about this area refers to laziness. The *ahupua'a*, comprising about 2,130 acres (LCA 11216) was awarded to Chiefess Miriam Kekauonohi during the Mahele of 1854, and the current Property area includes a portion of this LCA. Upon her death in 1851, the land passed to her husband, Ha'alelea. In 1862, most of the *ahupua'a* was sold to James McKee through public auction. A total of 14 LCAs and 11 Royal Patent Grants to commoners are listed for Palaeua *ahupua'a*. Four are described as Irish potato plots and three others as houselots. The remaining awards are not described as to land use. Map locations of kuleana are

unavailable. However, the narrative descriptions of two of theouselots place them at the coast. The others likely consisted of agricultural lots located in the wetter uplands.

Keauhou *Ahupua'a* – The Keauhou *ahupua'a* is a large land division of which only a small section lies within the Property. The name literally means “the new era” or “the new current” (Pūku'i et al. 1974). It is connected to the currents that flow around and between the islands, Nā Kai Ewalu, and the channels that carried the ancestors to and from their destinations.

In 1852, LCA 6715 (RP 8213) was awarded to Ho'omanawanui, a member of the *ali'i* class whose father, Kaleilei, was a member of King's (Kamehameha III) court, which included the entire *ahupua'a* of Keauhou 1. The award covered an area of 853 acres. In 1856, Ho'omanawanui and her husband Hikiau II sold Keauhou 1 to James McKee for \$1,000. Eleven commoner awards are listed for all of Keauhou (1 and 2) *ahupua'a*. Although their locations are unknown, based on the descriptions given in the award documents, most appear to be Irish and sweet potato lands orouselots. The potato lands probably were further inland (above the 1200-foot elevation) of the current Property area, while theouselots were most likely located closer to the coast.

4.2.3 Oral History Interviews

Informant interviews with eight local residents were conducted in January 2008 by Keli'i Tau'a and Kimokeo Kapahulehua of Hana Pono LLC as part of the cultural impact assessment. Kimokeo Kapahulehua conducted an additional interview in March 2009. The complete transcript for each interview is appended to the cultural impact assessment provided in Appendix K.

- Douglas “Butch” Wayne Akina was born in 1943. He is the youngest of eight siblings from the Akina family of Kīhei. He currently resides on Maui and has owned and operated a variety of small businesses including school/tourist bus, fishing, airplane, rooter, cesspool extraction, and fishing net companies. He learned of traditions and practices of the families of the land, and was a fisherman in his youth;
- Marie Doreen “MD” Alborano was born in 1935 in Kīhei. Raised from infancy in Kīhei, she grew up working on the family's 56-acre farm near the existing Welakahao Road. She was a student of renowned hula teacher Aunty Emma Sharpe;
- Edward Quai Ying Chang, Jr. was born in 1982 at Wailuku. He moved to Mākena when he was four or five years old. His ancestors have lived in Mākena since 1883 when his great great grandfather John Kukahiko bought the lands from Mākena Surf to Mākena Landing. Mr. Chang has a degree in Biological Science with a minor in Plant Pathology;

- Stanley Ahana Chock was born at Honolulu in 1933 and moved to Kula shortly after he was born. He was raised by his mother's sister, Hattie Kanohe, in Pulehu'iki at Kula and also spent most of his childhood in Kahakuloa;
- Eugene C. "Herman" Clark, Sr. is of Hawaiian ancestry and lived on Maui since 1935. He lived in the Kihei region on what is now known as Kenolio Road. He is knowledgeable of the Honua'ula area and is currently practicing the art of reflexology;
- Jimmy Gomes was born in Pu'unene in 1948. He has been employed by the 'Ulupalakua Ranch for the last six years and is currently the Operations Manager. Aside from his employment activities, he has visited the lands owned by the Ranch for the past 50 years;
- Kevin Mahealani Kai'okamaile was born in Keokea. He was raised in the Honua'ula region where his family has resided for at least seven generations. He took an interest in botany at a young age and was able to learn from noted local botanists;
- Ransom Arthur Kahawenui Piltz was born at Wailuku in 1939. He was raised on Maui until moving to Dayton, Ohio where he studied Business Management. He returned to Maui in 1993 to start working for his father's business, Piltz Electric. Mr. Piltz is part of the 130-member Kukahiko family which has roots in the Mākena Landing area. He also served on the Maui Planning Commission and is currently serving on the State LUC; and
- Mildred Ann Wietecha is a lifelong resident of Kihei. Her mother was Violet Thomson of the Thomson Ranch in Kula. She is related to Douglas "Butch" Wayne Akina of Akina Bus Service.

Summary of the Oral History Interviews

Each of the individuals interviewed had something to contribute about life in the Honua'ula District and the surrounding areas. The three most knowledgeable individuals regarding the region were Edward Chang Jr., Kevin Kai'okamaile, and Ransom Piltz. These three individuals, all related to the Kukahiko family of Mākena, grew up in different time frames, lived separate lifestyles, but all three speak the same language about the land and the ocean of the Honua'ula region. Mr. Eugene Clark interestingly spoke of the relationship between the upland farmers and the coastal fishermen, a traditional pattern of life that continued over centuries in the Honua'ula region.

The concerns raised by the oral interviews were more general in nature, and no cultural concerns were raised that related specifically to the Honua'ula property. These concerns included impact on coastal fishing, the rising property taxes that make it difficult if not near impossible for Hawaiian families to maintain any coastal property in the region, shoreline access in developed areas, gated communities, the loss of traditional Hawaiian place names, the potential loss of good grazing land for cattle, the desecration of Hawaiian culture, and the desire to keep new development out of the region. None of the

interviewees shared any proprietary knowledge about specific traditional cultural resources or associated practices within the boundaries of the Property.

POTENTIAL IMPACTS AND MITIGATION MEASURES

The cultural impact assessment report recommends that representative existing cultural sites be incorporated into Honua'ula and native plants be kept intact as much as possible to retain the unique identity of the area. The cultural impact assessment report also recommends that the *ala i ke kai* (pathway to the ocean) and the *ala i ke kula* (pathway to the uplands) be recognized as part of the law decreeing that one should respect Hawai'i's gathering rights (passage to fishing at the ocean and streams or gathering native plants in the mountain). However, based on consultation with interviewees, the cultural impact assessment report concludes that there are no known gathering practices or access concerns.

To preserve cultural resources within Honua'ula, Aki Sinoto Consulting, LLC and Hana Pono, LLC prepared a CRPP in compliance with County of Maui Ordinance No. 3554 (Condition 13). The CRPP seeks to:

- Define cultural parameters that will guide the preservation of archaeological remains and the interpretation of archaeological data;
- Document settlement patterns and timelines for the sites;
- Consult with traditional/cultural practitioners with ties to the Honua'ula region and other interested parties;
- Foster a more traditional and cultural land use perspective for the project site; and
- Ensure long-term consistency and integrity toward preservation efforts within the Property and in the Honua'ula region.

Appendix J contains the complete CRPP.

The CRPP incorporates the findings of the cultural impact assessment report and the Archaeological Inventory Survey. Recommendations of the CRPP regarding archaeological resources are summarized above in Section 4.1. Although archaeological resources comprise part of cultural resources and are more readily identified, quantified, and evaluated, other aspects of cultural resources are sometimes not as apparent and not as easily identified and evaluated. This is especially true of non-material regional resources, such as place names and specialized protocols, since the expertise is only found in persons with intimate or long-term knowledge of the subject region or particular locality.

During the initial planning stages of Honua'ula, several on-site tours and discussions involving archaeological and cultural components were held with various members of the community. An informational presentation was given to the Maui Cultural Resources Commission. Specific input was also sought from key individuals and the Native Hawaiian organization, Nā Kūpuna O Maui, and a number of valuable recommendations resulted

from discussions with an in-house cultural group⁶. Public input was also sought prior to preparation of the CRPP through publication of public notices in the *Honolulu Advertiser*, the *Maui News* and OHAs' Newsletter, *Ka Wai Ola*. Nā Kūpuna O Maui, under the leadership of Mrs. Patty Nishiyama and their regional representative Mr. Kimokeo Kapahulehua, retains the primary role in consulting with the landowner and in interacting with other Hawaiian organizations regarding matters related to cultural preservation, protocols, and practices.

The elements of the CRPP for which community input, especially from Native Hawaiian groups, was sought, include:

- The mode of preservation, passive or active, recommended for specific sites;
- The nature of access to religious, ceremonial, and confirmed burial sites;
- The determination of appropriate traditional protocols and practices;
- The size and types of buffer zones and appropriate protective barriers;
- The need for any stabilization or restoration;
- Whether signs are appropriate and if so, the type, design, and content of the sign;
- The types of native flora to be used for landscaping or barriers; and
- The establishment of educational and community stewardship programs;

Based on the community input received, the CRPP:

- Includes recommendations regarding the mode of preservation—passive or active—for specific sites;
- Notes that at this time, there are no known or identified religious, ceremonial, or burial sites on the Property; however, conditional access for lineal and cultural descendants will be provided if any such sites are identified later;
- Recommends that Nā Kūpuna O Maui, in consultation with other cultural experts, address appropriate protocols and practices throughout the planning and development periods and thereafter;
- Includes recommendations regarding the size and type of buffer areas for specific archaeological sites;
- Concludes that the long rock wall that demarcates the southern third of the Property (Site 200) requires repair and stabilization where deer have caused damage and where sections have been breached;
- Provides sample text for interpretive signs; the material and method of mounting signs will be finalized during subsequent planning phases;
- Recommends that native plants found on the Property should be used for archaeological buffer areas, and suitable plants include: 'a'ali'i (*Dodonaea viscosa*), 'āwīkīwīkī (*Canavalia galeata*), 'ilima (*Sida fallax*), kolomana (*Senna surrattensis*),

⁶ The in-house cultural group included: Kimokeo Kapahulehua, Clifford Naeole, Hokulani Holt Padilla, Keli'i Tau'a, members of Nā Kūpuna O Maui, Lisa Rotunno-Hazuka, Aki Sinoto, and Charlie Jencks.

maiapilo (*Capparis sandwichiana*), *ma'o* (*Abutilon grandifolium*), and *naio* (*Myoporum sandwicense*); and

- Notes that the nature and implementation of community stewardship and educational programs is currently under consideration by Nā Kūpuna o Maui, Honua'ula Partners, LLC, and other pertinent parties and will be finalized as additional input is received and planning progresses.

In addition to community input received for the specific points noted above, much information regarding traditional place names, protocols, practices, as well as glimpses of daily life were gained from oral interviews conducted in conjunction with both the CRPP and the cultural impact study. Starting from mythology and legends that include references to places in the region, there are well-known stories and folklore recounted for generations by the inhabitants. The compilation of not only this conventional folklore, but the recording of individual stories and experiences of area *kupuna* are invaluable resources that aid in interpreting the unique aspects of the region. The CRPP contains a compilation of not only texts and translations of several *mele* and *oli*, both traditional and contemporary, but also audio recordings of these on a compact disc.

In compliance with County of Maui Ordinance No. 3554 (Condition 13) the CRPP ~~will be~~ has been submitted to SHPD and OHA on March 18, 2010 for review and recommendations. Upon receipt of comments and recommendations from SHPD and OHA, the CRPP will be provided to the Maui County Cultural Resources Commission for review and adoption before Project District Phase II approval.

4.3 TRAILS AND ACCESS

Honua'ula is accessed directly from the Kihei southern terminus of Pi'ilani Highway, which is a two-lane State highway. There are several unimproved roads on the Property that provide limited access within the Property.

Remnant segments of a road referred to as the Kanaio-Kalama roadway are present along a portion of an existing jeep road which was constructed atop the same alignment. The original alignment is not followed by the current jeep road and only a small modified segment of the Kanaio-Kalama roadway exists. Water-worn cobbles and boulders, representing objects foreign to the environment presumably used in the original construction of the Kanaio-Kalama roadway, can be seen on either side of the jeep road in certain locations. Portions of the roadway may also have been modified for use by the military.

Discontinuous segments of steppingstone trails are present within the southern portion of Honua'ula. Researchers such as Chapman and Kirch (1979) proposed that a pattern of transience existed between coastal and inland areas. Foot trails linking upland and coastal settlements were used by travelers from upland areas to gain access to the coast and marine resources.

POTENTIAL IMPACTS AND MITIGATION MEASURES

The creation of Honua'ula will make the Property much more accessible relative to the current limited access. Honua'ula will include a system of pedestrian and bike trails along the community's roadways, gulches, and drainage ways (Figure 13). This secondary circulation system of linked pedestrian/bike trails will connect residential areas to the village mixed use areas, neighborhood parks, golf course clubhouse, and other areas and will provide residents a meaningful alternative to driving within the community.

A connector loop trail that ranges in width from six to eight feet will be suitable for walking and biking throughout the community. This trail will circle the Property from its northern to southern boundary and connect to the Wailea Ike Drive and Pi'ilani Highway intersection. A minor street path from Kaukahi Street will allow connection from Wailea to trail systems throughout Honua'ula. A proposed scenic trail along portions of the golf course will also link to several other trail segments and is expected to provide sweeping views, both mauka and makai.

~~The Native Plant Preservation Area contains known archaeological and cultural sites. Therefore, to protect the integrity of these sites and native plants, the Native Plant Preservation Area will remain undisturbed and development will be prohibited, with the exception of a Nature/Cultural trail that will border the Native Plant Preservation Area and traverse the adjacent Native Plant Conservation Area.~~

As recommended by the Honua'ula cultural impact assessment, Honua'ula will provide traditional native Hawaiian mauka-makai access trails across the Property (*ala i ke kai* (pathway to the ocean) and the *ala i ke kula* (pathway to the uplands)). These trails will follow the Property's natural gulches from mauka to makai.

The steppingstone trail segments within the Property, which represent discontinuous remnants of traditional trails, will be preserved *in situ*. In their current state they are truncated not only by prior disturbances, but also by private land holdings and existing developments that straddle portions of traditional land divisions. Segments beyond the boundaries of Honua'ula are beyond the jurisdiction of Honua'ula Partners, LLC.

In terms of the Kanaio-Kalama road, only a small modified segment still exists, with major segments of the original alignment altered by an existing jeep road. In addition, the integrity of the roadway has been lost outside of the Property both at the Kalama and Kanaio segments, which are under multiple ownerships. In a letter dated July 31, 2009, Nā Ala Hele of the DLNR Division of Forestry and Wildlife (DOFAW) states that no documentation of the Kanaio-Kalama roadway could be found in the royal grant patents of the Property that were awarded in 1850. Also, no record exists of the road being in existence prior to 1892, when the U.S. Highways Act was passed. Thus, the Kanaio-Kalama roadway is not considered to be a public highway. However, to further enhance mauka-makai access across the Property, the approximate route of the Kanaio-Kalama road will be incorporated into the Honua'ula trail system. This functionally equivalent

route will approximate the alignment shown on the current TMK map (Figure 3), and thus will run diagonally from Kaukahi Street, through the Native Plant Preservation Area, to the southeast corner of the Property.

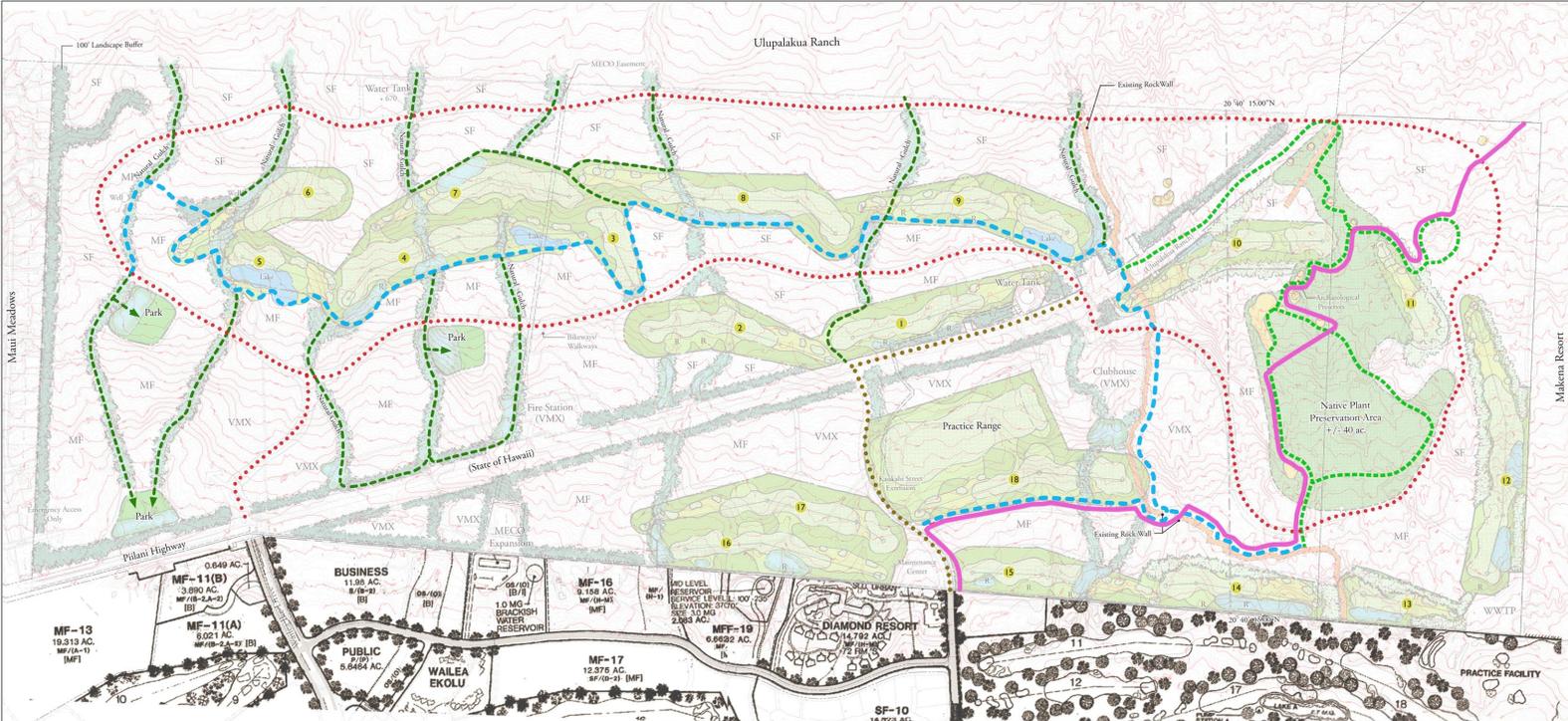
The Native Plant Preservation Area contains known archaeological and cultural sites. Therefore, to protect the integrity of these sites and native plants, the Native Plant Preservation Area will remain undisturbed and development will be prohibited, with the exception of: 1) the Kanaio-Kalama trail, which will transverse through the Native Plant Preservation Area; and 2) a Nature/Cultural trail that will border the Native Plant Preservation Area.

In their July 31, 2009 letter, Nā Ala Hele letter also stated, "The proposed development of walking trails and the preservation of the stepping stone trail will provide recreational opportunities that can highlight the historical and cultural values of the area."

Overall, Honua'ula will not be a gated community; however builders of some individual areas or specific homeowner's associations or residents may choose to gate individual areas. No gated community areas have been proposed, but it has not been determined if any areas would be gated or where these areas would be located within the Property or at what phase they would be built. However, any gated area would not be so restricted to prohibit anyone with a legitimate reason from accessing an area. Specifically, any gated area would not be designed to exclude access to any cultural or archaeological resources.

Typically gated communities evoke images of mini mansions in exclusive enclaves, but restricted access multi-family townhouse and other higher density developments can also be classified as "gated communities." While some upscale gated communities cater to upper income level residents, there are also many gated communities that are geared to average homebuyers. Although gated communities are often criticized as elitist and homogeneous, data suggests that gated communities are not necessarily reserved only for the rich (Nasser 2002). The 2001 American Housing Survey conducted by the U.S. Census Bureau reported that more than seven million households live in a type of gated community. The statistics also show that residents of gated communities belong to many different demographic types, not just the wealthy. Gated communities are popular with young families with children, retirees, second-home buyers, professionals, and many others. The elderly have been attracted to gated communities since the 1970s. Other potential buyers include empty nesters who are away frequently on vacations and young double-income families in which no one is home during the day (Blakely 1999). For second-home buyers, gated communities are especially attractive for the security they provide during long periods of vacancy (Blakely 1999).

Research shows that motivations for living in a gated community reflect, to varying degrees, a range of social values (Blakely & Snyder 1997). Some people are drawn to gated communities for prestige; some are looking for privacy; some want to protect themselves from crime and traffic (Blakely & Snyder 1997). For some, gated communities provide an added measure of security, less traffic, and increased pedestrian safety, a



- LEGEND**
- Connector Loop (6' to 8' wide)
 - Minor Street Path (5' to 6' wide)
 - - - - - Scenic Trail
 - - - - - Cultural/Nature Trail
 - - - - - Gulch Trail - Mauka/Makai Connectors
 - Kanaio - Kalama Road Trail

Figure 13
Trail Network
Honua'ula

Plan By: **VITA**
PLANNING & LANDSCAPE ARCHITECTURE

Honua'ula Partners, LLC
ISLAND OF MAUI
NORTH
LINEAR SCALE (FEET)
0 300 600 1,200
PBR HAWAII & ASSOCIATES, INC.

Disclaimer: This graphic has been prepared for general planning purposes only.

peaceful and quiet setting, social familiarity with neighbors, a sense of community, and shared ownership of space. Gated communities are attractive for residents as they provide protection and usually offer a high level of residential amenity and recreational value. The sense of community and belonging felt by residents may afford a more valuable notion of 'security' than is provided by gates alone as residents within gated communities tend to know or recognize each other thereby being able to easily identify non-residents (Quintal & Thompson 2007). Through restrictions on design and access, gated communities may help to reduce uncertainty by enabling residents to exert greater control over their living environment (Quintal & Thompson 2007). For some, gated communities provide for both security and a self-directed, democratic community in which all members of the association are active participants in community governance (Blakely 1999). While gated communities may not appeal to all, they do offer features many find attractive for their choice of style and quality of living.

In some municipalities gated communities have been considered "cash cows" for local governments because the developer initially provides all infrastructure (roads, landscaping, parks, community centers, etc) within the community and the residents pay homeowner's fees for the on-going maintenance of these common facilities. Thus, initially the developer, and then the residents pay for services that may typically be borne by government; however the residents in gated communities still pay property taxes to government based on property values, which may be higher in gated communities (Le Goix 2004). Therefore gated communities can be particularly desirable for local governments and in some areas are seen as a public-private partnership rather than an attempt to secede from the public realm (Le Goix 2004).

While research has shown that gated communities provide a sense of community and stability for their residents (Quintal & Thompson 2007), critics of gated communities believe that when people wall themselves from others they are cutting themselves from the mixed, open society that is needed for a social and political democracy (Drew & McGuigan 2005). Rather than being involved in an open society, critics argue that gated communities tend to foster segregation where better-off citizens gradually become less encumbered by collective social burdens (Blakely 1999; Drew & McGuigan 2005). Thus people with the necessary resources can quietly secede from the large and diverse public into homogenous enclaves within which their earnings need not be redistributed to people less fortunate than themselves (Blakely 1999). Others contend that gated communities offer a false sense of security as many nonresidents may have access to the communities, such as delivery people, maintenance workers, and other visitors (Drew & McGuigan 2005). Thieves may also seek out gated communities because of the perception of more valuable goods within the gates (Nasser 2002). Alternatively, others have theorized that gated communities cause crime to be redistributed to areas outside the gated communities (Le Goix 2004).

All neighborhoods, gated and non-gated, have the same ultimate goals: safety and security, no crime, safe streets, slow traffic, and a stable quality of life. To some extent, gated communities attain these goals and in this respect have a positive influence on the

lives of those residents. Honua'ula seeks to achieve these goals through design, with key objectives of reflecting community values, emphasizing vibrant community development, and creating a sense of place.

Building on overall goals of safe and secure neighborhoods, the Maui Police Department recommends incorporating principles of Crime Prevention Through Environmental Design (CPTED) into the design of Honua'ula. The goal of CPTED is to prevent crime by designing a physical environment that positively influences human behavior. The theory is based on four principles: 1) *natural surveillance*, which refers to the placement of physical features that maximize visibility of the neighborhood so residents can observe their surroundings; 2) *access management*, which involves guiding people by using signs, well-marked entrances and exits, and landscaping so visitors can be seen entering and exiting; 3) *territoriality*, which is the clear delineation of space to create pride or ownership and a vested interest of owners in their neighborhood; and 4) *physical maintenance*, which includes repair and general upkeep to maintain a well-kept appearance and neighborhood pride.

4.4 ROADWAYS AND TRAFFIC

Austin, Tsutsumi & Associates, Inc. (ATA) prepared a Traffic Impact Analysis Report (TIAR) to evaluate the potential traffic impacts resulting from the creation of Honua'ula. The TIAR includes an analysis of existing regional traffic conditions and projected future conditions both without and with Honua'ula with the assumption that the widening of Pi'ilani Highway from Kilohana Drive to Wailea Iki Drive would be necessary even if Honua'ula is not built. ATA also prepared transportation management plans (TMPs) for construction and post-construction operations. Key conclusions of the TIAR and TMPs are summarized below. Appendix L contains the complete TIAR. Appendix M contains the TMPs.

ATA further prepared TIARs specifically for the: 1) widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive; and 2) Wailea Alanui Drive intersection improvements. Appendix R contains the complete Pi'ilani Highway Widening Project Final EA. Appendix I of the Final EA contains the complete TIAR for the widening of Pi'ilani Highway. Appendix S contains the complete Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA. Appendix C of the Final EA contains the complete TIAR for the Wailea Alanui Drive intersection improvements.

4.4.1 Existing Roadways

Access – Primary access to Honua'ula is from the southern terminus of Pi'ilani Highway. Kaukahi Street, a private two-lane street within Wailea, provides a secondary, controlled access. Within Honua'ula there are several unimproved jeep trails that provide limited access to the interior of the Property. The following are descriptions of roadways in the vicinity of Honua'ula (See Figure 14).



LEGEND

 Honua'ula

Figure 14
Regional Roadways
Honua'ula

Honua'ula Partners, LLC

ISLAND OF MAUI

NORTH

LINEAR SCALE (FEET)

0 750 1,500 3,000

 PBR HAWAII & ASSOCIATES, INC.

Source: Maui County GIS Division (2008)
Disclaimer: This graphic has been prepared for general planning purposes only.

Pi'ilani Highway – This State highway is generally a four-lane, undivided, north/south arterial highway providing access to Kihei and Wailea from areas north of Kihei. Pi'ilani Highway narrows to a two-lane highway at its intersection with Kilohana Drive/Māpu Place until its terminus at Wailea Ike Drive. Pi'ilani Highway begins at its intersection with South/North Kihei Road and ends at its intersection with Wailea Ike Drive. Left-turn storage lanes are generally provided at major intersections on Pi'ilani Highway. The speed limit on Pi'ilani Highway is 45 mph in the northbound direction from Wailea Ike Drive to Kilohana Drive; the southbound speed limit on this segment decreases from 45 mph to 25 mph as it approaches Wailea Ike Drive.

South Kihei Road – South Kihei Road is an undivided north/south County collector roadway that is generally parallel to Pi'ilani Highway and provides local access to shopping centers and visitor accommodations along the Kihei coastline. In the south Kihei area, South Kihei Road is a two-lane roadway. The posted speed limit is generally 20 mph.

Kilohana Drive – This two-lane, undivided, east/west roadway connects South Kihei Road with Pi'ilani Highway, intersecting Pi'ilani Highway across Māpu Place, which provides the north access to the Maui Meadows residential subdivision. The posted speed limit on Kilohana Drive is 25 mph.

Māpu Place – This two-lane, undivided, east/west roadway provides one of two access points from Pi'ilani Highway to the Maui Meadows residential subdivision. The posted speed limit on Māpu Place is 25 mph.

Wailea Ike Drive – Wailea Ike Drive is a four-lane, divided, east/west County collector roadway that narrows to a two-lane roadway just before its connection to Pi'ilani Highway. Wailea Ike Drive is the main entrance to the Wailea Resort and connects Pi'ilani Highway with Wailea Alanui Drive. Its vertical alignment is a relatively steep grade with a posted speed limit of 30 mph. A broad median with a drainage channel and landscaping separate the two travel directions. Left-turn lanes are provided in the median area. The broad median also provides a refuge area for vehicles turning left from the cross streets.

Wailea Alanui Drive – Wailea Alanui Drive is a four-lane, divided, north/south collector roadway between Kaukahi Street to the south and Okolani Drive to the north. North of Okolani Drive, Wailea Alanui Drive narrows to a two-lane, undivided, north/south County collector road to its intersection with Kilohana Drive. South of its intersection with Kaukahi Street, Wailea Alanui Drive becomes Mākena Alanui Road. The segment of Wailea Alanui Drive between Wailea Ike Drive and Kaukahi Street has a rolling profile and a meandering alignment. The segment of Wailea Alanui Drive north of Wailea Ike Drive has a less pronounced rolling profile and meandering alignment. The posted speed limit on Wailea Alanui Drive is 30 mph.

Okolani Drive – Okolani Drive is the southern extension of South Kihei Road. The section between Wailea Alanui Drive and Pi'ilani Highway is a two-lane roadway. Makai of

Wailea Alanui Drive, the street has two lanes in each direction with a landscaped median. At the intersection with Pi'ilani Highway, Mikioi Place provides the mauka leg of the intersection. The posted speed limit of Okolani Drive is 30 mph.

Mikioi Place – Mikioi Place is a two-lane, undivided, east/west roadway that provides the southern access point from Pi'ilani Highway, across Okolani Drive, to the Maui Meadows residential subdivision. The posted speed limit on Mikioi Place is 25 mph.

Kālai Wa'a Street – Kālai Wa'a Street is a privately-owned, two-lane, undivided, north/south roadway between Kaukahi Street and Wailea Ike Drive. Stop signs are provided at its terminus with Wailea Ike Drive and its terminus with Kaukahi Street.

Kaukahi Street – Kaukahi Street is a private, two-lane, undivided, east/west roadway between Wailea Alanui Drive/Mākena Alanui Road and Kālai Wa'a Street. Kaukahi Street intersects with Wailea Alanui Drive/Mākena Alanui Road on the west end and terminates at the Honua'ula property boundary on the east end. Kaukahi Street provides access to the Wailea Golf Course and clubhouse, the Diamond Resort, and several residential neighborhoods.

4.4.2 Existing Conditions

Level of Service Concept

“Level of Service” is a qualitative measure used to describe the conditions of traffic flow at intersections based on the effect of a number of factors including traffic interruptions, freedom to maneuver, traffic volumes, lane usage, and lane configuration.

There are six levels of service, A through F, which relate to driving conditions from best to worst, respectively. The characteristics of traffic operations for each level of service are summarized in Table 4. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions.

There is a common misconception that LOS designations are like school grades, in which A is the best grade to achieve. In urban areas, a LOS of D is typically considered to be the threshold for adequate conditions during peak hours because roads are very expensive to build, and once built, they must be heavily used to help justify the cost of construction. A road that operates at LOS A at all times is a road that has been over-built for local traffic conditions. Even during peak traffic hours, a road at LOS A carries only a fraction of its capacity, which is a highly inefficient use of transportation funding. Comparatively, a road that operates at LOS C or D carries many trips for its size and represents a more efficient use of transportation funding. Such roads represent a better fit between the desire to travel freely on the road and the expense of building new roads. For this reason, many communities adopt LOS D as their standard LOS for roads and streets; for example Hawaii

County has established LOS D as the acceptable level of service for roads on the Big Island.⁷

Table 4. Level of Service Definitions for Urban Arterial Segments

Level of Service	Interpretation	Unsignalized Delay Time (Seconds)	Signal Delay Time (Seconds)
A	Vehicles completely unimpeded in ability to maneuver w/in traffic stream. Signal delay minimal.	<10.0	< 10.0
B	Ability to maneuver in traffic stream slightly restricted, signal delays not significant.	10-15	10-20
C	Ability to maneuver and change lanes more restricted than LOS B; longer queues at signals.	15-25	20-35
D	Range at which small increases in flow may cause substantial increases in delay and decreases in travel speed. Signal progression and timing become important factors in maintaining flow.	25-35	35-55
E	Significant delays at critical intersection; ability to maneuver highly restricted.	35-50	55-80
F	Urban street flow at extremely low speeds. Extensive queuing at intersections, long delays, high volumes.	> 50	> 80.0

Source: *Highway Capacity Manual, 2000*

Study Intersections

The TIAR studied traffic volumes and turning movements at the following intersections in the Wailea-Mākena region (Figure 14):

Intersections Along Pi'ilani Highway

- Pi'ilani Highway/Kilohana Drive/Māpu Place, currently signalized;
- Pi'ilani Highway/Okolani Drive/Mikioi Place, currently un-signalized; and
- Pi'ilani Highway/Wailea Ike Drive, currently un-signalized.

Currently, the signalized Pi'ilani Highway/Kilohana Drive/Māpu Place) operates at LOS D or better. The un-signalized intersection at Pi'ilani Highway/Okolani Drive/Mikioi Place operates at LOS F during the PM peak hour of traffic (4 PM to 5 PM on weekdays). The intersection of Pi'ilani Highway/Wailea Ike Drive experiences free flowing conditions because of the "L" configuration of the intersection.

⁷ Section 25-2-46, Hawaii County Code defines "acceptable level of service" to mean that the level of service of a transportation facility at the AM and PM peak is "D" or better.

Wailea Ike Drive/Kālai Wa'a Street

- Wailea Ike Drive/Kālai Wa'a Street, currently un-signalized.

Currently, the Wailea Ike Drive/Kālai Wa'a Street intersection operates at LOS C or better.

South Kīhei Road/Kilohana Drive

- South Kīhei Road/Kilohana Drive, currently un-signalized.

Currently, the South Kīhei Road/Kilohana Drive intersection operates at LOS B or better.

Intersections Along Wailea Alanui Drive

- Wailea Alanui Drive/Wailea Ike Drive, currently signalized;
- Wailea Alanui Drive/Okolani Drive/South Kīhei Road, currently un-signalized;
- Wailea Alanui Drive/Grand Wailea Resort, currently signalized; and
- Wailea Alanui Drive/Kaukahi Street, currently un-signalized.

Currently, intersections along Wailea Alanui Drive operate at LOS C or better.

POTENTIAL IMPACTS AND MITIGATION MEASURES

An important objective of Honua'ula is to make walking and biking meaningful alternatives to driving by locating commercial and retail establishments convenient to residential areas and integrating bicycle/pedestrian recreation ways throughout the community. Therefore, unlike residents in conventional residential subdivisions, Honua'ula residents will not have to drive outside of the community for all of their needs and services, and it is expected that car trips by Honua'ula residents onto Pi'ilani Highway will be reduced accordingly.

Another objective of Honua'ula is to provide homes near regional employment centers, thereby decreasing commuting time and increasing quality of life and environmental stewardship. Honua'ula's workforce affordable homes are expected to appeal to many employees working in the nearby Wailea and Mākena resorts. Providing the opportunity for workers to afford a home near their jobs is expected to decrease commuting to and from other parts of Maui, lessen traffic congestion, reduce stress, allow more family and recreation time, lessen pollution, and improve overall quality of life for not only Honua'ula residents, but for Maui residents in general. Providing homes near employment also allows workers more transportation options to get to work, such as walking and bicycling, and makes public transportation more feasible by clustering populations and destinations within a defined area along a practical route.

Despite these positive transportation strategies, it is recognized that many of these potential positive impacts are not readily quantifiable or predictable. To gain an understanding of future regional traffic impacts, the Honua'ula TIAR analyzed traffic conditions both without and with Honua'ula using standard traffic engineering methods

for three forecasted periods: 2016, 2018, and 2022. These periods correspond generally to: 1) the projected end of the initial period of building and occupancy of Honua'ula (2016); 2) the point where two-thirds of the community is expected to be built and occupied (2018); and 3) the period when Honua'ula is expected to be fully built-out and occupied (2022). To project future regional traffic the Maui Travel Demand Forecasting Model was used to determine a de facto growth rate in the vicinity. Then other known projects in the area were factored into the projected growth in traffic. These projects include:

Wailea Resort – Within the Wailea Resort several projects were either underway or proposed at the time the Honua'ula TIAR was prepared. The Honua'ula TIAR incorporates the results of the TIARs from these other known projects, which include: Kai Malu (MF-8), Wailea Gateway, the Grand Wailea Resort Renovation, and the 1 Resort and Residences (formerly Renaissance Wailea Resort). The Honua'ula TIAR also incorporates projected traffic from the remaining undeveloped parcels within the Wailea Resort based on the maximum residential units, hotel rooms, and commercial square feet that could be developed under existing zoning.

Mākena Resort – The Honua'ula TIAR assumes that approximately 850 residential units could be built within Mākena Resort based upon existing zoning, and it incorporates projected traffic from these potential units. However, ~~due to Mākena Resort's current financial situation~~ it is unknown if or when any of these units will be built.

4.4.3 Projected Traffic Conditions Without Honua'ula

In the discussion below of projected traffic impacts without Honua'ula, the TIAR determined that certain traffic improvements would be necessary by 2016 due to regional traffic growth even if Honua'ula is not built, and to achieve the projected levels of service the TIAR analysis assumed that these improvements would in fact be implemented. These improvements include:

- **Widen Pi'ilani Highway** to four-lanes from Kilohana Drive/Mapu Place to Wailea Ike Drive;
- **Signalize the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection** and provide the following lane configurations:
 - Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and a shared through/right-turn lane.
 - Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
 - Westbound Approach: Remain as a shared left-turn/through/right-turn lane (with a permissive signal phase).
- **Modify the Pi'ilani Highway/Kilohana Drive/Māpu Place intersection** and provide the following lane configurations:

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
- Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
- Westbound Approach: Provide an exclusive left-turn lane, an exclusive through lane and an exclusive right-turn lane (with a permissive signal phase).
- **Modify the Wailea Alanui Drive/Kaukahi Drive intersection** to provide the eastbound and westbound approach with an exclusive left-turn lane and a shared through/right-turn lane in conjunction with the build-out of the Mākena Resort.

The following is the analysis of projected traffic conditions without Honua'ula based on the assumption that the above improvements are actually implemented. It is important to note, however, that with the exception of adding a signal at the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection—which is a condition of approval of the Kai Malu Project (MF-8) project—it is not known if or when any of these improvements would be built without Honua'ula, or if the State, the County, or others would be willing or able to fund them.

Intersections Along Pi'ilani Highway

Analysis of projected traffic conditions without Honua'ula indicates that by 2016 the widening of Pi'ilani Highway to four-lanes would be necessary between its intersections with Kilohana Drive/Māpu Place and Wailea Ike Drive. A signal at the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection also would be necessary. If these improvements are undertaken, the Pi'ilani intersections with Kilohana Drive/Māpu Place and Okolani Drive/Mikioi Place would operate at LOS D or better during both the AM and PM peak hours of traffic. If Pi'ilani Highway is not widened but a signal is installed at the Okolani Drive/Mikioi Place intersection, some movements at the Kilohana Drive/Māpu Place intersection and the Okolani Drive/Mikioi Street intersection would operate at LOS F during the AM and PM peak traffic hours.

For periods 2018 and 2022, assuming Pi'ilani Highway is widened and a signal is installed at the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection, traffic conditions at intersections along Pi'ilani Highway would operate at LOS D during both the AM and PM peak hours of traffic. Without the widening of Pi'ilani Highway, traffic conditions at intersections along Pi'ilani Highway would be expected to operate at a worse level of service.

Wailea Ike Drive/Kālai Wa'a Street

For all periods (2016, 2018, and 2022), the Honua'ula TIAR projects that the northbound left-turn movement at the un-signalized intersection of Wailea Ike Drive/Kālai Wa'a Street will operate at LOS F for left turns exiting Kālai Wa'a Street. However, it is not uncommon for a low volume side street such as Kālai Wa'a Street to experience long delays,

especially when trying to cross or execute a left-turn onto a high volume roadway such as Wailea Ike Drive. At the Wailea Ike Drive/Kālai Wa'a Street intersection, it is projected that approximately 10 and 15 vehicles will utilize the northbound left-turn movement during the AM and PM peak hours of traffic, respectively. Due to low traffic volumes on Kālai Wa'a Street, the projected traffic volumes at this intersection will not warrant the installation of a traffic signal according to the Highway Capacity Manual⁸.

South Kihei Road/Kilohana Drive

For all periods (2016, 2018, and 2022), the South Kihei Road/Kilohana Drive intersection will continue to operate at level LOS C or better during both the AM and PM peak hours of traffic.

Intersections Along Wailea Alanui Drive

By 2016 all intersections along Wailea Alanui Drive will continue to operate at LOS D or better during both the AM and PM peak hours of traffic, with the exception of the Wailea Alanui Drive/Kaukahi Street intersection, which is projected to operate at LOS E or worse for left turn movements entering Kaukahi Street during the PM peak hour of traffic. However, because of the relatively low volumes of traffic entering Kaukahi Street, a traffic signal will not be warranted at this intersection according to the Highway Capacity Manual. The TIAR recommends that the east and west approaches from Wailea Alanui Drive be restriped to provide shared through/right turn lanes and exclusive left-turn lanes to Kaukahi Street; however this restriping is only recommended due to the projected build-out of the Mākena Resort.

By 2018, if the projected build-out of Mākena Resort is realized and the east and west approaches from Wailea Alanui Drive have been restriped to provide shared through/right turn lanes and exclusive left-turn lanes to Kaukahi Street, all intersections along Wailea Alanui Drive will operate at LOS D or better during the AM and PM peak traffic hours except for: 1) the northbound left-turn movement at the all-way stopped controlled intersection of Wailea Alanui Drive/Okolani Drive during the PM peak traffic hour (LOS E); and 2) the eastbound and westbound left turn movement at the un-signalized intersection of Wailea Alanui Drive/Kaukahi Street during the PM peak traffic hour (LOS E or worse). However, because of the relatively low volumes of traffic making left turns from

⁸ The Highway Capacity Manual (HCM), a publication of the national Transportation Research Board, is the standard reference for transportation and traffic engineering scholars and practitioners and contains concepts, guidelines, and computational procedures for computing the capacity and quality of service of various roadway facilities. Traffic engineering scholars and practitioners use the HCM in conjunction with the Manual on Uniform Traffic Control Devices (MUTCD), a publication of the FHWA, to determine whether a traffic signal will likely be warranted for future conditions. Both the State DOT and the County of Maui DOT use the HCM and the MUTCD as their standard references.

Okolani Drive and to Kaukahi Street, traffic signals will not be warranted at these intersections according to the Highway Capacity Manual.

By 2022, if the projected build-out of Mākena Resort is realized and the east and west approaches from Wailea Alanui Drive have been restriped to provide shared through/right turn lanes and exclusive left-turn lanes to Kaukahi Street, all intersections along Wailea Alanui Drive will operate at LOS D or better during the AM and PM peak traffic hours except for: 1) the northbound left-turn movement at the all-way stopped controlled intersection of Wailea Alanui Drive/Okolani Drive during the PM peak traffic hour (LOS F); and 2) the eastbound and westbound left turn movement at the un-signalized intersection of Wailea Alanui Drive/Kaukahi Street during the PM peak traffic hour (LOS E or worse). However, because of the relatively low volumes of traffic making left turns from Okolani Drive and to Kaukahi Street, a traffic signal most likely will not be warranted at these intersections according to the Highway Capacity Manual.

4.4.4 Projected Traffic Conditions With Honua'ula

As part of creating Honua'ula, Honua'ula Partners, LLC will not only provide traffic improvements that are necessary to specifically address traffic generated by Honua'ula, but it will also pay for and build many regional traffic improvements that would be necessary even if Honua'ula were not built—regional improvements that would most likely not be undertaken if not for the development of Honua'ula. Therefore, the improvements provided by Honua'ula Partners, LLC will address the impacts of general regional traffic growth as well as impacts specifically related to Honua'ula.

Regional Traffic Improvements

In accordance with County of Maui Ordinance No. 3554, Honua'ula Partners, LLC will provide the following regional traffic improvements before occupancy of any units within Honua'ula—these improvements mirror and exceed the above traffic improvements that would be necessary by 2016 due to regional traffic growth without Honua'ula:

- **Widen Pi'ilani Highway**, from Kilohana Drive to Wailea Ike Drive, to four lanes of traffic before the commencement of any construction on the Property, with the exception of grading (Condition 2a);
- **Signalize the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection** and provide an exclusive left-turn lane on Okolani Drive prior to occupancy of the first unit in Honua'ula (Condition 2c).⁹ To fully implement this condition and in accordance with the recommendations of the TIAR, the following lane configurations will be provided:

⁹ This condition is also a condition of the Kai Malu project (MF-8). Honua'ula Partners LLC and the Kai Malu project (MF-8) developer, A&B Wailea, Inc., will coordinate the installation of the signal as part of widening Pi'ilani Highway.

- Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), and two exclusive through lane, and a shared through/right-turn lane.
- Eastbound Approach: Provide an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
- Westbound Approach: Remain as a shared left-turn/through/right-turn lane (with a permissive signal phase).
- **Modify the Pi'ilani Highway/Kilohana Drive/Māpu Place intersection** to provide an exclusive left-turn lane, and the southbound Pi'ilani Highway approach to provide an exclusive right-turn lane into Māpu Place prior to occupancy of the first unit in Honua'ula (Condition 2f). To fully implement this condition and in accordance with the recommendations of the TIAR, the following lane configurations will be provided:
 - Northbound and Southbound Approaches: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
 - Eastbound Approach: Remain as an exclusive left-turn lane and a shared through/right-turn lane (with a permissive signal phase).
 - Westbound Approach: Provide an exclusive left-turn lane, an exclusive through lane and an exclusive right-turn lane (with a permissive signal phase).
- **Modify the Wailea Alanui/Wailea Ike Drive intersection** to add a signalized double right-turn movement for northbound to eastbound turning traffic and provide two left-turn lanes for southbound traffic from Wailea Ike Drive before occupancy of any units within Honua'ula (Condition 2e). To fully implement this condition and in accordance with the recommendations of the TIAR, the following lane configurations will be provided:
 - Northbound Approach: Provide an exclusive through lane and two exclusive right-turn lanes. Signalize the two exclusive right-turn lanes.
 - Southbound Approach: Remain as an exclusive left-turn lane and two exclusive through lanes.
 - Westbound Approach: Provide two exclusive left-turn lanes and an exclusive right-turn lane.

~~Planning is already underway for~~ For the widening of Pi'ilani Highway to four lanes, along with the required intersection improvements at the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection, the Pi'ilani Highway/Wailea Ike Drive intersection, and the Pi'ilani Highway/Kilohana Drive/Māpu Place intersection, ~~—Preliminary~~ design of these improvements has been completed and a draft and final EA ~~is being~~ were prepared. The State DOT ~~is currently reviewing the draft EA before notice of the draft EA is published in the OEQC's The Environmental Notice and the public comment period commences~~ has accepted the final EA and issued a Finding of No Significant Impact, which was published in the OEQC's The Environmental Notice on May 8, 2012. A SMA Assessment and Determination will be sought. Appendix R contains the complete Pi'ilani Highway Widening Project Final EA.

For the Wailea Alanui/Wailea Ike Drive intersection improvements, design has been completed, a draft and final EA were prepared, and the County Department of Public Works has accepted the final EA and issued a Finding of No Significant Impact which was published in the OEQC's *Environmental Notice* on January 23, 2010. Appendix S contains the complete Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA. The Maui Planning Commission has also approved A a Special Area-Management Area Use Permit application is also being processed for the intersection improvements on April 13, 2010.

Honua'ula-Related Traffic Improvements

In addition to the regional traffic improvements discussed above, and in further compliance with County of Maui Ordinance No. 3554, Honua'ula Partners, LLC will also provide the following traffic improvements specifically related to Honua'ula:

- **Signalize the Pi'ilani Highway/Wailea Ike Drive intersection** and provide a right-turn lane from Pi'ilani Highway to Wailea Ike Drive and a second right-turn lane from Wailea Ike Drive to northbound Pi'ilani Highway (Condition 2d). To fully implement this condition, and in accordance with the recommendations of the TIAR, the following lane configurations will be provided:
 - Southbound approach: Provide an exclusive left-turn lane and an exclusive right-turn lane. Allow the Pi'ilani Highway southbound right-turn to be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.
 - Eastbound approach: Provide two exclusive left-turn lanes (with a protected left-turn signal phase) and an exclusive through lane.
 - Westbound Approach: Provide an exclusive through lane, and an exclusive right-turn lane.
- **Extend Pi'ilani Highway south**, into Honua'ula, from Wailea Ike Drive to Kaukahi Street or prior to the completion for 50 percent of Honua'ula (Condition 2b). This will enable Kaukahi Street to provide a second access point into Honua'ula. Since Kaukahi Street is a private street, it is planned to be gated within Wailea Resort to address the concerns of Wailea Community Association. To fully implement this condition, and in accordance with the recommendations of the TIAR, the following lane configurations will be provided at the Pi'ilani Highway/ Wailea Ike Drive intersection:
 - Northbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), two exclusive through lanes, and an exclusive right-turn lane.
 - Southbound Approaches: Provide two exclusive left-turn lanes (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane. Also, it is recommended that the Pi'ilani Highway southbound right-turn to be a free turning movement by providing an exclusive westbound receiving lane on Wailea Ike Drive.

- Eastbound Approach: Provide two exclusive left-turn lanes (with a protected left-turn signal phase) and a shared through/right-turn lane.
- Westbound Approach: Provide an exclusive left-turn lane (with a protected left-turn signal phase), an exclusive through lane, and an exclusive right-turn lane.
- **Signalize the Wailea Ike Drive/Kālai Wa'a Street intersection** in coordination with Wailea Resort and Mākena Resort when warranted (Condition 2g); and
- **Signalize the Wailea Alanui/Kaukahi Drive/Kaukahi Street intersection** in coordination with Wailea Resort and Mākena Resort when warranted (Condition 2h).

In addition to all of the above traffic improvements, Honua'ula Partners, LLC also will pay a traffic improvement fee of at least \$5,000 per residential unit to the County of Maui before issuance of a residential building permit, in further compliance with County of Maui Ordinance No. 3554 Condition 3. If all Honua'ula units are constructed, this fee will total at least \$5.75 million and is in addition to the costs Honua'ula Partners, LLC will incur for the above regional and Honua'ula-related traffic improvements.

~~In compliance with County of Maui Ordinance No. 3554, Honua'ula Partners, LLC will consult with the State DOT and the County Department of Public Works to ensure that the proposed roadway improvements meet with their satisfaction (Condition 18k). Proposed agreements regarding the roadway improvements will be incorporated in the Phase II application and will be finalized as part of Project District Phase II approval. Honua'ula Partners, LLC has requested verification from the State DOT and County Department of Public Works that the proposed roadway improvements meet with their satisfaction. Honua'ula Partners, LLC will provide verification when received from State DOT and County Department of Public Works.~~

In compliance with County of Maui Ordinance No. 3554 (Condition 18k), Honua'ula Partners, LLC has engaged in extensive consultation and correspondence with the DOT and DPW regarding roadway improvements that Honua'ula Partners, LLC are required to implement. These include the regional traffic improvements noted above under the heading "Regional Traffic Improvements" and the Honua'ula-related traffic improvements noted above under the heading "Honua'ula-Related Traffic Improvements." These improvements are all provided in compliance with County of Maui Ordinance No. 3554 Condition 2, which includes multiple sub-conditions as noted above. The consultation involved ensuring that the design of the proposed improvements is to the satisfaction and agreement of: 1) DOT regarding State Highway improvements; and 2) DPW regarding County roadway improvements.

In correspondence from DOT dated March 24, 2010, DOT stated:

The improvements to be performed by Honuaula Partners LLC as stated in Condition 2 are consistent with the improvements identified in the Traffic Impact Assessment Report (TIAR)

dated 29, 2009¹⁰. These improvements are understood to be considered the 'fair share' for highway related improvements of the affected area.

In their March 24, 2010 letter DOT also specifically addressed extending Piilani Highway into Honua'ula from Wailea Ike Drive to Kaukahi Street (Condition 2b), a portion of which will be on State-owned ROW, by specifying their design requirements for the extension. In so specifying it is implicit that DOT is in agreement with extending Piilani Highway over the State-owned ROW. Regarding the widening of Piilani Highway to four lanes from Kilohana Drive to Wailea Ike Drive (Condition 2a), in further correspondence from DOT dated August 23, 2010, DOT concurred with the design of the widening provided by Honua'ula Partners, LLC.

In correspondence from DPW dated February 24, 2010 DPW stated: "We confirm that Honua'ula Partners, LLC is in compliance with and has initiated implementation of Condition Nos. 2e, g and h as defined in the conditions of zoning for the Honua'ula project." Conditions 2e, 2g, and 2h pertain to improvements to County roadways.

The correspondence between Honua'ula Partners, LLC and DOT and DPW indicates the satisfaction of DOT and DPW with the improvements that Honua'ula Partners, LLC will provide and constitutes these agencies' agreement with the improvements as designed thus far. Further satisfaction and agreement with the proposed improvements is evidenced by the environment assessments (EAs) for the widening of Pi'ilani Highway and the Wailea Ike Drive/Wailea Alanui Drive intersection improvements. Specifically the Final EA for the widening of Pi'ilani Highway (Appendix R) contains design details and—as the accepting authority for the EA—DOT has reviewed the draft and final EA, accepted the final EA, and issued a Finding of No Significant Impact. Similarly, the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA (Appendix S) includes design details and DPW—as the accepting authority for the EA—has reviewed the draft and final EA, accepted the final EA, and issued a Finding of No Significant Impact.

In summary, the consultation and subsequent written correspondence between Honua'ula Partners, LLC and DOT and DPW demonstrates the efforts of all involved to work cooperatively to implement the required roadway improvements. This is further evidenced by DOT's and DPW's review and acceptance of the EAs covering the respective improvements these agencies are responsible for overseeing. These agencies review of, and satisfaction with, the improvements required of, and proposed by, Honua'ula Partners LLC constitutes their agreement with the improvements and the use of the State and County ROWs necessary to implement the improvements. Collectively, DOT's and DPW's satisfaction with, and agreement of, the improvements constitutes Honua'ula Partners,

¹⁰ The TIAR dated October 29, 2009, pertains to the widening of Piilani Highway from Kilohana Drive to Wailea Ike Drive, including improvements at the intersections of: 1) Pi'ilani Highway/Okolani Drive/Mikioi Place; and 2) Pi'ilani Highway/Kilohana Drive/Mapu Place. The TIAR contained in the Draft EIS and this Final EIS is dated March 2, 2010, and identifies the same recommended improvements to these intersections.

LLC's compliance with County of Maui Ordinance No. 3554 Condition 18k, which requires: "Roadway improvements to the satisfaction of the State Department of Transportation and the County Department of Public Works and proposed agreements are incorporated in the application and site plan and finalized as part of Project District Phase II approval."

Appendix L includes the above referenced correspondence between Honua'ula Partners, LLC and DOT and DPW. Appendix R contains the Pi'ilani Highway Widening Project Final EA. Appendix S contains the Wailea Ike Drive and Wailea Alanui Drive Intersection Improvements Final EA.

The following is the analysis of projected traffic conditions in context with regional traffic growth combined with traffic from Honua'ula, with the understanding that the above regional traffic improvements will be implemented at specified time periods. The TIAR estimates that:

- By 2016, Honua'ula will generate 168 outbound and 220 inbound trips during the AM peak traffic hour and 433 inbound and 481 outbound trips during the PM peak traffic hour;
- By 2018, Honua'ula will generate 312 outbound and 279 inbound trips during the AM peak traffic hour and 579 inbound and 564 outbound trips during the PM peak traffic hour; and
- By 2022, Honua'ula will generate 411 outbound and 339 inbound trips during the AM peak traffic hour and 685 inbound and 634 outbound trips in the PM peak traffic hour.

These trips will be distributed in the region with approximately 70 percent traveling on Pi'ilani Highway (north/south) en route to and from Honua'ula, 25 percent traveling on Wailea Alanui Drive en route to or from the Mākena area, and approximately five percent traveling on Wailea Alanui Drive en route to or from Kihei.

Intersections Along Pi'ilani Highway

By 2016, Pi'ilani Highway will be widened to four lanes and the main entrance to Honua'ula will be constructed at the intersection of Pi'ilani Highway/Wailea Ike Drive. The intersection will be a "T" intersection (as opposed to an "L" currently) with Pi'ilani Highway terminating and Wailea Ike Drive extending to the west and the Honua'ula entrance extending to the east. Both the Pi'ilani Highway/Wailea Ike Drive intersection and the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection will be signalized, and lane improvements will have been provided at the signalized intersection of Pi'ilani Highway/Kilohana Drive/Mapu Place and the Pi'ilani Highway/Okolani Drive/Mikioi Place. With these improvements, all intersections along Pi'ilani Highway are projected to operate at LOS D or better.

By 2018 it is assumed that 50 percent of Honua'ula will be completed and Pi'ilani Highway will be extended into Honua'ula, and thus the "T" intersection at the intersection of Pi'ilani Highway/Wailea Ike Drive/Honua'ula entrance will become a standard four-way "cross" intersection.

For periods 2018 and 2022 all intersections along Pi'ilani Highway are projected to operate at LOS D or better; with the exception of the PM peak hour of traffic for the eastbound and southbound left-turn movements at the Pi'ilani Highway/Kilohana Drive/Māpu Place intersection, which provides the northern access point to Maui Meadows. However, additional improvements are not recommended for this intersection in the TIAR because: 1) providing additional capacity for the eastbound left-turn movement will not improve the level of service; 2) the projected volume of southbound left-turn traffic does not warrant a double left-turn lane according to the Highway Capacity Manual; and 3) the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection will be signalized and also provides access to Maui Meadows, and therefore some drivers may opt to use the southbound left-turn at the Pi'ilani Highway/Okolani Drive/Mikioi Place intersection instead of the Pi'ilani Highway/Kilohana Drive/Māpu Place intersection.

Wailea Ike Drive/Kālai Wa'a Street

For all periods (2016, 2018, and 2022) the northbound left-turn movement at the unsignalized intersection of Wailea Ike Drive/Kālai Wa'a Street is projected to operate at LOS F. By 2018 and continuing on to 2022 the northbound right turn movement is projected to operate at LOS E for left turns exiting Kālai Wa'a Street. However, it is not uncommon for a low volume side street to experience long delays, especially when trying to cross or execute a left-turn onto a high volume roadway such as Wailea Ike Drive. As was the case in the "Without Honua'ula" analysis, due to low traffic volumes on Kalai Waa Street, the projected traffic volumes at this intersection will not warrant the installation of a traffic signal system according to the Highway Capacity Manual.

South Kīhei Road/Kilohana Drive

For all periods (2016, 2018, and 2022) the South Kīhei Road/Kilohana Drive intersection is projected to continue to operate at LOS C or better during both the AM and PM peak hours of traffic.

Intersections Along Wailea Alanui Drive

By 2016, all intersections along Wailea Alanui Drive will continue to operate at LOS D or better during both the AM and PM peak hours of traffic, with the exception of the intersection of Wailea Alanui Drive/Kaukahi Street for left turn movements entering Kaukahi Street during the PM peak hour of traffic (LOS F). However, as was the case in the "Without Honua'ula" analysis, because of the relatively low volumes of traffic entering or exiting Kaukahi Street, a traffic signal will not be warranted at this intersection according

to the Highway Capacity Manual. As was the case in the “Without Honua’ula” analysis, it is recommended that the east and west approaches from Wailea Alanui Drive be restriped to provide shared through/right turn lanes and exclusive left-turn lanes to Kaukahi Street; however this restriping is only recommended due to the projected build-out of the Mākena Resort.

By 2018, if the projected build-out of Mākena Resort is realized and the east and west approaches from Wailea Alanui Drive have been restriped to provide shared through/right turn lanes and exclusive left-turn lanes to Kaukahi Street, all intersections along Wailea Alanui Drive will operate at LOS D or better during the AM and PM peak traffic hours except for: 1) the northbound left-turn movement at the all-way stopped controlled intersection of Wailea Alanui Drive/Okolani Drive during the PM peak traffic hour (LOS F); and 2) the eastbound and westbound left turn movement at the un-signalized intersection of Wailea Alanui Drive/Kaukahi Street during the PM peak traffic hour (LOS F). However, as was the case in the “Without Honua’ula” analysis, because of the relatively low volumes of traffic making left turns from Okolani Drive and to Kaukahi Street, traffic signals will not be warranted at these intersections according to the Highway Capacity Manual.

By 2022, if the projected build-out of Mākena Resort is realized, a traffic signal may be necessary at the Wailea Alanui Drive/Kaukahi Street intersection, as much of the through traffic on Wailea Alanui Drive at this intersection would be due to build-out of the Mākena Resort. Because of Mākena Resort’s current financial situation it is unknown when or if any or all of the proposed units at Mākena Resort will be built. Therefore, the need for a traffic signal will need to be evaluated based on actual traffic conditions at the time. Assuming build-out of the Mākena Resort by 2022, with a signal, this intersection will operate at LOS C. All other intersections along Wailea Alanui Drive will operate at LOS D or better during the AM and PM peak traffic hours except for the northbound left-turn movement at the all-way stopped controlled intersection of Wailea Alanui Drive/Okolani Drive during the PM peak traffic hour (LOS F). However, as was the case in the “Without Honua’ula” analysis, because of the relatively low volumes of traffic making left turns from Okolani Drive, a traffic signal will not be warranted at this intersection according to the Highway Capacity Manual.

In sum, the traffic improvements that will be implemented by Honua’ula Partners, LLC will have a significant positive impact on traffic conditions in the region. Not only will Honua’ula Partners, LLC provide improvements that are specifically intended to address traffic impacts generated by the Honua’ula, they will also complete improvements needed to address traffic impacts caused by general regional traffic growth even without Honua’ula—improvements that are highly unlikely to be realized without Honua’ula. Although the TIAR’s analysis of the “Without Honua’ula” scenario assumed that these necessary regional traffic improvements would be completed, it is implicit that if these improvements are not implemented then traffic conditions in the “Without Honua’ula” scenario would be much worse. Therefore, the creation of Honua’ula will address regional traffic impacts to the benefit of the entire Kihei-Mākena region.

4.4.5 Transportation Management

In compliance with County of Maui Ordinance No. 3554, ATA prepared TMPs for Honua'ula construction and post-construction operations (Condition 28). The TMPs propose transportation management strategies to reduce: 1) construction-related traffic during the construction of Honua'ula and the widening of Pi'ilani Highway; and 2) dependency on individual vehicles by Honua'ula residents, employees, and visitors after construction.

Key provisions of the TMPs are summarized below. Appendix M contains the complete TMPs. ~~The TMPs have been submitted to the State DOT, the County Department of Public Works, and the County Department of Transportation for review and approval. In a letter dated December 18, 2009 the County Department of Public Works have all reviewed and approved the TMPs for Honua'ula construction and post-construction operations. This~~ The approval letters is are included in Appendix M.

Construction Operations

The construction TMP sets forth transportation, parking and construction management policies and practices to reduce peak hour vehicle trips generated by construction of Honua'ula and the widening of Pi'ilani Highway. Pi'ilani Highway is required to be widened before any construction within Honua'ula, with the exception of grading. Therefore the Honua'ula property will be used for construction parking and as a staging area during the widening of Pi'ilani Highway. After Pi'ilani Highway is widened and construction starts within Honua'ula, the additional vehicle capacity of Pi'ilani Highway will lessen impacts of construction-related traffic traveling to Honua'ula.

Construction-related traffic will be from individual construction and trade workers arriving and leaving the construction sites. A small portion of construction-related traffic will be caused by construction improvements along Pi'ilani Highway and delivery trucks arriving and leaving the construction sites.

Specific transportation management strategies to reduce construction worker-related traffic include:

- **Transportation Coordinator** – The Transportation Coordinator will: 1) coordinate with contactors, administrators, employees, officials and the general public to implement transportation management initiatives and programs; 2) coordinate with construction managers and workers to make sure employee work shifts occur during off-peak hours to reduce the impacts to the AM and PM peak traffic hours; and 3) monitor surrounding residential areas to ensure construction workers are not parking in these areas;
- **Off-Peak Arrivals/Departures** – Work days are recommended to be scheduled so workers avoid travelling during peak hours of the day;

- **Ridesharing/Carpooling/Vanpooling Programs** – Ridesharing, carpooling and vanpooling will be encouraged through incentives such as reimbursements of costs for those who provide a rideshare vehicle, preferential parking in the designated employee parking lot for those who provide a rideshare vehicle, and other incentives;
- **Park-and-Ride Facilities** – To facilitate ridesharing/carpooling/vanpooling, park-and-ride facilities will be located outside of the construction work zone. Currently, there are existing park-and-ride facilities in Kahului along Pu'unēnē Avenue near Kuihelani Highway and in the Mā'alaea area along North Kihei Road near Honoapi'ilani Highway. Construction workers will be encouraged to park their personal vehicles at the park-and-ride lots and either carpool, vanpool or use a shuttle to enter the project site;
- **Guaranteed Ride Home Program** – A Guaranteed Ride Home program will be established to ensure that workers who do not drive to work have a way to get home in case of emergency, an unexpected situation, personal sickness, sickness of a family member, or if the worker must stay late to work unscheduled overtime; and
- **Employee Parking** – The designated construction worker parking area will be managed and regulated to promote ridesharing by limiting the number of employee parking spaces and requiring parking passes to regulate vehicles permitted to park in the parking lot.

Specific transportation management strategies to reduce traffic congestion caused by delivery trucks arriving and leaving the construction site and construction improvements along Pi'ilani Highway include:

- **Consolidating Deliveries** – Whenever possible, construction materials, fuel, supplies and equipment will be consolidated and delivered to the site during off-peak hours. Deliveries required during peak hours will be arranged and monitored by the Transportation Coordinator, so that proper coordination, planning and regulation of truck flows can be made prior to the delivery;
- **Reduce Traffic Delays and Reduction in Flow** – Lane or road closures will occur during off-peak hours, unless closures during peak hours are necessary for public safety reasons. All lane or road closures will be conducted in accordance with State DOT regulations; and
- **Public Information and Outreach** – The Transportation Coordinator will implement a public information and outreach program that will include:
 - Publicizing construction schedules, roadway use, alternative routes, and alternative modes of transportation via a website or written notices;
 - Notifying motorists of lane or road closures to give them time to plan ahead and use different routes;
 - Establishing a "hotline" for inquiries, construction activities, and complaints;
 - Conducting regular information meetings with surrounding neighborhoods;

- Coordinating delivery schedules and roadway construction schedules with other projects in the area; and
- Coordinating with unions and construction companies.

Post-Construction Operations

The post-construction TMP proposes specific on-going transportation management policies and practices to consolidate and reduce vehicle trips generated by Honua'ula residents, employees, and visitors.

By design Honua'ula is expected to reduce vehicle dependency, since it will contain commercial and retail establishments convenient to residential areas and a system of bicycle and pedestrian ways throughout the community. With these elements incorporated within the community, Honua'ula residents will not need to drive outside of Honua'ula for all needs and services, and walking and biking can be alternatives to driving.

Honua'ula is also located nearby the Wailea and Mākena Resorts, and Honua'ula's workforce affordable homes are expected to appeal to many people who may be resort employees. This close proximity to employment centers provides the opportunity for more transportation options for resort employees to get to work, such as resort shuttles, ridesharing, carpooling, walking, and bicycling.

Specific transportation management strategies to encourage Honua'ula residents to use alternative modes of transportation include:

- **Encourage Walking and Biking** – Honua'ula will include safe and accessible walkways and bikeways. To encourage residents to walk and bike, most residential areas will be within approximately a half-mile or less of commercial and recreational facilities;
- **Coordinate Expansion of the Sub-Regional Shuttle System** – For travel within the Kīhei-Mākena region, the Transportation Coordinator will coordinate with the Wailea Resort Shuttle and Mākena Resort Shuttle to identify opportunities for expansion of shuttle service to Honua'ula. The resort shuttle buses could provide an ideal mode of transportation for Honua'ula residents who work at Wailea Resort and Mākena Resort to get to work; and
- **Coordinate Expansion of the Maui Bus** – For travel outside of the Kīhei-Mākena region, the Transportation Coordinator will coordinate with the Maui Department of Transportation to identify opportunities for expansion of bus service to Honua'ula. A bus stop will be provided within Honua'ula; ideally this bus stop would be located within the Village Mixed Use area VMX Town Center near the intersection of Pi'ilani Highway and Wailea Ike Drive. A park and ride facility ~~could~~ will also be located in this area. The park and ride facility is envisioned as an overflow parking area in the VMX Town Center that could be used as a park and

ride facility during normal working hours and either employee or customer overflow parking during weekend and nights.

Specific transportation management strategies to encourage and provide opportunities for employees of Honua'ula's commercial areas to use alternative modes of transportation include:

- **Active Retail/Commercial Participation** – To reduce individual commuter trips generated by employees of Honua'ula's commercial space, employers will be encouraged to provide incentives to employees to use alternative modes of transportation to get to work;
- **Schedule Off-Peak Work** – Employers will also be encouraged to offer flexible work schedules so their employees can avoid travel during peak hours of the day;
- **Encourage Ridesharing/Carpooling/Vanpooling/Transit** – Employers will be further encouraged to consider incentives for employees who rideshare, carpool and/or vanpool, such as discounted/free bus passes or cash incentives and subsidies;
- **Coordinate Expansion of the Sub-Regional Shuttle System and the Maui Bus** – As discussed above, the Transportation Coordinator will coordinate with the Wailea and Mākena Resort shuttles and with the Maui Department of Transportation to increase service of shuttles and buses to Honua'ula. These services can be used by both Honua'ula residents and employees to travel to and from Honua'ula;
- **Parking Management** – Commercial parking facilities can be managed and regulated to encourage efficient use of parking and promote ridesharing and alternative modes of transportation. For example, a number of parking stalls at each commercial parking lot could be designated for ridesharing vehicles and ridesharing drivers then could be given parking passes that permit parking in the ridesharing stalls.

4.5 NOISE

Y. Ebisu & Associates prepared an acoustic study to: 1) study the existing and future noise environment in the environs of Honua'ula; ~~and~~ 2) evaluate potential noise impacts associated with Honua'ula, including the widening of Pi'ilani Highway; and 3) provide recommendations for minimizing noise impacts. Appendix N contains the complete acoustic study. Y. Ebisu & Associates also prepared a separate acoustic study specifically for the widening of Pi'ilani Highway. Appendix R contains the complete Pi'ilani Highway Widening Project Final EA. Appendix F of the Final EA contains the acoustic study specifically for the widening of Pi'ilani Highway.

Sources of noise in the vicinity of the Property stem from traffic traveling along Pi'ilani Highway and other surrounding roads, distant construction, and natural sources, such as wind, rain, and birds. Sources of noise in the vicinity of the Wailea Alanui Drive intersection include traffic noise from vehicles transversing the intersection. Sources of noise in the vicinities of the off-site wells, waterline, storage tank, and the wastewater transmission line alignment for possible connection to the Mākena Resort WWRF (off site

water and sewer infrastructure) include activity associated with human habitation, and natural sources, such as wind, rain, and birds.

Currently, existing traffic noise levels along Pi'ilani Highway south of Maui Meadows in the immediate vicinity of the Property do not exceed U.S. Federal Highway Administration (FHWA) or State DOT noise standards for residential structures. However, existing traffic noise levels at two residences adjacent to Pi'ilani Highway north of the Pi'ilani Highway/Okalani Drive/Mikioi Place currently exceed State DOT noise standards for residential structures.

Some existing residences makai of Pi'ilani Highway presently benefit from the noise shielding effects of walls which have been constructed along the lot boundary lines. Residences in the Maui Meadows subdivision on the mauka side of the highway benefit from the noise shielding effect of the large highway cuts. In general, if the visual lines of sight between the residences are blocked by the walls or the highway cuts, residences experience lower traffic noise levels due to the sound attenuation effects of the obstructions.

Along Wailea Ike Drive existing traffic noise levels do not exceed the FHWA or DOT noise standards for residential structures at Wailea 'Ekolu Village, which is located on the south side of Wailea Ike Drive. Existing traffic noise levels from Wailea Ike Drive also do not exceed FHWA and DOT noise standards for commercial buildings.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Potential impacts on the ambient quality of the site and surrounding area due to the creation of Honua'ula, the widening of Pi'ilani Highway, the Wailea Alanui Drive intersection improvements, and the off-site water and wastewater infrastructure, are primarily limited to short-term construction activity and, in the long-term, increases in traffic and human activity within the community.

Short-term Impacts – During construction of Honua'ula, the widening of Pi'ilani Highway, the Wailea Ike Drive and Wailea Alanui Drive intersection improvements, and the off-site water and wastewater infrastructure there will likely be noise impacts associated with operation of heavy construction machinery, paving equipment, ~~and~~ material transport vehicles, and possible blasting to break or dislodge rock. As an alternative to blasting, the use of chemical expansion to break or dislodge rock will be considered. Chemical demolition agents are non-toxic and provide environmentally-friendly, safe, controlled demolition. Expansive powers are mixed with water and poured into pre-drilled holes in rock. The non-explosive demolition agent swells and exerts significant expansive thrust on the hole-wall. After a certain period, the pressure induced by the chemical non-explosive demolition agent fractures the wall and splits the rock across the line of the drill holes. These chemicals easily split and fracture mass rock without producing any noise or vibration.

During construction of Honua'ula, the widening of Pi'ilani Highway, the Wailea Ike Drive and Wailea Alanui Drive intersection improvements, and the off-site water and wastewater infrastructure ~~Proper~~ proper mitigating measures will be employed to minimize construction-related noise impacts and comply with all Federal and State noise control regulations. Increased noise activity due to construction will be limited to daytime hours and persist only during the construction period. Noise from construction activities will be short-term and will comply with State DOH noise regulations (HAR, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed, the DOH's allowable limits, a permit must be obtained from the DOH. Specific permit restrictions for construction activities are:

- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday;
- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 9:00 a.m. and after 6:00 p.m. on Saturday; and
- No permit shall allow any construction activities that would emit noise in excess of the maximum permissible sound levels on Sundays and holidays.

The acoustic study concludes that adverse impacts from construction noise (from the widening of Pi'ilani Highway and creation of Honua'ula) are not expected to affect public health and welfare due to the temporary nature of the work and the administrative controls regulating noise impacts. Public health and welfare are also not expected to be affected due to the construction of the Wailea Alanui Drive intersection improvements and the off-site water and wastewater infrastructure.

Long-term Impacts – The acoustic study concludes that the widening of Pi'ilani Highway and the creation of Honua'ula will not cause increases in traffic noise levels that would exceed DOT's criteria signifying a substantial change, which is defined as an increase of 15 decibels (dB) or more over existing conditions. By the year 2022 maximum increases in traffic noise levels in the vicinity of Honua'ula should not increase more than 10 decibels (dB) along Pi'ilani Highway and 3.6 dB along Wailea Ike Drive as a result of: 1) regional growth in traffic volumes; 2) the widening of Pi'ilani Highway; 3) the creation of Honua'ula; and 4) the planned extension of Pi'ilani Highway into Honua'ula to connect with Kaukahi Street.

While a substantial change in noise levels (as defined by DOT) will not occur, by the year 2022 the number of residences along Pi'ilani Highway subject to noise levels that exceed DOT residential noise standards is projected to increase from two residences under existing conditions to:

- 13 residences due to regional increases in traffic even if Pi'ilani Highway is not widened and Honua'ula is not built;

- 14 residences if Pi'ilani Highway is widened and Honua'ula is not built; and
- 16 residences if Pi'ilani Highway is widened and Honua'ula is built.

In other words, noise levels along Pi'ilani Highway are projected to increase even if Pi'ilani Highway is not widened and Honua'ula is not built. Noise levels at two residences adjacent to Pi'ilani Highway currently exceed State DOT noise standards for residential structures. By 2022 this number will increase to 13 due to regional increases in traffic conditions even if Pi'ilani Highway is not widened and Honua'ula is not built. If Pi'ilani Highway is widened and Honua'ula is built, by 2022 noise levels at three additional residences adjacent to Pi'ilani Highway would exceed State DOT noise standards for residential structures. Thus, the direct impact of widening Pi'ilani Highway and building Honua'ula is that three additional residences adjacent to Pi'ilani Highway would exceed State DOT noise standards for residential structures compared to projected future conditions if Pi'ilani Highway is not widened and Honua'ula is not built. Therefore the primary noise impacts to residences adjacent to Pi'ilani Highway are from regional increases in traffic that are projected to occur even if Pi'ilani Highway is not widened and Honua'ula is not built, and not the direct result of the widening of Pi'ilani Highway and the building of Honua'ula.

Under all of the above scenarios, by the year 2022 future traffic noise levels along Pi'ilani Highway fronting Honua'ula and along Wailea Ike Drive should not exceed FHWA and DOT noise standards for residential or commercial structures. Future traffic noise levels along the Pi'ilani Highway extension into Honua'ula should not exceed FHWA and DOT noise standards for residential or commercial structures, since adequate setback distances from the highway extension's centerline will be provided in accordance with Section 19.90A.030(E)(6), MCC. In addition, DOT's criteria for a substantial change in noise levels will not be exceeded for existing residences at Wailea 'Ekolu Village and Diamond Resort.

To mitigate impacts to residences along Pi'ilani Highway subject to noise levels that exceed FHWA and DOT residential noise standards, sound attenuating walls are recommended in accordance with DOT's traffic noise abatement policy¹¹. Walls fronting two lots mauka of Pi'ilani Highway and one lot makai of Pi'ilani Highway have a possibility of being considered as reasonable and feasible under the current DOT traffic noise abatement policy. Landscaping should be considered on the roadway side of sound attenuating walls to mitigate potential visual impacts and the potential for graffiti.

~~As~~ Appendix R contains the Pi'ilani Highway Widening Project Final EA specifically addressing the impacts (including noise impacts) of the widening Pi'ilani Highway is being prepared and will be submitted to the State OEQC for public and State agency review.

¹¹ "Noise Analysis and Abatement Policy" State of Hawaii Department of Transportation, Highways Division, Materials Testing and Research Branch; June 1997. Under this policy if the cost of the sound attenuating wall does not exceed \$35,000 per benefited residence, construction of the walls can be considered to be reasonable and feasible.

The DOT ~~will be the accepting authority for the EA~~ has accepted the final EA and issued a Finding of No Significant Impact which was published in the OEQC's *The Environmental Notice* on May 8, 2012.

While a specific acoustic study was not prepared for the Wailea Ike Drive and Wailea Alanui Drive intersection improvements, long-term impacts are not expected to be significant as the improvements will accommodate anticipated future traffic while providing similar vehicle flow and queuing times at the intersection as compared to exiting conditions.

Long-term noise impacts from the off-site water and wastewater infrastructure are not expected to be significant, as after these facilities are created there will be very little to no noise generating activity associated with on-going operations.

To mitigate potential noise from golf course maintenance activities and facilities, in compliance with County of Maui Ordinance No. 3554 (Condition 18g), the golf maintenance center is located in an area sufficiently distanced from residential uses and will be designed to further lessen noise to surrounding uses. All golf course maintenance will be conducted in a manner so as not to cause a nuisance to residents.

4.6 AIR QUALITY

Air quality refers to the presence or absence of pollutants in the atmosphere. It is the combined result of the natural conditions (i.e., dust from wind erosion) and emissions from a variety of pollution sources (i.e., automobiles, power generating facilities). B.D. Neal & Associates prepared an air quality study to: 1) describe existing air quality in the area; 2) assess the potential short- and long-term direct and indirect air quality impacts that could result from Honua'ula; and 3) recommend measures to mitigate potential air quality impacts where possible and appropriate. Key findings and recommendations of air quality study are summarized below. Appendix O contains the full study.

B.D. Neal & Associates also prepared an air quality study specifically for the widening of Pi'ilani Highway from Kilohana Drive to Wailea Iki Drive. Appendix R contains the complete Pi'ilani Highway Widening Project Final EA. Appendix E of the Final EA contains the complete air quality study for the widening of Pi'ilani Highway.

The present air quality in the vicinity of Honua'ula, the area of the widening of Pi'ilani Highway, Wailea Ike Drive and Wailea Alanui Drive intersection, and the off-site wells, waterline, storage tank and the wastewater transmission line alignment for possible connection to the Mākena Resort WWRF (off-site water and wastewater infrastructure) is believed to be relatively good, except for periodic impacts from volcanic emissions (vog) and possibly occasional localized impacts from traffic congestion and local agricultural sources.

Regional and local climate, together with the amount and type of human activity, generally dictate the air quality of a given location. The climate in the vicinity of Honua'ula, the area of the widening of Pi'ilani Highway, the Wailea Ike Drive and Wailea Alanui Drive intersection, and the areas of the off-site water and wastewater infrastructure is very much affected by ~~its~~ the elevation near sea level and by nearby mountains. Haleakalā shelters the area from the northeast trade winds, and local winds (such as land/sea breezes and upslope/downslope winds) affect the wind flow in the area much of the time. Temperatures in the area are generally very consistent and warm with average daily temperatures ranging from about 63°F to 86°F.

Both Federal and State standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated: 1) particulate matter, 2) sulfur dioxide, 3) hydrogen sulfide, 4) nitrogen dioxide, 5) carbon monoxide, 6) ozone and 7) lead. Hawaii air quality standards are comparable to the national standards except those for nitrogen dioxide and carbon monoxide, which are more stringent than the national standards.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Creation of Honua'ula, the widening of Pi'ilani Highway, the Wailea Ike Drive and Wailea Alanui Drive intersection improvements, and the areas of the off-site water and wastewater infrastructure may result in short- and long-term impacts on air quality, either directly or indirectly, as a consequence of construction and ~~occupancy~~ use. However, it is anticipated that no State or Federal air quality standards will be violated during or after the construction. After build-out, air quality in the ~~vicinity~~ vicinities of Honua'ula, the widened Pi'ilani Highway, the Wailea Alanui Drive intersection, and the off-site water and wastewater infrastructure primarily will be affected by vehicular emissions associated with additional traffic.

Short-term Impacts – Short-term impacts from fugitive dust will likely occur during construction. Construction will include earthmoving activity, excavating, trenching, and filling. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from disruption of traffic, and from workers' vehicles may also affect air quality during construction.

~~A dust~~ Dust control plans for both Honua'ula and the widening of Pi'ilani Highway will be implemented during all construction phases. All construction activities, including construction of the Wailea Ike Drive and Wailea Alanui Drive intersection improvements and the off-site water and wastewater infrastructure will comply with the provisions of Chapter 11-60.1-33, HAR on fugitive dust. Measures to control dust during construction may include:

- Planning phases of construction to minimize the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of least impact;
- Watering active work areas and any temporary unpaved work roads daily;

- Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Minimizing dust from shoulders and access roads;
- Providing adequate dust control measures during weekends, after hours and before daily start-up of construction activities;
- Controlling dust from debris being hauled away;
- Using wind screens and/or limiting the area of disturbance at any given time;
- Covering dirt-hauling trucks traveling on roadways;
- Preventing trucks from tracking dirt onto paved roadway by routine road cleaning and/or tire washing;
- Establishing landscaping early in the construction schedule; and
- Monitoring dust at the Property boundary during the construction period as a means to evaluate the effectiveness of the dust control program, and adjusting the program if necessary.

In accordance with County of Maui Ordinance No. 3554 (Condition 15), during construction of Honua'ula all dust control will use non-potable water or effluent, which may be obtained from the Kihei WWRF when available.

Long-term Impacts – After construction, use of Honua'ula, the widened Pi'ilani Highway, and the improved Wailea Ike Drive and Wailea Alanui Drive intersection will result in increased motor vehicles in these areas coming to and from Honua'ula will result in a long-term increase in air pollution emissions in the area. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminants.

To assess the impact of emissions from ~~these~~ vehicles, a computerized air quality modeling ~~study was~~ studies were undertaken to: 1) provide estimates of air pollution emissions from traffic within the area of the widened Pi'ilani Highway from Kilohana Drive to Wailea Iki Drive; and 2) estimate current assess ambient concentrations of carbon monoxide at roadway intersections in the area of the widened Pi'ilani Highway and the vicinity of Honua'ula after build out and to predict future levels both with and without Honua'ula.

Based on the results of the analysis of the potential long-term effects of the widening of Pi'ilani Highway, the air quality study concludes that the widening of Pi'ilani Highway would likely have an overall positive impact on air quality of the area. This is due to the fact that emissions from vehicles are a function of vehicle speed, and improved traffic flow will also provide for less time queued at intersections and less idle emissions.

While the widening of Pi'ilani Highway is expected to have an overall positive impact on air quality of the area, at specific locations, such as at intersections, the widened highway will tend to concentrate more traffic, and thus may cause an increase in carbon monoxide concentrations at specific locations. Therefore, some specific locations may experience

higher carbon monoxide concentrations compared to without the project, but concentrations are expected to remain well within State and Federal standards and overall emissions are expected to decrease for the region as a whole.

Based on the results of the analysis of ambient concentrations of carbon monoxide prepared specifically for Honua'ula, ~~Even~~ even during worst-case conditions, model results indicated that present one-hour and eight-hour carbon monoxide concentrations at study intersections are well within both State and Federal ambient air quality standards. In the year 2022 without Honua'ula, worst-case carbon monoxide concentrations were predicted to increase at some ~~locations~~ study intersections in the area, but concentrations should remain well within State and Federal standards. With Honua'ula in the year 2022, worst-case carbon monoxide concentrations at study intersections were estimated to increase by about 10 to 20 percent compared to the without-Honua'ula case, but worst-case concentrations should still remain within both State and Federal standards.

The air quality study concludes that implementing mitigation measures for traffic-related air quality impacts are unnecessary and unwarranted.

While a specific air quality study was not prepared for the Wailea Ike Drive and Wailea Alanui Drive intersection improvements, long-term impacts are not expected to be significant as the improvements will accommodate anticipated future traffic while providing similar vehicle flow and queuing times at the intersection as compared to exiting conditions.

Long-term air quality impacts are not expected to be significant from the off-site water and wastewater infrastructure, as after these facilities are created there will be very little to no vehicle emissions associated with on-going operations.

Electrical Demand and Solid Waste Disposal – The Honua'ula air quality study concludes that significant long-term impacts on air quality are unlikely due to indirect emissions associated with the community's electrical power and solid waste disposal requirements. Nevertheless, Honua'ula will incorporate energy conservation strategies (see Section 4.8.6 (Electrical System)) and recycling programs (see Section 4.8.5 (Solid Waste)) to further reduce any associated impacts and conserve resources.

4.7 VISUAL RESOURCES

The Honua'ula Property is characterized by moderately sloping, rough, rocky terrain that is interspersed by several large dry gulches and an expansive, 'a'ā lava flow in the southern area. The northern 75 percent of the Property is characterized as a kiawe/buffel grass grassland, with kiawe trees and buffelgrass the most prominent vegetation. The southern quarter of the Property is characterized as mixed *kiawe-wiliwili* shrubland with scattered groves of large-stature *wiliwili* and *kiawe* trees the most dominate visual vegetation.

Panoramic views of shoreline, upland areas of Haleakalā, the West Maui Mountains, and the offshore islands of Molokini, Kaho'olawe, and Lāna'i are available from select areas of the Property. Views of the ocean are available from almost all areas. Figure 4 contains site photographs.

Wailea Resort, west and makai of Honua'ula, is an urban, master-planned resort-residential community consisting of hotels, multi-family and single-family residences, a shopping center, a tennis center, golf courses, parks, and open space areas. The Maui Meadows subdivision, directly north of Honua'ula, has over 600 home sites on lots a minimum size of one-half acre; however most properties have both a main house and an 'ohana unit.

POTENTIAL IMPACTS AND MITIGATION MEASURES

The creation of Honua'ula will change the visual appearance of the Property from vacant land to a built environment. This change will be visible from Pi'ilani Highway looking mauka across the Property. However Honua'ula will not impinge upon any significant public scenic view corridors, and Honua'ula will have no significant impacts on views toward the ocean or Haleakalā. With the creation of Honua'ula, the ocean will still be visible from public view corridors along Pi'ilani Highway as Honua'ula is mauka of the current alignment of Pi'ilani Highway and therefore Honua'ula will not block any ocean views from the current alignment of Pi'ilani Highway. Similarly, Haleakalā will still be visible from public view corridors along Pi'ilani Highway, as Haleakalā rises over 9,000 feet above the elevation of Honua'ula and therefore views of Haleakalā will not be significantly impacted by Honua'ula.

Honua'ula will be in character with surrounding uses and will complement the pattern of development as envisioned in the *Kīhei-Mākena Community Plan* and by the County zoning of the Property. Honua'ula will incorporate appropriate architecture, materials, colors, site design standards, and landscaping to create a community in context with the Kīhei-Mākena region.

To ensure an overall architectural theme as well as other design standards are established for Honua'ula, design guidelines have been prepared. The design guidelines cover various aspects of Honua'ula design with the overall goal of providing a framework so that a consistent character is achieved. Guiding principles and design objectives for Honua'ula within the design guidelines include:

- Adhering to the adopted Project District ordinance (Chapter 19.90A, MCC) and zoning requirements (Ordinance 3554 (2008)) and related development standards;
- Encouraging building forms that respect and maintain both the unique topographic and landscape character of each individual building site;
- Encouraging building designs that de-emphasize the scale and size of the structures;

- Encouraging buildings that respect the view corridors of the buildings above them;
- Creating buildings composed of materials, textures, and finishes that exist naturally in the environment;
- Encouraging building designs that are simple, timeless, and permanent in execution; and
- Encouraging buildings that respect local traditions, history, and culture.

In addition, Honua'ula Partners, LLC will implement the recommendations of the Urban Design Review Board (UDRB). At its regular meeting on June 1, 2010, the UDRB reviewed the design guidelines, landscaping, architectural plans, and related aspects of Honua'ula and recommended: "That the multi-family area closest to Maui Meadows on the northern boundary [i.e. southern boundary of Maui Meadows] of the site be limited to 30 ft. in height." This height limitation is consistent with the height limit for single family homes in Honua'ula and will result in structures not exceeding the maximum single family height originally planned for the area.

In compliance with County of Maui Ordinance No. 3554 (Condition 21), all exterior lighting will be shielded from adjacent residential properties and near shore waters. Lighting requirements in force at the time of building permit application shall be applied.

To mitigate potential impacts to views of existing Maui Meadows properties, a minimum one hundred foot wide fire buffer area, with a minimum fifty-foot wide landscape buffer area within it, will be provided between the southern boundary of Maui Meadows and Honua'ula. No structures, except rear and side boundary walls or fences, will be permitted in the buffer.

4.8 INFRASTRUCTURE AND UTILITIES

Wilson Okamoto Corporation prepared a Preliminary Engineering Report for Honua'ula. Key elements of the report are summarized in the following sections. Appendix P contains the complete report.

Austin Tsutsumi & Associates Inc. (ATA) prepared a Preliminary Engineering Report specifically for the widening of Pi'ilani Highway from Kilohana Drive to Wailea Iki Drive. The widening of Pi'ilani Highway is not anticipated adversely impact water, wastewater, solid waste, electrical, or communication infrastructure and therefore the sections below regarding these services pertain only to Honua'ula and not to the widening of Pi'ilani Highway. The widening of Pi'ilani Highway will increase impervious surfaces and effect stormwater runoff rates and therefore drainage impacts from the widening of Pi'ilani Highway are discussed below in Section 4.8.3 (Drainage System) along with drainage impacts from Honua'ula. Appendix R contains the complete Pi'ilani Highway Widening Project Final EA. Appendix I of the Final EA contains the complete Preliminary Engineering Report for the widening of Pi'ilani Highway.

In compliance with County of Maui Ordinance No. 3554 (Condition 4), Honua'ula Partners, LLC will be responsible for all required infrastructure improvements for Honua'ula, including water source and system improvements for potable and non-potable use and fire protection, drainage improvements, traffic-related improvements, wastewater system improvements, and utility upgrades, as determined by the appropriate governmental agencies and public utility companies. Improvements will be constructed and implemented concurrently with each phase of Honua'ula, and will be completed prior to issuance of any certificate of occupancy of final subdivision approval, unless improvements are bonded. Honua'ula Partners, LLC will execute appropriate agreements with governmental agencies regarding participation in improvements of infrastructure and public facilities as determined by the agencies.

In further compliance with County of Maui Ordinance No. 3554 (Condition 19), Honua'ula Partners, LLC will execute appropriate agreements with the State of Hawai'i and County of Maui agencies regarding participation in improvements of infrastructure and public facilities where such improvements are reasonably related to Honua'ula.

4.8.1 Water System

Potable water for the Kīhei-Wailea region is presently supplied by the 'Īao Aquifer, which also supplies the Wailuku-Kahului region. A 36-inch and an 18-inch transmission main convey water from the 'Īao Aquifer to the Kīhei-Wailea area. As of July 21, 2003, the 'Īao Aquifer was designated as a groundwater management area by the State CWRM. The sustainable yield of the 'Īao Aquifer is 20.0 MGD, and existing water use is 18.940 MGD (Wilson Okamoto/CWRM, 2008).

The Property, and the wells that will supply the Property, are located in the Kama'ole Aquifer System. The system comprises a triangular-shaped area of approximately 89 square miles, with its apex at the top of Haleakalā and its base along the 11-mile length of shoreline from Waiakoa Gulch on the north to Cape Kīna'u on the south. Groundwater in the Kama'ole Aquifer exists as a basal lens from the shoreline as far inland as the 1,700-foot contour. In 1990, the CWRM set the sustainable yield of the Kama'ole Aquifer at 11 MGD. This was based on a computed groundwater recharge of 25 MGD and the assumption that 44 percent of the recharge could be withdrawn by wells without adversely impacting the integrity of aquifer. However, several far more detailed and sophisticated studies on the aquifer's recharge have been completed since then (USGS 1999; Waimea Water Services Inc. 2004; USGS 2007). These studies indicate that the recharge amount on which the CWRM's sustainable yield is based is substantially underestimated; the actual sustainable yield of the aquifer may be as much as 50 percent greater than the 1990 CWRM estimate. Current actual aquifer pumpage is estimated to be approximately 4.0 MGD (TNWRE 2010a).

The County of Maui does not have any water service lines to the Honua'ula Property. Existing water systems in the vicinity of the Property include the County Maui Meadows System to the north and the County potable Wailea Resort System to the west. The Maui

Meadows System consists of a high-level 0.5 MG tank located at the 799 foot elevation and a mid-level 1.0 MG tank located at the 563 foot elevation. The Wailea Resort System consists of a low-level 2.0 MG tank at the 210 foot elevation south of Wailea Ike Drive and a mid-level 3.0 MG tank at the 374-foot elevation. The potable Wailea 3.0 MG tank is located on the west side of the Honua'ula makai boundary and serves most of the Wailea Resort. The Wailea Resort also operates a private non-potable system for golf course irrigation. There is also an existing 1.0 MG water tank located on the Honua'ula Property above Kaukahi Street that will be dedicated to the County of Maui to provide service to properties below Honua'ula.

Honua'ula has four brackish wells. Two of these are on the Property (Wailea 670 1 and 2). The other two are off-site (Kama'ole 1 and 2) in an area north of Maui Meadows and on land owned by Haleakalā Ranch. The total safe yield of the four wells, with one as standby, is 1.37 MGD (TNWRE ~~2009~~2010a). All of the wells are within the Kama'ole Aquifer System and are fully permitted by CWRM.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula will not rely upon or burden any County water system or facilities. Instead, Honua'ula Partners, LLC will develop, maintain, and operate a private water system providing both potable and non-potable water for use within Honua'ula. The complete water system will include a:

1. Non-potable system supplied by brackish wells to provide water for irrigation of common areas and within individual parcels;
2. Potable system supplied by RO treated water, using brackish groundwater as the feedwater supply, to provide drinking water and other potable water needs; and
3. Golf course irrigation system supplied by recycled wastewater (R-1 quality), concentrate from the RO treatment of the potable supply, and brackish groundwater from the non-potable irrigation system.

The average daily potable water use for Honua'ula is estimated to be 0.34 MGD at build-out. Non-potable water will be used for all irrigation within Honua'ula, including single-family and multifamily lots. The average non-potable demand for irrigation excluding the golf course is estimated to be 0.810 MGD at build-out. The non-potable demand for golf course irrigation is estimated to be 0.717 MGD. Brackish well water will be used to supply all Honua'ula water needs. The brackish well water will supply the feedwater for the RO system, thus producing potable water. Concentrate from the RO treatment of the potable supply will also be produced. Much of the potable waste water will be recycled (R-1) then mixed with the RO concentrate and used for golf course irrigation. With this system, the total average withdraw from brackish wells is estimated to be 1.7 MGD.

To provide for summertime maximum use periods and to have standby capacity, two more wells will be needed. Depending on actual water use rates that materialize, a third new well may or may not be needed as Honua'ula approaches build-out. New wells will

be developed within the Haleakalā Ranch source development area north of Maui Meadows where the existing off-site wells are located. Section 3.5.1 (Groundwater) contains the discussion on the potential impact of existing and new wells.

The existing off-site wells and any new off-site wells will be connected to Honua'ula by an approximately 12-inch diameter underground water line running roughly parallel to the upper boundary of Maui Meadows in an unpaved easement approximately 12,000 linear feet in length and 30 feet in width. The 30-foot easement width allows for access and maintenance parallel to the underground transmission line.

Honua'ula's private water system will be provided in compliance with County of Maui Ordinance No. 3554 (Condition 1). In further compliance with County of Maui Ordinance No. 3554 (Condition 1), Honua'ula Partners, LLC will: 1) comply with applicable water ordinances that pertain to the supply and transmission of water from the island of Maui when such ordinances are enacted; 2) offer to the County the right to purchase the water system when completed at the cost of development of the system; and 3) ensure that the water rates for the residential workforce housing units will be no higher than the general water consumer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, MCC.

In addition, non-potable water will be used for all irrigation purposes in compliance with County of Maui Ordinance No. 3554 (Condition 14)

In developing, maintaining, and operating the water system, Honua'ula Partners, LLC will comply with all requirements of Chapter 174C, HRS (State Water Code) and HAR, Chapters 13-167 to 13-171, as applicable, pertaining to CWRM and administration of the State Water Code. As recommended by CWRM, Honua'ula Partners, LLC will coordinate with the County to incorporate Honua'ula into the County's Water Use and Development Plan. Honua'ula Partners, LLC will also comply with: 1) DOH Engineering and Capacity report requirements; and 2) the County's Water Availability Policy, codified as Chapter 14.12, MCC. The above oversight processes ensure adequacy of the water source and that water source development will not interfere or conflict with County plans for source development. In addition, as stated in Section 3.5.1 (Groundwater), the UIC line¹², as established by the State DOH, is located approximately along the 600-foot elevation contour, above the majority of the Property. Therefore Honua'ula's on- and off-site wells are below the UIC line. Since the wells will provide the source of water for Honua'ula's potable (and non-potable) water system, setbacks will be established which may restrict new and existing injection well construction. Honua'ula Partners, LLC will inform landowners located within the setbacks surrounding the wells of the effect of such setbacks on the injection well development potential of their properties.

¹² Underground Injection Control Line (UIC) means the line on the DOH Underground Injection Control maps which separates exempted aquifers and underground sources of drinking water (Section 11-23-03, HAR).

Potable System

Source and Treatment – Brackish well water will be treated by RO to produce potable water for Honua'ula. The RO process involves initially passing the brackish water through a filter to remove particulate matter. The filtered water is then forced through a membrane under pressure. The membrane acts as a barrier to salts and other constituents. The water that passes through the membrane may be further chemically treated and disinfected, as necessary, prior to use.

The RO process generates brine in the course of producing potable water. However, by diluting the brine water with other non-potable water (brackish and R-1), the salt content will be reduced to a degree that it can be used for irrigation, ~~thus avoiding the use of injection wells to dispose of the brine.~~ In periods of extended wet weather when irrigation requirements are minimal, it may be necessary to dispose of the RO concentrate in a disposal well with delivery in the saltwater zone below the basal lens. Such a disposal well will be in compliance with all provisions of HAR Title 11, Chapter 11-23 (Underground Injection Control).

The RO plant will be located at the eastern border of the Property next to a water storage tank. A portion of the brackish water will bypass the RO plant for use as non-potable water for irrigation.

The RO plant and other components of the water system will be subject to regulation as a public water system and will meet requirements of the State DOH, including HAR Chapters 11-20 (Potable Water Systems), 11-21 (Cross-Connection & Backflow Control), and 11-25 (Operating Personnel in Water Treatment Plants). The water treatment facility and other components of the water system (i.e., storage, piping, pumps, and disinfection) are subject to the approval of the DOH Safe Drinking Water Branch before start up. In addition to successfully completing the start up testing process, the water system will be required to satisfy all components of HAR Chapter 11-20 (Potable Water Systems), including:

- Demonstration of capacity requirements and satisfactory technical, managerial, and financial capabilities to enable the system to comply with safe drinking water standards and requirements, including:
 - An adequate water source to serve current and future water users;
 - Adequate system technical performance;
 - An infrastructure replacement plan that includes estimates of the useful life and plans for the eventual replacement of the public water system's infrastructure;
 - An operational plan that includes a preventative and corrective maintenance program;
 - A clear management organization and communication structure;
 - An emergency response plan;

- Adequate financial capacity and dedicated sources of income, including income and cash reserves to pay annual operating expenses, unexpected significant repairs, and planned major work;
- Adequate budget controls, including performance reviews of actual expenditures and annual budgets, procedures to safeguard financial assets, and maintenance of detailed financial records that clearly identify sources of income and expenses involved in operating the public water system; and
- Demonstration of credit worthiness, including: 1) long-term dedicated revenue projections showing sufficient revenue for: a) operating and maintaining the public water system; b) performing anticipated repairs; c) replacement of major equipment; d) future expansion; and e) repayment of loans; and 2) credit reports that indicate that the public water system is financially healthy and credit worthy.
- Approval of the Director of Health prior to use, which is based upon the submission of a satisfactory engineering report meeting requirements of DOH;
- Identification (within the engineering report) of all potential sources of contamination and evaluation of alternative control measures that could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source; water quality analysis for all regulated contaminants, performed by the State Laboratories Division of the State of Hawaii, will be submitted to DOH to demonstrate compliance with all drinking water standards;
- Assessment to delineate a source water protection area and creation of a source water protection plan, including activities to protect the source of drinking water;
- Operation of the system by certified distribution and water treatment plant operators meeting the requirements of DOH;
- Design and operation of the potable system to prevent the cross-connection with the non-potable system and the possibility of backflow of water from the non-potable system to the drinking water system—the two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid contaminating the drinking water supply and all non-potable spigots and irrigated areas must be clearly labeled with warning signs to prevent the inadvertent consumption of non-potable water
- Addressing the potential of contaminating activities (as identified in the Hawaii Source Water Assessment Plan) within the source water protection area and activities that will be implemented to prevent or reduce the potential for contamination of the drinking water source.

Further, the County's Water Availability Policy, codified as Chapter 14.12, Maui County Code (MCC), requires verification of a long-term, reliable supply of water before subdivisions are approved. In accordance with Section 14.12.050 MCC, in reviewing and commenting on water source engineering reports the DWS Director shall consider (among other things) the following factors:

- Cumulative impacts;
- CWRM's Water Resources Protection Plan;
- The general plan and relevant community plans;
- The adverse impacts on surrounding aquifers and stream systems, including:
 - Water levels,
 - Water quality, including salinity levels,
 - Surface water-groundwater interactions, and
 - Adverse impacts on other existing, future, or planned wells;
- The adverse impacts on the water needs of residents currently being served and projected to be served by DWS;
- The adverse impacts on environmental resources that are rare or unique to the region and the project site (including natural, cultural, or human-made resources of historic, archaeological, or aesthetic significance);
- The adverse impacts on the exercise of traditional and customary Native Hawaiian rights and practices;
- United States Geological Survey studies;
- Whether the applicant is in full compliance with the State water code and County's water reporting laws;
- Whether the affected water source, including groundwater, surface water, or other source of water will exceed:
 - 90 percent of the sustainable yield;
 - Instream flow standards, or
 - Interim instream flow standards;
- The adverse impacts to the water needs of residents currently on a County "wait list" for water meters;

In addition, Honua'ula's private water system will be regulated as a public utility by the State Public Utility Commission (PUC). The PUC: 1) prescribes rates, tariffs, charges and fees; 2) determines the allowable rate of earnings in establishing rates; 3) issues guidelines concerning the general management of public utility businesses; and 4) acts on requests for the acquisition, sale, disposition or other exchange of utility properties, including mergers and consolidations.

Pressure Zones and Storage – The elevation of the Property ranges from 320 to 710 feet. To provide service and adequate water pressure over this range of elevation, the Property was divided into two pressure zones, correlating with a high and a low water storage system approximately divided by the 530-foot elevation. Water storage will be required for each pressure zone. A lower 0.5 MG potable water tank (at an approximate 640-foot elevation) will service the lower portion of the Property (below the 530 foot elevation) and will be located on-site along the eastern border adjacent to the RO plant. A higher 0.2 MG potable water tank (at an approximate 810-foot elevation) will be located off-site and east (mauka) of the Property and will service the upper portion of the Property (above the 530 foot elevation).

Distribution – The potable water distribution system will largely follow the proposed roadway system providing potable water service to residential lots and other buildings. Pressure-reducing valves will be used to regulate excessive pressures within the pressure zones.

Non-Potable System

Source – There are three sources of non-potable water: 1) brackish well water; 2) brine water from the RO facility; and 3) R-1 recycled water returned from the WWRF (see Section 4.8.2, Wastewater System).

Pressure Zones and Storage – Comparable to the potable water system, the Property is separated into two pressure zones for non-potable water due to the elevation difference across the Property. Storage tanks will be provided for each pressure zone. A lower 1.0 MG non-potable water tank will be located on site at the 640 foot elevation adjacent the RO plant. A higher 0.5 MG non-potable water tank will be located off-site and east (mauka) of the Property at the 810 foot elevation. Golf course irrigation water, supplied primarily from the WWRF, will be stored in lined water features located on the golf course.

Distribution – Similar to the potable system, the non-potable water distribution system will largely follow the proposed roadway system providing non-potable water to irrigate individual residential lots, roadway buffers, and other landscaped areas. A separate distribution system will be used to irrigate the golf course. Pressure reducing valves will be used to regulate excessive pressures within the pressure zones.

Estimated Water Infrastructure Cost and Consumer Rates

TNWRE prepared estimates of the cost to construct and operate Honua'ula's potable and non-potable water systems (2010c). The estimates are summarized below. Appendix B contains the complete estimate report.

The estimated potable and non-potable water infrastructure cost is \$21 million. This includes costs for: construction and testing the required off-site wells, piping from the off-site wells to the on-site storage tank, booster pumps, on- and off site potable and non-potable storage tanks, and the RO plant. It does not include piping for distribution to individual Honua'ula homes and businesses.

Based on infrastructure costs and assumptions such as infrastructure efficiencies, electrical power costs, and costs for operating personnel, administration, and maintenance, the daily operating cost for both potable and non-potable systems would be \$3,000 per day. The cost of capital recovery would be \$4,950 per day. The cost to consumers, with and without capital recovery would be as follows:

<u>Estimated Cost in Dollars per Thousand Gallons</u> <u>Items Included</u>	<u>Potable</u> <u>Water</u>	<u>Non-Potable</u> <u>Water</u>
<u>Based on Operation and Maintenance Exclusively</u> <u>(No Capital Recovery)</u>	<u>\$4.00</u>	<u>\$2.00</u>
<u>Based on Operation, Maintenance, and Full Capital</u> <u>Recovery</u>	<u>\$10.64</u>	<u>\$5.32</u>

For fiscal year 2010-2011 the cost for potable water for general water consumers set by the County in its annual budget is \$1.70 per 1,000 gallons for users that use up to 10,000 gallons bi-monthly. The price increases for users that use more than 10,000 gallons bi-monthly. In compliance with County of Maui Ordinance No. 3554 (Condition 1) water rates for the residential workforce housing units will be no higher than the general water consumer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, MCC.

Water Conservation

Honua'ula Partners, LLC is committed to aggressive water conservation strategies to reduce consumption, conserve resources, and minimize water demands. The goal is to reduce the total water requirements through a combination of water saving equipment and strategies. To conserve water within Honua'ula, Honua'ula Partners, LLC will implement water conservation recommendations of the County of Maui Department of Water Supply, including:

- Using climate-adapted plants for landscaping;
- Preventing over watering by automated systems;
- Not allowing single pass cooling pursuant to Section 14.21.20, MCC;
- Installing low-flow fixtures and devices throughout the community pursuant to Section 16.20A.680, MCC; and
- Maintaining fixtures to prevent leaks.

Water conservation is also central to the functioning of the golf course. While non-potable water will be used for all golf course irrigation, the golf course will also include a modern irrigation system designed to use non-potable water efficiently. The key component of the irrigation system will be a central computer to store information for every sprinkler, including the type of sprinkler, nozzle sizes, location, soil type, slope, infiltration, exposure, etc., so that the exact amount of water needed is applied (i.e., not just turning on sprinklers for a set duration). Cycle/Soak features will prevent runoff when heavy irrigation is needed. Flow management features will ensure optimum pressure and amount to every sprinkler.

Records of irrigation procedures will be maintained for each management zone. Each management zone will be treated independently; the highest priority zones (greens, tees, fairways) will receive the highest amounts of water, while lower priority zones (secondary

roughs, natural areas) will receive less water. These priority designations will help to efficiently manage overall water use on the golf course, providing the highest level of playability and aesthetics while incorporating water conservation and environmentally sustainable management practices.

In designing and implementing a detailed and efficient irrigation system, Honua'ula Partners, LLC will also be in compliance with County of Maui Ordinance No. 3554 Condition 18d, which requires compliance with Condition 5a of DOH's "12 Conditions Applicable to All New Golf Course Development." Specifically Condition 5a of the DOH's conditions relates to providing an irrigation plan.

4.8.2 Wastewater System

The Wailea area is serviced by the Kīhei WWRF, located approximately four miles northwest of Honua'ula. Sewage from the Wailea area is conveyed to the Kīhei WWRF via the South Kīhei Collection System, which consists of trunk sewer mains running along Wailea Alanui Drive and South Kīhei Road. Other Kīhei communities along this route are also served by this system. The Kīhei WWRF currently has unused capacity; however, the collection and transmission system may not be adequate to support Honua'ula. In addition, the County desires to reserve the unused plant capacity to accommodate other development in the existing service area, rather than extend the service area to Honua'ula.

The Mākena Wastewater Corporation owns and operates the Mākena WWRF, which is approximately one mile south of Honua'ula. The Mākena WWRF was is currently designed to handle wastewater flows of 720,000 gallons per day (gpd) and is also designed to be expandable to handle 1.54 million gallons per day (mgd). Currently the facility is only handling ~~391,413~~ 114,440 gpd, leaving an unused capacity of ~~328,587~~ 605,560 gpd.

Currently, the Honua'ula Property does not contain any wastewater infrastructure and is not served by a wastewater collection system. Honua'ula is located in the critical wastewater disposal area as determined by the Maui Wastewater Advisory Committee. No new cesspools are allowed in this area.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Wastewater from Honua'ula will be managed to protect human health and the environment, and Honua'ula will not rely upon or burden any public facilities. Using County of Maui design standards, ~~Wilson Okamoto Corporation projected~~ the average wastewater flow from Honua'ula at full build-out is projected to be ~~0.562 MGD~~ 380,000 gpd.

Wastewater Treatment

Honua'ula will not rely upon or burden any public wastewater facilities. In compliance with County of Maui Ordinance No. 3554 (Condition 17), Honua'ula Partners, LLC will either participate in the operation of a private WWRF and system that accommodates the needs of Honua'ula (Alternative 1) or provide a WWRF on-site (Alternative 2). No cesspools will be developed within Honua'ula. Connection to the Mākena WWRF would be in conformance with the option of participating in the operation of a private wastewater treatment facility, and therefore is being considered for Honua'ula wastewater treatment.

In further compliance with County of Maui Ordinance No. 3554, Honua'ula Partners, LLC ~~will~~ 1) provided a sewage disposal analysis to the Maui County Council that has been reviewed and commented on by DOH, DLNR, the County Department of Environmental Management, and DWS before Project District Phase II approval (Condition 16)¹³; and 2) will ensure that sewer rates for the residential workforce housing units will be no higher than the residential sewer rates set by the County in its annual budget, for as long as the units are subject to Chapter 2.96, MCC (Condition 17). Sewer rates for Honua'ula's market rate residential units have not yet been established; however, the Mākena WWRF is regulated as a public utility by the State Public Utility Commission (PUC), as are all private wastewater companies. If an on-site WWTF is built at Honua'ula, it will also be a private facility. The PUC prescribes rates, tariffs, charges and fees, for public utilities.

Wastewater system design, ~~and~~ construction, and operation will be in accordance with County standards and all wastewater plans and facilities will conform to applicable provisions of: Chapter 11-62, HAR (Wastewater Systems); Section 11-62-27, HAR (Recycled Water Systems); and Chapter 11-21, HAR (Cross-Connection and Backflow Control). Chapter 11-62, HAR (Wastewater Systems) specifically requires that wastewater systems shall not create or contribute to foul or noxious odors.

In complying with the DOH regulations, Honua'ula Partners, LLC will also be in compliance with County of Maui Ordinance No. 3554:

- Condition 18c, which requires compliance with Condition 4 of DOH's "12 Conditions Applicable to All New Golf Course Development" relating to connecting the golf course clubhouse and other golf course facilities to a WWRF; and
- Condition 18d, which requires compliance with Condition 5 of the DOH's "12 Conditions Applicable to All New Golf Course Development" relating to use of treated wastewater for golf course irrigation.

¹³ Honua'ula Partners, LLC submitted the sewage disposal analysis to the Maui County Council on May 11, 2010. After receiving the analysis, the Maui County Council accepted the analysis and did not subject Honua'ula to any additional conditions or amendments. As a result, Condition 16 has been fully satisfied.

Alternative 1 – Mākena WWRF – The first, and preferred, alternative is to transport wastewater to the Mākena WWRF for treatment. Wastewater from Honua'ula would be conveyed to the Mākena WWRF via a pump station and force main. R-1 recycled water would be pumped back to Honua'ula for golf course irrigation use. Figure 2 shows the proposed wastewater alignment for possible connection to the Mākena Resort WWRF. The alignment provides for underground wastewater transmission and R-1 return lines approximately 12-inches in diameter within an unpaved easement approximately 6,400 linear feet in length and 30 feet in width. The 30-foot easement width allows for access and maintenance parallel to the underground transmission line.

Mākena WWRF (as well as the County Kihei WWRF) uses a process called “extended aeration activated sludge/coagulation/filtration” to treat wastewater. With this process wastewater first passes through bar screens to remove large debris. The screened wastewater then enters aeration lagoons where naturally-occurring micro-organisms (called “activated sludge”) consume organic material. The micro-organisms settle to the bottom of a clarifier, and are returned to the aeration lagoon. Flocculants like ferric chloride and/or polymer are added to the clarified water to agglomerate small particles into larger particles that can be removed by a granular media filtration process. The filtered water is then disinfected using UV light prior to reuse.

Transporting wastewater to the Mākena WWRF for treatment provides the benefit of consolidating wastewater services for both Honua'ula and Mākena, allowing economies of scale in the treatment process and consolidated regulatory compliance. Sufficient golf course land is available within both Honua'ula and the Mākena Resort to reuse 100 percent of the recycled water for irrigation.

While there is currently unused capacity at the Mākena WWRF, it may be necessary to expand certain portions of the Mākena WWRF in the future to provide a small amount of additional capacity to accommodate the total projected Honua'ula wastewater flows along with the projected Mākena Resort flows before each project is completely built out.

The Mākena WWRF is currently designed to handle wastewater flows of 720,000 gpd and is also designed to be expandable to 1.54 million gallons per day (mgd). Currently the facility is only handling 114,440 gpd, leaving an unused capacity of 605,560 gpd based on the current capacity of 720,000 gpd. Future development within Mākena Resort is estimated to produce flows of 276,973 gpd. Therefore the total flow from the Mākena Resort is projected to be 391,413 gpd at build-out. See Table 5 below.

After the build-out of Honua'ula, the total Honua'ula wastewater flow is projected to be 380,000 gpd. Combined with the total Mākena Resort flow, the combined flow from both Mākena Resort and Honua'ula would be 771,413 gpd, which is 51,413 gpd more than the current capacity of 720,000 gpd of the Mākena WWRF. See Table 5 below. Preliminary indications are that the headworks, effluent filters, and UV disinfection systems would require modifications to handle the additional capacity. Expansion of the Mākena WWRF

will not be necessary until both Honua'ula and Mākena Resort approach 90 percent of build out, which could be 10 to 20 years from now. As both Honua'ula and Mākena Resort will be built out over a number of years, improvements can be implemented at the appropriate time, when needed.

Table 5. Current and Projected Mākena WWRF Capacities

Description	GPD
Current Mākena Resort flow	114,440
Future Mākena Resort flow	276,973
Total Mākena Resort flow at build-out	391,413
Honua'ula flow at build out	380,000
Total Mākena Resort and Honuaula flow at build-out	771,413
Current Mākena WWRF Capacity	720,000
Additional capacity required to accommodate both Mākena Resort and Honua'ula at build-out	51,413

Conveying wastewater from Honua'ula to the Mākena WWRF will require a pump station to receive the flows from Honua'ula. The pump station would be located at the southwest corner of the Property at approximately the same location as an on-site WWRF. The pump station would convey the wastewater via a force main directly to the Mākena WWRF. For recycled water to be returned to Honua'ula, a recycled wastewater pump station located at or near the Mākena WWRF and a force main would be required. See Figure 2 for the location of the wastewater force main route to the Mākena WWRF.

Honua'ula Partners, LLC has had substantive discussions about this alternative with the Mākena WWRF owner, Mākena Wastewater Corporation, and they support the connection; however, formal agreements with Mākena Wastewater Corporation have not yet been finalized.

Alternative 2 – On-Site Treatment Plant – The second alternative is to construct an on-site WWRF that is capable of treating all of the Honua'ula wastewater to R-1 standards. The on-site WWRF would be located at the southwest corner of the Property on approximately four acres of land. R-1 water would be delivered to the Honua'ula golf course water features for storage and eventual irrigation of the golf course and other landscaped areas. RO concentrate from the on-site desalination facility (see Section 4.8.1 (Water System)) would be blended with the R-1 water.

A membrane bioreactor (MBR) wastewater treatment system is proposed for the on-site WWRF to produce R-1 quality water for non-potable use. The MBR process is a biological process (activated sludge process) combined with a separation process (membrane system). MBR systems are widely used throughout the world and are considered an industry standard for the production of reliable R-1 recycled water. In addition, MBR

systems have the smallest footprint of the various biological treatment systems available and provide the highest quality recycled water.

In a MBR system the first element of the wastewater treatment process is screening to remove debris. This takes place in an enclosed building to control odors. Air collected from the building is then passed through a biofilter to remove odors. During the MBR process, wastewater is pumped into aeration basins, where a population of naturally-occurring microbes (activated sludge) treats the water by consuming organic matter. The activated sludge is separated from the water using membranes, located in the MBR basins. The activated sludge is pumped back to the head-end of the aeration basin to be used again.

Periodically, excess activated sludge must be removed (wasted) from the treatment system. The activated sludge goes through a thickening process to form dewatered solids. The dewatered solids will be taken to the County landfill for composting by EKO Compost, which operates a composting facility at the landfill. At build-out the on-site WWRF is expected to produce approximately 17 wet tons of dewatered solids per week. EKO Compost has the capacity to accept this amount of dewatered solids for composting.

The treated water will be disinfected using ultraviolet (UV) light. The treated water will flow through concrete channels containing banks of submerged UV light bulbs. The water will be disinfected as it passes by the bulbs and is exposed to the UV light. The UV light penetrates the cells of pathogenic organisms, rendering them unable to replicate. The disinfected water exiting the channel will meet R-1 standards and will be suitable for reuse. A pump station located adjacent to the UV channel will deliver the R-1 water to the Honua'ula golf course.

Another potential approach to treating Honua'ula wastewater in lieu of the MBR is via an extended aeration activated sludge process, followed by addition of coagulant chemicals and granular media or cloth disk filtration. The main difference between MBRs and other R-1 treatment technologies (such as the extended aeration activated sludge/coagulation/filtration process used at the Mākena and County Kihei WWRFs) is the method of separating the suspended solids from the water. MBRs have thin membranes with many thousands of micro-perforations, which are too small for the passage of suspended solids and microorganisms present in the wastewater, but large enough to allow the passage of water molecules. In the extended aeration activated sludge/coagulation/filtration process, combination flocculants like ferric chloride and/or polymer are added to treated water to agglomerate small particles into larger particles that can be removed by a granular media filtration process. When coupled with a suitable disinfection system, both MBR systems and extended aeration activated sludge/coagulation/filtration systems are capable of reliably producing R-1 quality water that meets all DOH R-1 water quality standards. In addition, MBR systems require less land area to treat a given flow than extended aeration activated sludge/coagulation/filtration systems. This is because the MBR membranes perform the equivalent treatment of gravity sedimentation and filtration in one tank. Additional land

area within Honua'ula would have to be set aside for the WWRF if ~~this approach is taken~~ an extended aeration activated sludge/coagulation/filtration system was used. The extended aeration activated sludge/coagulation/filtration approach is currently used at the Mākena WWRF and the Kihei WWRF.

On-Site Collection System

The on-site wastewater collection system will collect flows from the various areas and uses within Honua'ula. Sewer lines will essentially follow the proposed roadway system. A network of eight-inch gravity sewer lines will collect wastewater from homes and buildings throughout the site within four service areas. In each of these service areas, the sewer lines will follow the topography and will flow by gravity. Pump stations will be used where the topography requires flows to travel upslope.

All wastewater flows will flow to the southwest corner of Honua'ula. From there the flows will either enter the on-site WWRF for treatment or will be pumped to the Mākena WWRF for treatment.

Recycled Water Use

After treatment—at either the possible on-site WWRF or the existing Mākena WWRF—recycled water will be stored in lined water features located on the golf course. Brine water from the RO facility will be mixed with the recycled water. The mixed recycled/brine water will then be distributed for irrigation purposes. In compliance with County of Maui Ordinance No. 3554 (Condition 17), none of the recycled water will be placed into injection wells.

The Mākena WWRF includes an unlined wet weather storage/disposal back-up basin to handle treated peak wet weather flows in conformance with DOH rules. This basin accommodates treated water when quantities exceed the irrigation requirements, such as in time of wet weather when golf course irrigation may not be necessary or when peak flows enter the wastewater system due to storm water runoff. Treated water discharged into the basin either percolates or evaporates. If an on-site WWRF is built for Honua'ula, a similar wet weather storage/disposal basin will be provided for management of recycled water during extended wet weather periods after the golf course water features are full. Treated water stored in the wet weather storage/disposal back-up basin will percolate, evaporate, or be pumped back to the treatment plant for additional treatment. The basin will be designed to accommodate the peak recycled water flow rate and will have storage volume of approximately 4.6 million gallons, or the capacity to store approximately 12 days of average dry weather flow and therefore no recycled water will be discharged.

Recycled water (including the mixed recycled/brine water) will be distributed in piping systems that are completely separate from potable water distribution piping systems. The DOH has established requirements for piping systems used to distribute recycled water to the points of use. The DOH requirements are designed to reduce the risk of accidental

cross-connection between potable and non-potable systems. Honua'ula piping systems will be in full compliance with these requirements.

The use of R-1 irrigation water is not expected to have negative impacts on groundwater or nearshore waters. See Section 3.5 (Groundwater Resources and Water Quality) for complete discussion on potential impacts to groundwater and nearshore waters.

4.8.3 Drainage System

Honua'ula

Honua'ula is on the lower southwestern slope of Haleakalā. Site elevations range from 320 feet to 710 feet with slopes of generally three to 17 percent. The Property and areas immediately mauka are undeveloped. The Wailea Resort, including three golf courses, is located makai of Honua'ula.

Currently, surface runoff mauka of the Property sheet flows over the Property or through natural drainage paths toward the ocean. The Property is generally semi-arid, with rainfall averaging about 15 inches per year. Drainage characteristics impacting the site are typical of the western slope of Haleakalā.

There are approximately 15 natural drainageways in which runoff flows through the Property. Considering the relatively low rainfall at the Property, these drainage ways are generally dry throughout the year. There are no existing drainage improvements mauka of the Property. The entire property is designated on the FIRM as Zone € X, which is outside of the 500-year flood plain in an area of minimal flooding (Figure 11). The Department of the Army, United States Corps of Engineers has determined that the Property does not contain any navigable waters or other waters of the United States; therefore a Department of Army (DA) permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404) is not required for any proposed or future work.

Based on County drainage standards, existing (pre-development) flow (based on a 100 year 24 hour storm) from the Property is calculated to be 2,195 cubic feet per second (cfs).

Off-Property Areas

There are nine existing culvert crossings spanning the Pi'ilani Highway widening area from Kilohana Drive to Wailea Ike Drive. The highway drainage system consists of concrete swales, curb/gutter, catch basins/grated drain inlets and drain pipes at along the highway. These systems drain to the existing culverts and then to the adjoining gulches. No retention systems currently exist within the highway right-of-way. Mauka offsite flows are currently intercepted by a concrete drainage ditch located along the eastern boundary of the highway and are then conveyed to the existing culverts. Existing flows within highway widening area were calculated to be approximately 65.2 cfs based on a 25-year,

one-hour storm recurrence interval in accordance with DOT Design Criteria for Highway Drainage (2006).

Stormwater from the Wailea Alanui/Wailea Ike Drive intersection is collected and disposed of by the existing roadway drainage system. Runoff from the north portion of the intersection flows northward toward an existing catch basin about 300 feet away. Runoff from the south portion of the intersection flows southward to a catch basin about 400 feet away. Existing flows from the north portion of the intersection were calculated to be approximately 1.2 cfs. Existing flows from the south portion of the intersection were calculated to be approximately 1.3 cfs. The calculations are based on a 50-year, one-hour storm recurrence interval in accordance with the County of Maui's "Rules for the Design of Storm Drainage Facilities."

The currently there are no drainage improvements in the areas of the areas of: 1) Honua'ula's off-site wells, waterline, and storage tank; and 2) the wastewater transmission line alignment for possible connection to the Mākena Resort WWRF.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula

Drainage from Honua'ula is not expected to have a significant adverse effect on groundwater, downstream properties, or marine waters. In accordance with the County of Maui's "Rules for the Design of Storm Drainage Facilities," all drainage improvements will be designed so that there will be no increase in the peak rate of stormwater runoff leaving the Property compared to existing conditions. The post-development runoff from the Property is estimated to be 3,114 cfs, an increase of 919 cfs over calculated existing conditions (pre-development). The discussion below sets forth the means by which Honua'ula will address this additional runoff in compliance with County of Maui requirements.

Runoff will be collected and managed through a drainage system. Roadways, homes, buildings, and other facilities within Honua'ula will increase impervious areas within the Property thereby increasing surface runoff flow rates and volumes. However, approximately half of the Property will be open space, including the Native Plant Preservation Area, ~~other~~ Native Plant Conservation Areas, natural gulches, open space buffers along Pi'ilani Highway and the border of Maui Meadows, and the golf course. The extensive open space and the golf course are expected to assist drainage control as open space areas will provide pervious areas for percolation of runoff and golf course greens, fairways, and plants will either absorb runoff or slow drainage flows. Of the 18 inches of average annual rainfall received on the Property, it is assumed that one-third of the rainfall percolates to groundwater and the remaining two-thirds evaporates to the atmosphere or becomes runoff.

To manage drainage within the Property, the drainage system will include detention basins, drainage pipes, open channels, and roadway culverts. This system will be designed to not only manage flood control but also to reduce pollution associated with stormwater. Runoff will be stored in ~~26~~27 detention basins located on the Property in low lying areas, within the golf course, or along the makai Property boundary. Each of the detention basins will have a drainage outlet consisting, in part, of a vertical perforated pipe within a gravel mound which will act as a filter. In addition to reducing the peak runoff rate by detention storage, this configuration will also capture floatables and suspended solids in the basin and allow for settling of fine particles and pollutants, thus reducing sediments and pollutants in the water released from the detention basins. All detention basins will be designed with the proper volume to allow adequate draw-down time for water quality treatment. In addition, the detention basins will be maintained so that the capacity is not impaired. As design progresses a maintenance program will be developed. In general, the detention basins will contain markers so that the depth of silt at the bottom can be measured. When the silt reaches a certain level, the silt will be removed and properly disposed of. With the use of detention basins, the peak rate of runoff leaving the Property will not increase over current conditions and seepage of water into the ground from the detention basins will actually increase the amount of percolation to groundwater. Residential areas will be graded so that runoff flows to drain inlet structures. From the drains, the flow will be piped through a series of drain lines in the roadways to the detention basins. The majority of the drain lines will be 18-inch diameter and the remaining will be 24-inch diameter.

To supplement the detention system Low Impact Development (LID) techniques will be incorporated into the design of Honua'ula where appropriate. LID comprises a set of approaches and practices designed to reduce runoff of water and pollutants from the site at which they are generated. By means of infiltration, evapotranspiration, and rainwater reuse, LID techniques manage water and water pollutants at the source thereby reducing stormwater flows to detention basins. A goal of LID is to maintain or closely replicate predevelopment hydrology of the site with an understanding that rainwater is not merely a waste product to be disposed of, but a resource to be reused.

With LID techniques small-scale practices are employed to control stormwater runoff on-site. The practices are designed to work in concert with other stormwater best management practices, such as detention basins. While LID techniques span a wide range of design considerations, infiltration and filtration are two primary practices. Infiltration practices are engineered structures or landscape features designed to capture and infiltrate runoff. Infiltration can both reduce the volume of water discharged from the site and contribute to groundwater recharge. Examples of infiltration practices include: 1) infiltration basins and trenches which are shallow depressions designed to infiltrate stormwater through permeable soils; 2) rain gardens and other vegetated treatment systems that provide a planted depression to collect rainwater (usually from a single home) and allow absorption on-site; and 3) disconnected down spouts, which are roof gutter downspouts that are not connected to the sewer system to allow roof water to drain to

lawns and gardens (or rainwater storage barrels) and permit plants and soils filter pollutants.

Similar to infiltration practices, filtration practices treat runoff by filtering it through media designed to capture pollutants (such as sand or vegetation). Like infiltration, filtration can both reduce the volume of water discharged from the site and contribute to groundwater recharge, but filtration practices have the added advantage of providing increased pollutant removal. Examples of filtration practices include: 1) bioswales, which are landscaped drainage courses with gently sloped sides filled with vegetation, compost and/or rocks designed to slow down water flows and trap pollutants and silt; 2) vegetated swales which are smaller, broad, shallow, channels with dense vegetation covering the side slopes and bottom to trap pollutants, promote infiltration, and reduce flow velocity; and 3) vegetated filter strips, which are bands of vegetation intended to treat sheet flow from adjacent impervious areas (such as parking lots) by slowing runoff velocities, filtering out sediment and other pollutants, and providing some infiltration into underlying soils.

LID practices can also effectively treat and manage non-point source pollution from drainage by filtering “first flush” runoff volumes. Non-point source pollution typically results from rainwater washing across impermeable surfaces such as roadways, parking lots, and sidewalks and with it picking up pollutants such as oil, detergents, pesticides, fertilizer, and pet wastes. Most surface pollutants are collected during the first one-half inch, or “first flush” of a storm event. LID practices can filter these pollutants before they reach detention basins. Traditional conveyance systems, such as drains and catch basins in parking lots and roadways can also be designed to capture this first flush with installed filtering materials.

Strategically integrated LID practices applied throughout the Property—from individual building sites to larger areas such as parking lots and roadways—can lessen stormwater flows to detention basins and increase the length of time for flows to travel to detention basins. The increased time allows for greater opportunities for groundwater recharge, filtration, and evapotranspiration. LID practices can result in enhanced environmental performance, while at the same time reducing costs compared to traditional stormwater management approaches.

As an application of LID, ~~Natural~~ natural open drainage channels will be provided throughout the site to divert runoff toward the detention basins. Open channels also will be provided at the upper limits of the Property to direct mauka off-site runoff entering the Property to natural drainage ways on-site. These channels will remain natural and unlined with concrete. Roadway culverts will be provided throughout the Property to divert runoff under major streets and prevent flooding. In addition, bioswales, landscape elements designed to remove silt, ~~may~~ will be ~~an option~~ provided along roadways where appropriate.

Section 3.5.1 (Groundwater) contains discussion on potential impacts due to percolation of stormwater and irrigation water to groundwater. In general, reductions in nitrogen and

phosphorus loading are expected, which would result in positive impacts regarding groundwater flowing to the ocean and ocean water quality. Section 3.5.2 (Nearshore Marine Environment) contains discussion on potential impacts to ocean water quality. The nearshore water quality assessment (MRC 2010; Appendix D) concludes that: "the estimates of changes to groundwater and surface water would result in a decrease in nutrient and sediment loading to the ocean relative to the existing conditions. With such a scenario, it is evident that there would be no expected impacts to the nearshore marine ecosystem owing to development of Honua'ula."

All drainage systems and detention basins will be designed in accordance with the "Rules for the Design of Storm Drainage Facilities in the County of Maui." In addition any detention basin with vertical dimensions that exceed its horizontal dimensions will also be in compliance with all provisions of HAR Title 11, Chapter 11-23 (Underground Injection Control). In compliance with County of Maui Ordinance No. 3554 (Condition 6), the Preliminary Engineering Report (Appendix P) includes a Drainage Master Plan and Phasing Plan of improvements.

Off-Property Areas

The widening of Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive will increase impervious surfaces by approximately 5.8 acres. The post-development runoff from the highway widening area is estimated to be 76.8 cfs, an increase of 11.6 cfs over calculated existing conditions (pre-development). The additional runoff will be retained in accordance with DOT Design Criteria for Highway Drainage (2006) and DOT Storm Water Permanent Best Management Practices Manual (2007) so that there is no increase in the peak rate of stormwater runoff compared to existing conditions.

Drainage system improvements will include grated drain inlets, catch basins, manholes, underground drainlines, surface retention basins and subsurface retention systems, extension of existing culverts, and construction of new inlet and outlet structures. The increased runoff will be retained via the retention systems. Coordination with the Army Corp of Engineers, Department of Health and Department of Land and Natural Resources will be undertaken during the planning and design of the highway widening to address applicable permitting requirements for culvert modification work. In addition to reducing peak flow rates, the proposed stormwater system will reduce the discharge of pollutants to the maximum extent practicable in accordance with the DOT Storm Water Permanent Best Management Practices Manual (2007).

A National Pollutant Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activities will be obtained and the requirements of the approved NPDES permit and Best Management Practices (BMPs) plan will be adhered to during construction. At a minimum silt fences, diversion berms, gravel egress, truck wash down areas and dust screens will be included in the BMP plan.

The post-development runoff from the Wailea Alanui/Wailea Ike Drive intersection improvements is estimated to be 1.0 cfs for the north portion of the intersection and 1.6 cfs from the south portion, an increase over calculated existing conditions (pre-development) of 0.1 cfs for the north portion and 0.3 cfs for the south portion. These increases are nominal and the existing drainage system has the capacity to accommodate this additional runoff. Existing drainage patterns will not be altered and the intersection improvements will have no adverse drainage impacts on the existing drainage facilities or downstream properties.

No significant changes to current drainage patterns are expected in the areas of: 1) Honua'ula's off-site wells, waterline, and storage tank; and 2) the wastewater transmission line alignment for possible connection to the Mākena Resort WWRF. Figure 2 shows location of this water and wastewater infrastructure.

The waterline alignment provides for an underground waterline within in an unpaved easement approximately 12,000 linear feet in length and 30 feet in width. The wastewater alignment provides for underground wastewater transmission and R-1 return lines within an unpaved easement approximately 6,400 linear feet in length and 30 feet in width. The 30-foot easement widths allow for access and maintenance parallel to the underground lines. Because the waterline and wastewater and R-1 return lines will be underground and the easements will not be paved, significant changes to current drainage patterns are not expected.

4.8.4 Internal Roadways

Currently access to Honua'ula is from the southern terminus of Pi'ilani Highway at the intersection with Wailea Ike Drive. Kaukahi Street, a private two-lane street within Wailea, provides a second, controlled access.

The creation of Honua'ula will include a complete internal roadway system and significant improvements to the intersection of Pi'ilani Highway and Wailea Ike Drive, which will be the primary entrance to Honua'ula. Before construction within Honua'ula, with the exception of grading, Honua'ula Partners, LLC will widen Pi'ilani Highway from Kilohana Drive to Wailea Ike Drive to four lanes of traffic, in accordance with County of Maui Ordinance No. 3554 (Condition 2a). This work will include creating the entrance to Honua'ula by reconfiguring the intersection of Pi'ilani Highway and Wailea Ike Drive. When first constructed, the entrance to Honua'ula at the Pi'ilani Highway/Wailea Ike Drive intersection will be a "T" intersection (as opposed to an "L" currently), with Pi'ilani Highway terminating as it currently does, Wailea Ike Drive extending to the west as it currently does, and the Honua'ula entrance extending to the east. The reconfigured intersection will include a traffic signal, a free right-turn lane from Pi'ilani Highway to Wailea Ike Drive, and a second right-turn lane from Wailea Ike Drive to northbound Pi'ilani Highway, in accordance with County of Maui Ordinance No. 3554 (Condition 2d).

At or before the completion of 50 percent of Honua'ula, Honua'ula Partners, LLC will extend Pi'ilani Highway south into Honua'ula, from Wailea Ike Drive to Kaukahi Street, in accordance with County of Maui Ordinance No. 3554 (Condition 2b). Thus the "T" intersection at Pi'ilani Highway/Wailea Ike Drive/Honua'ula entrance will become a standard four-way "cross" intersection. Connecting Pi'ilani Highway with Kaukahi Street will enable Kaukahi Street to provide a second access into Honua'ula. Since Kaukahi Street is a private street, it is planned to be gated within Wailea Resort to address the concerns of the Wailea Community Association.

Internal roadways within Honua'ula will include six major types:

1. Parkway: The Honua'ula entrance will be a parkway consisting of a 102-foot ROW which includes an eight-foot median, two 12-foot travel lanes in the eastbound direction, three 12-foot travel lanes in the westbound direction. There will be curbs and gutters and a six-foot landscape area on each side. There also will be a 10-foot combined sidewalk/bikeway on the westbound direction and a four- to six-foot wide sidewalk on the eastbound direction.
2. Pi'ilani Highway Extension: Honua'ula Partners, LLC will work in coordination with DOT regarding extending Pi'ilani Highway into Honua'ula and any internal access points needed; however preliminarily ~~The~~ the length of the Pi'ilani Highway extension into Honua'ula ~~will~~ is planned to include three configurations:
 - a. Wailea Ike Drive Intersection: The first configuration, starting at the Pi'ilani Highway/Wailea Ike Drive/Honua'ula entrance intersection (within the State ROW), will consist of a 105-foot ROW with two 12-foot thru lanes, one 12-foot right turn lane and one 11-foot left turn lane for northbound traffic. There will be a median with one 12-foot southbound lane and curbs, gutters, and a four to six-foot wide meandering sidewalk on the makai side of the street.
 - b. South of the Wailea Ike Drive Intersection: This configuration (within the State ROW) will consist of one 12-foot lane in each direction with an 11-foot middle turning lane. There will be curbs, gutters and a four to six-foot wide meandering sidewalk on the makai side of the street. The ROW width varies from 140 to 202 feet.
 - c. South of the Wailea Ike Drive Intersection: The last configuration within the Property will consist of a 54-foot ROW with an 11-foot lane with two-foot paved shoulders and an eight-foot bioswale in each direction. A six-foot landscape area and six-foot wide sidewalk will be located on one side of the road. This segment will connect with Kaukahi Street but will not extend to the mauka boundary of the Property.
3. Collector Roads: There will be two alternatives for collector roads within Honua'ula. Both alternatives will consist of a 60-foot ROW with two 11-foot travel lanes.

- a. Alternative 1: The first alternative includes an eight-foot wide bioswale and 10-foot wide meandering sidewalk/bikeway on one side of the road and a 15-foot bioswale/landscape area on the other side.
 - b. Alternative 2: The second alternative includes a four-foot wide paved bike lane in each direction adjacent to the travel lanes. One side of the road will contain a four to six-foot wide meandering sidewalk with a variable bioswale/landscape area. The other side will contain a 15-foot bioswale/landscape area.
4. Minor Streets: Minor streets within Honua'ula will consist of a 52-foot ROW, widening to 58-feet in areas where a four to six-foot wide sidewalk will be provided. There will be two 11-foot travel lanes and a 15-foot wide bioswale/landscape area on each side. An eight-foot wide paved parking lane will be provided at designated locations.
 5. Cul De Sacs: Cul de sacs within Honua'ula will consist of a 52-foot ROW with two 11-foot travel lanes and a 15-foot wide bioswale/landscape area on each side. An eight-foot wide paved parking lane will be provided at designated locations.
 6. Village Streets: There will be two alternatives for Village Streets within Honua'ula - one for parking on one side of the street and the other for parking on both sides:
 - a. Parking on One Side of the Street: This alternative will consist of a 56-foot ROW with two 11-foot travel lanes, curbs, gutters, a six-foot landscape area and a four to six-foot wide sidewalk on both sides of the street. An eight-foot parking lane will be provided on one side of the street.
 - b. Parking on Two Sides of the Street: This alternative will consist of a 62-foot ROW with two 11-foot travel lanes, curbs, gutters, a six-foot landscape area, and four to six-foot wide sidewalks on both sides of the street. An eight-foot parking lane will be provided on both sides of the street.

4.8.5 Solid Waste

The County of Maui Department of Environmental Management (DEM), Solid Waste Division provides residential refuse collection in the Kīhei-Mākena area. Solid waste generated in the Kīhei-Mākena region is transported to the Central Maui Landfill located in Pu'unēnē, four miles southeast of the Kahului Airport on Pūlehu Road. The Central Maui Landfill receives approximately 500 tons of solid waste per day. Since 2000, approximately 30 percent of the solid waste generated annually in Maui County is diverted by means of recycling, reuse, and composting (R.M Towill Corporation 2007). The County is targeting a 50 percent waste diversion rate by 2030 (R.M Towill Corporation 2007).

Green waste is collected by EKO Compost, which is also located at the Central Maui Landfill. Another private company, Maui Earth Compost, operates two facilities on Maui.

One is located on the corner of Hansen Road and Pūlehu Road in Pu'unēnē, and the other is in central Kīhei off of Pi'ilani Highway behind the County wastewater treatment facility. Demolition and construction waste is accepted at the Maui Demolition and Construction Landfill (privately operated) near Mā'alaea.

As part of the County's recycling program, plastic, glass, metal, cardboard, and newspaper can be recycled when left at various drop-boxes throughout the County. Drop-boxes are typically located on public property, such as schools or County land. The closest existing County recycling drop-box is located at the corner of Welakahao Road and Pi'ilani Highway across from Hope Chapel. A private company, Maui Recycling Services, provides curbside collection on a subscription basis for central Maui. Also, private haulers have piloted curbside recycling in selected communities.

Currently, solid waste is not being generated on the Property.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Construction

Waste generated by site preparation will primarily consist of vegetation, rocks, and debris from clearing, grubbing, and grading. Soil and rocks displaced from grading and clearing will be used as fill within the site as needed. Construction waste will consist of waste lumber, concrete, and other building materials.

Honua'ula Partners, LLC is committed to limiting the environmental impact resulting from construction of Honua'ula. As much as practical, construction plans will specify the use of products with recycled content (such as steel, concrete aggregate fill, drywall, carpet, and glass tile) and the use of locally produced products (such as plastic lumber, hydromulch, soil amendments, and glass tile).

A solid waste management plan will be coordinated with the County's Department of Environmental Management Solid Waste Division for the disposal of on-site and construction-related waste material. Honua'ula Partners, LLC will work with contractors to minimize the amount of solid waste generated during the construction. A job-site waste management and recycling program will be implemented to maintain clean construction sites, maximize material recycling, and minimize disposal truck traffic impacts. This recycling program will incorporate the "Three Rs" of effective construction waste management:

- Reduce: by preventing waste before it happens through efficient design;
- Reuse: by using materials removed during demolition (such as rocks and concrete) on-site; and
- Recycling: by separating recyclable materials from non-recyclable materials and supplying these recyclable materials to a recycler for use as new products.

Demolition and construction waste that cannot be recycled will be taken to the Maui Demolition and Construction Landfill (privately operated) near Mā'alaea.

Post-Construction

The County's DEM, Solid Waste Division estimates that residential households on Maui generate approximately 2.3 tons of solid waste per household per year. Commercial units on Maui generate approximately 1.58 tons of solid waste per employee per year. Solid waste generation includes all the waste produced in a residence or business, including that which is reused or recycled as well as that which is disposed of in landfills.

Using the above rates, after full build-out and occupancy of all Honua'ula homes and commercial units, total waste generated within Honua'ula is estimated to be approximately 3,249 tons per year. Using the County's current waste diversion rate of 30 percent, total waste from Honua'ula is estimated to be approximately 2,274 tons per year. Achieving the County's target waste diversion rate of 50 percent by 2030 would reduce Honua'ula's total waste to 1,624 tons per year.

Honua'ula will support the County's recycling, reuse, and composting activities. The County of Maui Integrated Solid Waste Management Plan (2009) provides strategies for diverting solid waste from landfills to reduce landfill dependency, save landfill capacity and improve operational efficiency. Honua'ula will implement these strategies by providing options for recycling, such as collection systems and bin spaces, within Honua'ula, and promoting sound recycling practices among residents and guests. After the community is occupied by residents, to the extent practical, wastes such as aluminum, paper, newspaper, glass, and plastic containers will be recycled.

Green waste, particularly from the golf course, may be processed on-site and reused by:

- Collecting organic waste material for composting;
- Applying the final composted product as topdressing to reduce the dependency on chemical treatments;
- Using mulches and clippings for erosion controls, stabilizers, and/or resurfacing in high utility areas; and
- Not removing grass clippings from fairways, roughs, and other turf areas.

Provisions for recycling golf course green waste will be in compliance with County of Maui Ordinance No. 3554 (Condition 18h), which requires compliance with Condition 10 of DOH's "12 Conditions Applicable to All New Golf Course Development" concerning solid waste disposal, managing waste so that it does not create a nuisance, and composting green waste for subsequent use as a soil conditioner or mulching material.

Waste that cannot be recycled will be disposed of in the County's Central Maui Landfill in Pu'unēnē. In the Public Facilities Assessment Update County of Maui (2007), R.M. Towill

Corporation projected that the Central Maui Landfill will have adequate capacity to accommodate residential and commercial waste through the year 2025. This projection was arrived at by multiplying Maui County's de facto population projections by an estimated number of pounds per person per day of waste generated and assumes that solid waste generated by commercial and industrial growth will be captured by a corresponding trend in projected population growth. This estimate does not take into account future increases in source reduction and waste diversion. Increases in waste diversion achieved through education, recycling, composting, and reuse programs are expected to decrease demand for landfill space and extend the life of the Central Maui Landfill beyond the currently projected closure date. The County's DEM Solid Waste Division anticipates that additional phases of the Central Maui Landfill will be developed as needed to accommodate future waste.

4.8.6 Electrical System

The Kīhei-Mākena region is serviced by a 69 kV (kilovolt) power line that runs from the 'Ulupalakua Ranch, mauka of Honua'ula, to the MECO substation (Wailea Substation) located on a separate parcel (TMK (2)2-1-08: 043) near the western boundary of the makai portion of the Property. The Wailea Substation is currently being fed by transmission lines from the Maalaea Power Plant, northwest of the Property and from Kealahou Switchyard, mauka of the Property. The substation converts the 69 kV power to 12.47 kV for distribution to the Wailea area. The converted 12.47 kV lines run within a 12-foot wide easement along the makai boundary of the Property. The Wailea Substation is nearly filled to capacity.

MECO supports net energy metering as a way to encourage the use of eligible renewable energy electricity generators by residential and commercial customers. Net energy metering allows a MECO customer to: 1) offset all or part of the electricity they would normally receive from MECO with energy produced by the customer's renewable generation system (e.g. solar photovoltaic system); and 2) export any excess electricity they produce to the MECO grid for use by MECO in meeting electrical demand elsewhere.

MECO customers that own or lease an eligible renewable energy generator may enter into an agreement with MECO to connect their generator to the utility grid, allowing it to feed surplus electricity into the grid. Net energy metering means that any kilowatt-hours the customer's renewable energy generator feeds into the grid will be subtracted from the kilowatt-hours of electricity the customer obtains from MECO to determine the net amount of kilowatt-hours. The customer is then billed only on the net kilowatt-hours.

By Public Utility Commission (PUC) order, net energy metering is available to MECO customers on a first come, first served basis until the sum of the total energy received from the renewable energy generators equals four percent of MECO's current system peak demand. This cap is in place because when MECO customers participate in net energy metering, they receive credit at the retail rate for self-produced electricity. The retail electric rate that MECO charges includes not only recovery of the cost of producing

electricity, but also the cost for: 1) facilities (e.g., lines, substations, etc.) to deliver power to MECO customers; 2) maintaining and operating facilities; and 3) administrative and other operating costs, such as billing. Those MECO customers who produce their own electricity on-site only incur the cost of generating the electricity, not additional delivery and other costs. By receiving credit at the full retail rate, in essence, the MECO customer who net meters is receiving a subsidy from all other customers. By providing a cap, the subsidy can be kept to a reasonable level and still help to support small to medium renewable energy producers.

POTENTIAL IMPACTS AND MITIGATION MEASURES

When fully built-out, the peak forecasted electrical demand for Honua'ula is estimated to be 9,467 11,103.3 kilowatts (kW) per month. This peak forecasted electrical demand represents "conventional" demand without consideration of solar water heating, renewable energy systems, or other measures to reduce the energy consumption. Honua'ula Partners, LLC's electrical engineer calculated this demand in consultation with MECO based on empirical values derived from records of past electrical consumption of other similar facilities. The total forecasted demand includes estimated electrical loads for: 1) single- and multi-family homes; 2) neighborhood commercial uses; 3) golf course facilities including, the clubhouse and maintenance facility; and 4) infrastructure facilities, including well pumps, the reverse osmosis facility, the wastewater reclamation facility, and streetlights.

Honua'ula Partners, LLC's electrical engineer has been in communication with MECO to ensure service is provided. Based on the forecasted Honua'ula electrical demand and use, MECO anticipates additional transformer units or new substation development may be necessary. The current plans for the Property include an area for the expansion of the existing substation (Figure 1).

~~MECO is aware that Honua'ula Partners, LLC will provide area for the expansion of the existing substation, but at this time cannot confirm that the expansion area is needed without more detailed information, including projections for electrical demand for other proposed projects in the region. MECO has stated that they continuously attempt to plan for additional substation sites to meet the electrical demand of the community. Honua'ula Partners, LLC's electrical engineer will continue to coordinate with MECO regarding the need for expanding the substation and Honua'ula Partners, LLC will continue to include an area for the expansion of the existing substation on Honua'ula plans.~~

It has not yet been determined whether expansion of the existing substation will be necessary. Honua'ula Partners, LLC's electrical engineer has provided available information regarding Honua'ula to MECO for their review and planning purposes. MECO has stated that additional review is required during the design development stage of Honua'ula to determine if expansion of the existing substation will be necessary. MECO has also stated that although the current capacity of the MECO electrical system to serve Honua'ula may be limited, with continuously evolving demands for MECO's service,

along with MECO's on-going efforts to upgrade and maintain their system to serve new and existing loads, capacity may be in place and adequate to serve Honua'ula by the time Honua'ula is under construction. MECO will continue to review its electrical system and requirements as Honua'ula progresses into the design development stage so that MECO will be able to evaluate: 1) the size of actual electrical loads that MECO is required to serve; 2) the dates when these loads need to be energized by MECO; and 3) the state of the MECO electrical system at the time when these loads are expected to be connected.

In anticipation of the need, Honua'ula Partners, LLC will continue to include an area for the expansion of the existing substation on Honua'ula plans. Should MECO not require additional area, the existing substation would not be expanded. Since MECO cannot make a determination until Honua'ula is within the design development stage, details on the requirements for serving Honua'ula are not available at this time. Should the substation be expanded, however, MECO's additional equipment (i.e. transformers, switchgear, cabling, etc.) and structures currently are anticipated to be similar to what is presently constructed at the existing substation. In response to a question from the Maui Planning Commission on the Draft EIS regarding the feasibility of the Wailea Substation expansion to include batteries for the storage of energy, a MECO representative noted that battery storage is expensive, but feasibility would not be evaluated based only on cost, but on many different considerations, such as land availability, integration design, system impact, etc. The MECO representative stated that MECO was exploring this option near the Wailea Substation as there are grant funds that may be available to offset the cost.

Maui Electric Company (MECO) strictly complies with all applicable Federal, State, and County regulations regarding public safety and the environment. MECO designs its substations in accordance with current and applicable codes and standards. Presently, the National Electrical Code, 2008 Edition, and the Uniform Building Code, 1997 Edition, as approved by the County of Maui, along with the National Electrical Safety Code, 2002 Edition; govern minimum separation and clearance requirements. In addition, MECO's substation equipment installations meet all applicable County, State, and Federal environmental regulations and guidelines and do not contain toxic substances.

All new electrical lines within Honua'ula will be underground and Honua'ula Partners, LLC proposes to place underground the existing overhead lines that run over the Property in the mauka-makai direction and along the makai boundary.

To facilitate renewable energy generation and net energy metering within Honua'ula, Honua'ula Partners, LLC will consider providing "photovoltaic ready" homes and commercial buildings to allow home and business owners the option of installing their own photovoltaic system. Features of "photovoltaic ready" homes and buildings could include: 1) roof slopes orientated for optimal photovoltaic efficiency and aesthetic appeal; and 2) specific items such as inverters, grid intertie components, and fundamental wiring to easily connect to roof top photovoltaic panels. "Photovoltaic ready" homes and buildings would make installation of photovoltaic systems more attractive for home and building owners, thereby encouraging net metering agreements with MECO and on-site

power generation. Because of the cap imposed by the PUC on the amount of total energy received from renewable energy generators, it may not be possible for all homes and buildings within Honua'ula to participate in net energy metering, and therefore not all homes in Honua'ula would need to be "photovoltaic ready" in anticipation of being able to participate in net energy metering.

Honua'ula Partners, LLC is committed to limiting the environmental impact of Honua'ula by reducing energy consumption. ~~Energy saving concepts and devices will be encouraged in the design of Honua'ula.~~ In compliance with Chapter 344 (State Environmental Policy) and Chapter 226 (Hawai'i State Planning Act), HRS, all Honua'ula buildings, activities, and grounds will be designed with energy-saving considerations. Design standards will specify low-impact lighting and will encourage energy-efficient building design and site development practices.

In compliance with County of Maui Ordinance No. 3554 (Condition 30), Honua'ula Partners, LLC will design and construct energy systems for all residential units to meet all applicable ENERGY STAR requirements established by the EPA in effect at the time of construction. Energy systems will include all hot water systems, roof and attic areas, outside walls, windows, air cooling systems, and heating systems.

The ENERGY STAR program was established in 1992 for energy-efficient computers. Now a joint program under the EPA and the U.S. Department of Energy, the ENERGY STAR program has grown to encompass more than 35 energy-efficient product categories for homes and workplace.

Homes that earn the ENERGY STAR designation must meet guidelines for energy efficiency set by the EPA. ENERGY STAR qualified homes can include a variety of energy-efficient features, such as effective insulation, high performance windows, tight construction and ducts, efficient heating and cooling equipment and ENERGY STAR qualified lighting and appliances.

In further compliance with County of Maui Ordinance No. 3554, Honua'ula Partners, LLC will: 1) equip all residential units (single-family and multi-family) with a primary hot water system at least as energy efficient as a conventional solar panel hot water system, sized to meet at least 80 percent of the hot water demand for the unit (Condition 30); 2) ensure that all air cooling systems and all heating systems for laundry facilities, swimming pools, and spa areas will make maximum use of energy-efficient construction and technology (Condition 30) ; and 3) obtain confirmation from MECO that the proposal to relocate and/or landscape MECO facilities is incorporated in the Project District Phase II application and site plan (Condition 18j).

Equipping all residential units with a primary hot water system at least as energy efficient as a conventional solar panel hot water system, sized to meet at least 80 percent of the hot water demand for the unit is expected to reduce the energy consumption of individual Honua'ula homes by approximately 32 percent since energy consumption for hot water heating is typically about 40 percent of total residential energy use. Based on average

residential energy consumption of approximately 600 kilowatt-hours (kWh) per home per month, at full build out of all homes in Honua'ula a 32 percent reduction in energy use would result in a savings of 220,800 kWh per month. In relation to total energy demand for all of Honua'ula the residential hot water systems would reduce total electrical demand by approximately 8.5 percent.

In addition to the water heating systems provided with all homes, if a homeowner chooses to install a photovoltaic system, electrical demand could be further reduced. Assuming a homeowner installs a 2 kW PV system and assuming a very conservative four hours per day of usable sunlight, an additional reduction in energy consumption (2 kW x 4 hours/day x 30 days/month) of 240 kWh per month would be contributed by each such home with a photovoltaic system. Assuming that 200 homeowners choose to install a PV system the total reduction in energy demand would be 48,000 kWh per month (200 homes x 240 kWh/month equals 48,000 kWh/month) and the resulting energy savings would equal approximately 1.85 percent of Honua'ula's total energy demand.

Cumulatively, a 10.4 percent reduction in energy consumption could be achieved with the energy savings from the hot water systems combined with 200 homes installing a photovoltaic system. Additional reductions in energy consumption are anticipated as a result of: 1) meeting all applicable ENERGY STAR requirements; 2) ensuring that all air cooling systems and all heating systems for laundry facilities, swimming pools, and spa areas make maximum use of energy-efficient construction; and 3) and other energy conservation measures; however the projected reduction in energy consumption from these additional measures has not been calculated.

The following additional energy saving methods and technologies will also be considered during the design phase of Honua'ula:

- Use of site shading, orientation, and naturally ventilated areas to reduce cooling load;
- Maximum use of day lighting;
- Use of high-efficiency compact fluorescent lighting;
- Exceeding Model Energy Code requirements;
- Roof and wall insulation, radiant barriers, and energy efficient windows;
- Use of solar parking lot lighting;
- Use of light color or "green" roofs;
- Use of roof and gutters to divert rainwater for landscaping;
- Use of landscaping for dust control and to minimize heat gain to area; and
- Use of photovoltaics, fuel cells and other renewable energy sources.
- Installation of right-sized air conditioning systems with duct work that does not pass through unconditioned space (i.e. attic) unless the duct itself is insulated.
- Installation of zoned air conditioning systems with programmable thermostats.

- Installation of energy feedback devices in homes, such as a TED (The Energy Detective) so occupants can monitor energy use and adapt behavior to reduce power use.

4.8.7 Communication Facilities

Hawaiian Telcom provides telephone service in the Kīhei-Mākena region, and Oceanic Time Warner Cable (Oceanic) provides cable service. The telephone system servicing the area consists of overhead and underground facilities. Hawaiian Telcom currently has fiber optic trunk cables along Piilani Highway and continuing across the western boundary of Honua'ula. Oceanic has an agreement with Hawaiian Telcom for joint use of utility poles that run along Piilani Highway and across the western boundary of Honua'ula. The poles support Oceanic fiber optic trunk cables that provide Oceanic telecommunication services to the area.

POTENTIAL IMPACTS AND MITIGATION MEASURES

It is anticipated that Hawaiian Telcom will provide telephone service to Honua'ula and Oceanic ~~Time Warner Cable~~ will provide cable service.

To provide telecommunication services to Honua'ula, Hawaiian Telcom intends to extend fiber optic cables onto the Property from their existing splice point, which is situated adjacent to the Pi'ilani Highway/Wailea Ike Drive intersection. Within the Property, Hawaiian Telcom will provide fiber optic distribution hubs in various locations to provide telecommunication services to individual homes and other users. Oceanic intends to extend fiber optic cables onto the Property from their existing trunk facilities. Within the Property Oceanic will provide power supply pedestals at various locations to facilitate providing and maintaining telecommunication services to individual homes and other users.

The telecommunication systems constructed on-site will be underground with the exception of fiber distribution hubs and power supply pedestals. Honua'ula Partners, LLC will provide a network of underground ducts and handholes in accordance with Hawaiian Telcom's and Oceanic's standards, and Hawaiian Telcom and Oceanic then will provide the cable systems within the ducts and make necessary arrangements for serving individual telecommunications requirements. Therefore, during the design development of Honua'ula, plans will be submitted to Hawaiian Telcom and Oceanic to verify their requirements.

4.9 SOCIO-ECONOMIC CHARACTERISTICS

The Hallstrom Group Inc., prepared an in-depth market study, economic impact analysis, and public costs/benefits assessment for Honua'ula. Key findings of the analysis along with other social-economic information are summarized below. Appendix Q contains the complete study.

4.9.1 Community Character

Honua'ula is located within the Kīhei-Mākena Community Plan region, which stretches from Mā'alaea in the north to La Perouse Bay in the south. This area contains the resort areas of Wailea and Mākena, and includes 25 percent of the Urban District lands on Maui. Urban development in the region consists of residential, commercial, and resort uses. The region has the second highest full-time resident population on Maui, with over 28,114 people in 2010. The region currently has the third highest number of jobs on the island and is forecasted to surpass the Lahaina Community Plan region by 2025. Kīhei-Mākena also contains the Maui Research and Technology Park, which has the potential to be a vibrant employment center for professional and technical resident workers. The region contains a diverse range of physical and socio-economic environments. The dry and mild climate coupled with proximity to recreation-oriented shoreline resources has fueled the visitor-based economy of the region.

The town of Kīhei serves as the commercial and residential center of the region, with Wailea and Mākena serving as the focal point for the majority of visitor activities. Many luxury hotels and several golf courses are located in Wailea and Mākena.

Many residents work in the community businesses and resorts, although Kīhei has long been planned to provide a centralized housing location for workers throughout the island. The gross household income among area residents is estimated at about \$1 billion.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula will complement the pattern of development in the Kīhei-Mākena region in a way that is consistent with the State Land Use Urban designation of the Property and envisioned in the *Kīhei-Mākena Community Plan*. In doing so, Honua'ula will help to satisfy the housing demand of a growing population and provide for a complete and vibrant community.

Honua'ula will differ substantially from the major coastal resort designations makai of the Property by providing a broad range of residential housing opportunities, rather than an economically stratified resort residential development.

Key objectives of Honua'ula include: 1) reflecting community values to create a unique and compelling community in context with the Kīhei-Mākena region; 2) preserving the inherent beauty of the Property by incorporating a Native Plant Preservation Area, Native Plant Conservation Areas (see Section 3.6 (Botanical Resources)), parks, and open space, as well as through excellence in landscaping and design ; 3) integrating natural and human-made boundaries and landmarks to craft a sense of place within a defined community; 4) incorporating and preserving natural and cultural resources; 5) including buffer zones between residential areas and Pi'ilani Highway; and 6) making walking and biking meaningful alternatives to driving by locating commercial and retail establishments

convenient to residential areas and integrating bicycle/pedestrian recreation ways throughout the community.

4.9.2 Population

Prior to the 1970s, Kīhei was a small coastal village with fewer than 3,000 residents, with very limited resort-oriented and commercial uses. By 1980, the population had more than doubled to about 7,000 persons, substantial commercial space was being developed, and the region was well-established as a desirable vacation locale offering a wide variety of resort units.

The overall population of Maui County has also exhibited relatively strong growth over the past decade. The ~~2000~~ 2010 United States Census reported that resident population of Maui County was ~~128,094~~ 154,834 people in ~~2000~~ 2010. This is more than double the 1980 total of 62,823 persons.

Population projections by the Maui County Planning Department (2006) indicate that the Maui Island population will reach 140,289 people in 2010¹⁴.

For the Kīhei-Mākena region, Maui County Planning Department (2006) projections indicate that the Kīhei-Mākena population will reach 28,114 people in 2010.

In addition to the resident population, for the year 2010 the Maui County Planning Department projects that the Maui Island average visitor census is 49,476 people. The average visitor census is defined as the average number of visitors on an average day. Approximately 21,621 (43 percent of total) of these visitors are in the Kīhei-Mākena region (Maui County Planning Department 2006).

Combining the resident population and the average visitor census, the total population of Maui is estimated to be 189,765 people in 2010. The total population of the Kīhei-Mākena region is estimated to be 49,735 people in 2010.

Currently the Honua'ula Property does not contain any residents.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Projections indicate that the Maui Island population will increase to 174,184 people by 2025, a 24 percent increase from the 2010 population. In the Kīhei-Mākena region, the population is expected to increase to 35,962 people in 2025, a 28 percent increase from the 2010 population. The average visitor census for Maui Island is projected to increase to 63,482 visitors in 2025, a 28 percent increase from the 2010 visitor census.

¹⁴ The Maui County Planning Department projections presented here are their "baseline" projections, of which the Maui County Planning Department states are: "well within the range of likely future trends."

Approximately 30,241 (47 percent) of these visitors will be in the Kīhei-Mākena region. Therefore, the total population of Maui Island in 2025 is estimated to be 237,666 people. The total population of the Kīhei-Mākena region in 2025 is estimated to be 66,203 people.

Honua'ula will respond to the demand for housing for the growing population in the Kīhei-Mākena region, as well as provide opportunities for existing Maui residents wishing to relocate to South Maui to be closer to their jobs. This will have a meaningful positive impact, as it will decrease commuting to and from South Maui, lessen traffic congestion, reduce stress, reduce energy consumption, lessen pollution, allow more family and recreation time, and improve overall quality of life for not only Honua'ula residents, but for Maui residents in general.

When fully built out, the total population of Honua'ula is projected to be 1,833 persons, of which 1,541 will be full-time residents and 292 will be periodic users comprised of non-resident owners and their guests (Hallstrom 2009). Many of Honua'ula's future residents may already be existing Maui residents because Honua'ula's 450 on-site workforce affordable homes must be offered for sale to Maui residents. Based on a household size of 2.5 people per household approximately 1,125 (73 percent) of Honua'ula's future 1,541 full-time residents may be existing Maui residents.

Potential impacts and mitigative measures related to Honua'ula population, such as traffic, infrastructure, and public services, are discussed in other sections of this EIS. However, it should be noted that the population of Maui is projected to grow independent of Honua'ula. Therefore, population-related impacts to traffic, infrastructure, public services, and other issues will need to be addressed regardless of whether Honua'ula is built.

4.9.3 Housing

The Kīhei-Mākena region is among the most desirable resort and residential areas in Hawai'i. The area has many full-time residents but is also a large vacation destination, with many visitors, resorts, and second homes.

The demand by non-resident buyers for general residential units in the Kīhei-Mākena region is significant; the County Planning Department (2006) reports that 42 percent of all Kīhei-Mākena housing sales in 2004 were to buyers residing outside of Maui County. A more recent study (Hallstrom 2009) indicates that 25 to 35+ percent of demand for residential units in the Kīhei-Mākena region is from non-resident purchasers.

In December ~~2009~~ 2011, the year-end average sales price of a single-family home in Maui County was ~~\$713,946~~ \$787,552, the year-end average sales price of a single-family home in Kīhei was ~~\$674,327~~ \$597,124, and the year end average sales price of a single-family home in Wailea/Mākena was ~~\$2,511,667~~ \$4,492,089. ~~The~~ In December 2009 2011, the year-end average sales price of a condominium in Maui County was ~~\$719,993~~ \$485,874, the year end average sales price of a condominium in Kīhei was ~~\$360,660~~ \$301,557, and

the year end average sales price of a condominium in Wailea/Mākena was \$1,507,710 \$1,548,654 (Realtors Association of Maui, <http://www.ramaui.com>).

It is estimated that there are 13,251 housing units in Kīhei-Mākena region in 2010 (County Planning Department 2006). This includes single-family homes and condominiums occupied both by Maui residents and non-residents (i.e. visitors). It is projected that approximately 7,000 to 10,846 new homes will be needed in the Kīhei-Mākena region by 2030 (County Planning Department 2006; Hallstrom 2009). Currently there are approximately 510 unsold homes or residential lots in the region. Another 3,000 to 4,650 units are projected to be built in the region (not including Honua'ula) by 2030 if all potential projects are actually built to maximum densities in a timely manner. Therefore by 2030 there is a potential housing shortfall ranging from 1,840 to 5,686 units in the Kīhei-Mākena region (Hallstrom 2009). Thus there is a substantial, quantifiable market demand for housing that Honua'ula can help address (Hallstrom, 2009).

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula will help to satisfy the housing demand of a growing population by providing homes in the Kīhei-Mākena region. Objectives of Honua'ula include: 1) emphasizing community development and creating a complete and vibrant community with a range of housing types, including single-family, multifamily, and workforce housing, complemented with village mixed uses primarily serving the residents of the community; and 2) providing homes near regional employment centers, thereby decreasing commuting and increasing quality of life.

Honua'ula will include homes priced for a range of consumer groups, including workforce affordable homes in compliance with Chapter 2.96, MCC (Residential Workforce Housing Policy). All workforce affordable homes will be priced and subject to restrictions in accordance with the requirements of Chapter 2.96, MCC to ensure they remain both available and affordable for full-time Maui residents.

The Honua'ula market rate homes will appeal to those buyers seeking the location, view, and climate of the Property. Although not a destination resort, as it is lacking ocean frontage and will not contain transient vacation rentals, Honua'ula market-rate homes will be comparable with Maui's destination communities and are expected to attract purchasers from the same market segments.

The market study (Hallstrom 2009) concludes that the workforce affordable homes will be fully absorbed (sold out) within an eight year period and the market-priced homes within 12 years.

In compliance with County of Maui Ordinance No. 3554, Honua'ula Partners, LLC will:

- Provide workforce housing in accordance with Chapter 2.96, MCC (Residential Workforce Housing Policy); provided that, 250 of the required workforce housing

units shall be located at the Ka'ono'ulu Light Industrial Subdivision and completed prior to any market-rate unit, that 125 of those workforce housing units will be ownership units, and that 125 of those units shall be rental units. In addition, construction of those workforce housing units will be commenced within two years, provided all necessary permits can be obtained within that timeframe. Honua'ula Partners, LLC will provide a minimum two-acre park at Ka'ono'ulu Light Industrial Subdivision, which shall be credited toward the requirements of Section 18.16.320, MCC, for that subdivision (Condition 5); and

- Not allow transient vacation rentals or time shares within Honua'ula (Kīhei-Mākena Project District 9); and further, no special use permit or conditional permit for such accommodations will be accepted by the Department of Planning (Condition 25).

4.9.4 Village Mixed Uses

Currently, there are no commercial uses within the Honua'ula property. The nearest commercial area is the Wailea Gateway Center at the intersection of Pi'ilani Highway and Wailea Ike Drive. This newly developed commercial space includes offices, retail, and restaurants. The Shops at Wailea is a resort-oriented shopping center which also includes many restaurants and is located at the intersection of Wailea Ike Drive/Wailea Alanui Drive. The closest supermarkets are Foodland, approximately 3.8 miles to the north in the Kīhei Town Center on South Kīhei Road, and Safeway, approximately 4.6 miles to the north at the intersection of Pi'ilani Highway and Pi'ikea Avenue. Kīhei also contains many other shopping centers, commercial areas, and offices.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula will be a complete community with village-mixed use areas comprised of, commercial, residential, recreational, and community facilities serving the needs of Honua'ula residents and guests. The intent of the Village Mixed Use sub-district is to create a community identity and character with landmark buildings and groupings of services within a central core. Permitted uses in the Village Mixed Use sub-district include: retail food and beverage establishments; grocery stores; retail shops; offices; business services; minor medical offices; religious institutions; and public facilities.

It is expected that car trips from Honua'ula residents onto Pi'ilani Highway will be reduced since there will be various establishments providing for residents' day-to-day needs within the community. Therefore, unlike residents in conventional residential subdivisions, Honua'ula residents will not have to drive outside of the community for all needs and services. In addition, by locating commercial and retail establishments convenient to residential areas, walking and biking will be meaningful alternatives to driving within Honua'ula.

While Honua'ula residents are expected to support the commercial and retail establishments within Honua'ula, additional market support is expected from populations in the general vicinity, particularly given Honua'ula's location at the key intersection of

Pi'ilani Highway and Wailea Ike Drive. In addition to offering convenience to these populations, the commercial areas within Honua'ula are also anticipated to alleviate the need for some trips into Kihei.

The total floor area of all commercial and retail uses within the Village Mixed Use sub-district will not exceed 100,000 square feet and the total land area will not exceed 53 acres. Based on the total Honua'ula population, combined with near-by residents who may patronize Honua'ula businesses, on-site employees, and passer-bys entering and exiting the Wailea region, the total quantified demand for Honua'ula village mixed use space is estimated at 98,000 square feet, commensurate with the maximum allowable area of 100,000 square feet (Hallstrom 2009).

Appendix A includes: 1) a conceptual site plan of the proposed VMX Town Center; and 2) a conceptual site plan of the proposed golf clubhouse complex. The Town Center is currently proposed to contain approximately 75,000 square feet of commercial and retail uses, and the golf clubhouse complex is currently proposed to contain approximately 25,000 square feet of commercial and retail uses.

4.9.5 Economy

The Maui economy is heavily dependent on the visitor industry. This is especially evident in the Kihei-Mākena region, which is a major resort destination area with many available vacation rentals, world-class resorts, and recreational facilities.

Although signs of underlying mainland economic weakness and softening in a variety of real estate sectors began to appear on Maui by early to mid-2007, the critical event foreshadowing a broad downturn was the collapse of Aloha and ATA Airlines in April 2008. These events abruptly decimated tourism, leading to increasing unemployment, business failures, slackening of residential and contractor demand, and modified spending levels island wide.

Subsequent external events significantly exacerbated the situation, including the advent of economic recession on the U.S. mainland and throughout the Pacific Basin, rapidly fluctuating fuel prices, a significant tightening of available credit, and a major decline in stock/equity markets.

As a result, the unemployment rate on Maui, traditionally among the lowest in the nation, has more than doubled over the past year to 8.5 percent, up from the 3.3 percent rate of April 2008 (Hallstrom 2009). Tourism indicators have declined by 10 to 20-plus percent, and gross total expenditures (residents and visitors) were down by more than two percent in 2008, with 2009 showing a similar decline (Hallstrom, 2009). A previously fast-growing population has been somewhat stabilized by out-migration and a stagnation of gross household income.

Following past off-cycles, South Maui has demonstrated the ability to rebound faster than most neighbor island sectors, a function of its large working-class resident population and a highly competitive tourism infrastructure. The South Maui economy is anticipated to stabilize then recover in concert with statewide trends commencing in 2010-2011 (Hallstrom 2009).

POTENTIAL IMPACTS AND MITIGATION MEASURES

The creation of Honua'ula will result in significant expenditures that will have a substantial positive impact on the County of Maui and State of Hawaii economies, on both a direct and indirect basis. By significantly increasing the level of capital investment and capital flow in the region, which will in turn create employment opportunities and widen the tax base, Honua'ula will serve as a compelling economic stimulus for the region.

As Honua'ula homes and commercial space are not expected to be offered for sale or lease until late 2012, at the earliest, the current recession is not expected to have a meaningful impact on the marketability of Honua'ula. The real estate sectors are anticipated to be in full recovery mode by this time, and it is highly probable that during the decade-plus build-out and absorption period another full economic cycle will transpire.

The Honua'ula economic impact analysis estimates the general and specific effects on the economy which will result from the creation of Honua'ula, including construction and business employment, wages and income, resident expenditures, regional monetary and employment effects, and taxes and fees accruing to the County of Maui and State of Hawaii.

Construction and Operations

Honua'ula is projected to generate approximately \$1.2 billion of direct capital investment in the Maui economy over the 13-year build-out period. This includes investment in on-site infrastructure, home construction, golf course construction, and commercial building construction (Hallstrom 2009).

A total of approximately 9,537 "worker years"¹⁵ of direct on-site employment will be created during the projected 13-year construction and sales period. Of this total, 3,692 worker years are direct construction-related jobs, 3,480 are on-going, on-site business operation and maintenance positions, and 2,366 are off-site/direct worker-year requirements. After completion, Honua'ula is projected to generate 518 permanent full-time equivalent jobs — 382 directly related to on-site activities and 136 indirect jobs throughout the island (Hallstrom 2009).

¹⁵ A "worker year" is defined as the amount of time one full-time worker can work in one year although one worker year (2,080 working hours) may be comprised of many employees involved in specialized tasks of shorter duration.

Employee wages of approximately \$480 million are projected to be paid out during the 13-year build-out period. On a stabilized basis after construction, golf course and commercial operations, maintenance, and other on- and off- site positions are projected to earn approximately \$19 million in wages each year (Hallstrom 2009).

Discretionary expenditures made by Honua'ula residents and guests during the 13-year build-out period are expected to total \$513.9 million, or nearly \$40 million annually. After the build-out period, discretionary expenditures are expected to stabilize at approximately \$77 million annually. The household income of full-time residents is forecast to total approximately \$497 million over the build-out period and stabilize at \$68.9 million per year after build-out (Hallstrom 2009).

The gross taxable operating economic activity generated from on-site operations (which include commercial operations, golf course operations, maintenance, landscaping, and renovations) is estimated to total approximately \$383.7 million during the build-out period. After the build-out period, annual operating economic activity is estimated to be approximately \$96.9 million (Hallstrom 2009).

The overall statewide economic impact over the 13-year build-out period is estimated to total approximately \$3.2 billion. This includes direct capital investment, contractors' and suppliers' profits, employee wages, resident income and expenditures, and operating economic activity. On a stabilized basis after build-out, the overall economic impact of Honua'ula is estimated to be approximately \$290.5 million annually (Hallstrom 2009). The expenditure of these funds into the island and state economies will facilitate hundreds of additional off-site, secondary, and indirect jobs on Maui and statewide.

Taxes, Government Revenues, and Development Fees

Fiscal and economic impacts from the short-term construction and long-term operation of Honua'ula are expected to directly benefit the State of Hawai'i and County of Maui through four major sources: 1) real property taxes; 2) gross excise tax receipts; 3) state income taxes; and 4) development fees. According to projections, in no year will the State or the County suffer a revenue shortfall due to Honua'ula.

As projected, the County of Maui will receive approximately \$81.1 million in real property tax revenues from Honua'ula over the 13-year build-out period, and an estimated \$7.25 million per year thereafter. The County government operating costs associated with serving the community, using a per capita basis, is estimated to total \$39.3 million during the 13-year build-out period and stabilize at approximately \$5.65 million per year after build-out. Therefore, the County will enjoy a net revenue benefit (taxes less costs) totaling approximately \$41.8 million during the 13-year construction period, and \$1.6 million each year after build-out.

It is projected that the State of Hawai'i will show a similar positive net revenue benefit from Honua'ula. The total gross tax revenues during the 13-year build-out period will reach approximately \$165 million from income and gross excise taxes, and will stabilize at approximately \$11.3 million per year after build-out. State costs associated with the community on a per capita basis are projected to be \$68.2 million during the 13-year build-out period and are projected to stabilize at approximately \$9.8 million per year after build-out. The State will experience a net profit of approximately \$97 million in the 13-build-out and sales period and a stabilized benefit of approximately \$1.5 million per year after build-out.

In addition to State and County taxes, Honua'ula will also pay specific development fees in compliance with County of Maui Ordinance No. 3554. These fees include:

- Traffic improvement fees of \$5,000 per residential unit, payable to the County of Maui (Condition 3);
- Park assessment fees, currently at \$17,240 per residential unit, payable to the County of Maui (Condition 11); and
- School impact fee, currently at least \$3,000 per residential unit, payable to the State (Condition 22).

Together, these fees are at least \$25,240 per residential unit and total over \$29 million.

In addition, Honua'ula Partners, LLC will also:

- Pay not less than \$5 million to the County for the development of the South Maui Community Park in-lieu of dedicating a Little League Field within Honua'ula (Condition 10);
- Contribute \$550,000 to the County for the development of the new Kihei District Police Station in South Maui (Condition 24); and
- Provide the County two acres of land with direct access to the Pi'ilani Highway extension for the development of a fire station (Condition 24).

4.10 PUBLIC SERVICES AND FACILITIES

Overview

As discussed in Section 4.9.2 (Population), projections indicate that the Maui Island population will increase from 140,289 people in 2010 to 174,184 people by 2025, a 24 percent increase (Maui County Planning Department 2006). For the Kihei-Mākena region, the population is expected to increase from 28,114 people in 2010 to 35,962 people in 2025, a 28 percent increase (Maui County Planning Department 2006). These projections do not include the average daily visitor population of Maui Island, which is expected to increase from 49,476 people in 2010 to 63,482 people in 2025, a 28 percent increase.

Honua'ula will provide homes for Maui's growing population. Build-out of Honua'ula will occur over approximately 13 years, and thus the need for additional public services to serve Honua'ula residents is expected to occur incrementally and in proportion with Maui's population growth. The needs of a growing population relating to public services and other issues will need to be addressed regardless of whether Honua'ula is built.

As discussed in Section 4.9.5 (Economy), Honua'ula will have a significant positive impact on the State and County economies and will contribute to increased State and County revenues in the form of increased property taxes, general excise taxes, and income taxes from increased employment. Should the State and County choose to allocate these additional tax revenues to fund more services to protect public health, welfare, and safety, any cost to the public that may result will be effectively minimized.

4.10.1 Schools

The Kīhei-Mākena region is served by Kīhei Elementary (grades K-5), Kamali'i Elementary (grades K-5), Lokelani Intermediate (grades 6-8), and Kīhei Charter School (K-12). Maui High School (grades 9-12), the designated public high school for Kīhei residents, is located in Kahului. Table 5 provides the enrollment data.

Table 65. Capacity and Enrollment for Public Schools serving Kīhei-Mākena

School	Capacity	Enrollment in 2009-2010 School Year	Enrollment in 2011-2012 School Year	Projected Enrollment 2011-2012 2015-2016
Kīhei Elementary	923	870	<u>920</u>	845 <u>988</u>
Kamali'i Elementary	797 <u>809</u>	660	<u>638</u>	765 <u>696</u>
Lokelani Intermediate	697 <u>808</u>	569	<u>597</u>	807 <u>623</u>
Kīhei Charter School	-	436	<u>509</u>	<u>500</u>
Maui High	1,526 <u>1,701</u>	1,815	<u>1,826</u>	1,861 <u>1,946</u>

Source: State of Hawai'i Department of Education, ~~2009~~ 2012 (<http://doe.k12.hi.us/reports/enrollment.htm>).

Currently, the State DOE is planning to build a new high school in Kīhei on approximately 77 acres mauka of Pi'ilani Highway between Kūlanihāko'i and Waipu'ilani Gulches. Design enrollment for Kīhei High School will be for up to 1,650 students in grades 9-12. Phase I of the Kīhei High School is slated to open in ~~2013~~ 2016 with 800 students (Group 70 ~~2009~~2011), the same year the first homes in Honua'ula are projected to be occupied.

POTENTIAL IMPACTS AND MITIGATION MEASURES

At build-out in 2022, the population of full-time Honua'ula residents is projected to be 1,541 persons, of which, approximately 370 (24 percent) will be school-age children (5 to 18 years of age). Public school students who will reside in Honua'ula will most likely attend Kamali'i Elementary School (K-5), Lokelani Intermediate (6-8), and the new Kihei High School (9-12).

To help address the need for funding of school improvements, Honua'ula Partners, LLC will pay at least \$3,450,000 to the DOE over the course of the 13-year build-out period. In compliance with County of Maui Ordinance No. 3554 (Condition 22), Honua'ula Partners, LLC will pay the DOE at least \$3,000 per dwelling unit upon issuance of each building permit to be used, to the extent possible, for schools serving the Kihei-Mākena Community Plan area; provided that, should the State pass legislation imposing school impact fees that apply to Kihei-Mākena Project District 9, Honua'ula Partners, LLC will from that point forward comply with the State requirements, or contribute \$3,000 per dwelling unit, whichever is greater.

In 2007, the State Legislature passed a law establishing school impact fees (see HRS Section 302A-1601 et. seq). It has not been determined if the school impact fees to be implemented under the 2007 school impact fee law will cause Honua'ula school impact fees to be greater than \$3,000 per dwelling unit. However, In November 2010, the Hawai'i Board of Education designated Central Maui, including Kihei-Mākena Project District 9, as a school impact fee district. Honua'ula Partners, LLC will comply with all applicable laws regarding school impact fees. Currently the Central Maui school impact fee established by DOE is \$5,560 per single-family unit and \$2,451 per multi-family unit. Therefore, in compliance with County of Maui Ordinance No. 3554 (Condition 22), Honua'ula Partner's, LLC will pay a school impact fee of \$5,560 per single-family unit and \$3,000 per multi-family unit.

Honua'ula's commercial areas provide the opportunity for child care services for children under kindergarten-age, such as day care facilities, to be developed within Honua'ula to serve the community and neighboring areas. Under the Project District 9 Ordinance (Chapter 19.90A, MCC) governing the Property, day care facilities are a permitted use in the Village Mixed Use sub-district.

4.10.2 Police

The Maui Police Department is headquartered at the Wailuku Police Station on Mahalani Street. Twenty-four hour full-time uniformed police service for South Maui (Mā'alaea, Kihei, Wailea, Mākena) is provided by the Kihei Patrol District, which is currently located in a leased storefront within the Kihei Town Center on South Kihei Road, approximately 3.8 miles from the main entrance of Honua'ula. Two small offices are located at Wailea Point between Kama'ole Beach Parks II and III and at the old Kihei Community Center.

According to the Maui Police Department, currently the Kīhei Police District is commanded by one Police Captain, who is assisted by one Police Lieutenant, and one Civilian Clerk. Staffing for the Kīhei District Station includes seven Police Sergeants who supervise 30 Police Officer positions, three Community Police Officer positions, two Visitor Oriented Police Officer positions, and one School Resource Officer position. There are also six Public Safety Aides (civilian employees).

Projected for the near future is a new Kīhei District Police Station at the intersection of Pi'ilani Highway and Kanani Road, 2.8 miles north of the main entrance to Honua'ula. This full service police station will replace the current police station at Kīhei Town Center.

POTENTIAL IMPACTS AND MITIGATION MEASURES

As Maui County's population grows, there is a need for the County to allocate resources necessary to adequately fund police services. These additional funds could potentially be allotted from the increased tax revenues resulting from Honua'ula.

In their comment letter on the Draft EIS dated May 10, 2010, the Maui Police Department stated:

A residential community of this size will have a measurable impact on Police services.

It is unknown however what the exact impact may be. There will be a wide variety of calls for service to this community.

To help address the need for resources to adequately fund police services, in compliance with County of Maui Ordinance No. 3554 (Condition 24), Honua'ula Partners, LLC will contribute \$550,000 to the County for the development of the new Kīhei District Police station in South Maui, to be paid at the time a contract is entered into for the construction of that police station.

To minimize the impacts on police services and reduce the incidence of crime within Honua'ula, the Maui Police Department recommends incorporating principles of Crime Prevention Through Environmental Design (CPTED) into the design of Honua'ula. The goal of CPTED is to prevent crime by designing a physical environment that positively influences human behavior. The theory is based on four principles: 1) *natural surveillance*, which refers to the placement of physical features that maximize visibility of the neighborhood so residents can observe their surroundings; 2) *access management*, which involves guiding people by using signs, well-marked entrances and exits, and landscaping so visitors can be seen entering and exiting; 3) *territoriality*, which is the clear delineation of space to create pride or ownership and a vested interest of owners in their neighborhood; and 4) *physical maintenance*, which includes repair and general upkeep of space to maintain a well-kept appearance and neighborhood pride. These guiding principles and design objectives will

be encouraged in the design of Honua'ula (see Appendix A (Design Guidelines) and Appendix G (Landscape Master Plan) for further discussion).

4.10.3 Fire

The fire station nearest Honua'ula is the newly built Wailea Fire Station located at the intersection of Kilohana Drive and Kapili Street between Pi'ilani Highway and South Kihei Road. The Wailea Station is approximately one half mile from the Property (less than five minutes away) and services the area from Kama'ole Beach Park II to Mākena. In addition, there are three other fire stations within 20 minutes from the Property.

The two-story ~~facility~~ Wailea Station is equipped with a 1,500 gallon per minute apparatus, a 95-foot mid-mount ladder truck and a 3,500 gallon water tanker truck. In addition, an emergency helipad and fuel dispensing station is located mauka of the fire station.

The Wailea Fire Station is staffed with 33 full-time paid firefighters where there are fire personnel on duty each day, 24-hours per day.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula and all related structures will be designed and built in compliance with all fire protection requirements. Fire apparatus access roads and water supply for fire protection will comply with the Uniform Fire Code.

As Maui County's population grows, there is a need for the County to allocate resources necessary to adequately fund fire prevention and emergency services. These additional funds could potentially be allotted from the increased tax revenues resulting from Honua'ula.

To help address the growing need for fire prevention and emergency services, in compliance with County of Maui Ordinance No. 3554 (Condition 24), Honua'ula Partners, LLC will provide the County with two acres of land that has direct access to the Pi'ilani Highway extension for the development of fire control facilities within the village mixed-use sub-district. This land will be donated at the time 50 percent of the total unit/lot count has received either a certificate of occupancy or final subdivision approval. The acreage provided will have roadway and full utility services provided to the parcel.

4.10.4 Medical

The major hospital serving Maui is Maui Memorial Hospital located in Wailuku. This 231-bed facility provides acute, general, and emergency care services. There are medical clinics and offices throughout Kihei and Wailea; however, these offer limited medical services. Medical clinics and offices include: Kihei Clinic and Wailea Medical Service,

Kīhei Pediatric Clinic, Kīhei Physicians, the Kīhei-Wailea Medical Center, Maui Medical Group, and Kaiser Permanente.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula residents at some time may require health care and emergency medical services. Medical services are available in the region.

Honua'ula's commercial areas will provide the opportunity for medical services, such as doctors' offices and/or a medical clinic, to be developed within Honua'ula to serve the community and neighboring areas. Under the Project District 9 Ordinance (Chapter 19.90A, MCC) governing the Property, such medical services are a permitted use in the Village Mixed Use sub-district.

4.10.5 Recreational Facilities

There are over 3.8 acres of total park land per 1,000 residents in the Kīhei-Mākena area. Over 90 percent of Kīhei-Mākena's parks are either directly on a beach, or separated from a beach by a road. The Kīhei-Mākena public currently has access to ten tennis courts, three tot lots, six sport fields, four sport courts, and two community centers, in addition to the supplemental facilities offered by resorts in the area. The following County public parks and community centers are available in the region:

- Kama'ole Beach Park (I, II, III);
- Charlie Young Beach;
- Kalama Beach Park;
- Kama'ole Point;
- Keonekai Park;
- Cove Park;
- Kilohana Park;
- Kīhei Community Center;
- Kenolio Recreation Complex; and
- Kenolio Park;
- Po'olenalena Beach Park;
- Kalepolepo Beach Park, Lot 2-A;
- Haycraft Park (Ma'alaea);
- Ma Poina 'Oe la'u Park;
- Kīhei Beach Preserve;
- Hale Pi'ilani Park; and
- Kīhei Aquatic Center.

The total County-owned sub-regional park space in the Kīhei-Mākena region is approximately 114.2 acres, with the bulk of the community's parks categorized as special use beach parks." Special use parks serve a regional or islandwide populace because their activities or points of interest are tied to a specific location.

Kilohana Park, located on Kilohana Drive, is the County park facility nearest to Honua'ula.

Despite a relatively large ratio of park area to people in comparison to other communities, according to the Public Facilities Assessment Update County of Maui (R.M. Towill Corporation 2007) the Kīhei-Mākena region has a deficiency of County park space and

facilities, including beach parks; however there is still land area available that is more than adequate to accommodate future park development (R.M. Towill Corporation 2007). The County is in the process of developing a 44-acre park site near Kīhei Elementary School, which will include six sports fields and a gym with community meeting rooms. According to the Public Facilities Assessment, the County also has a 150-acre parcel mauka of Kamali'i Elementary school which may be developed for a park, or used as an exchange for suitable park land in another area of the region (R.M. Towill Corporation 2007).

There are currently 28.8 acres of County beach parks the Kīhei-Mākena region (R.M. Towill Corporation 2007). This does not include Ulua, Wailea, Polo, Palauea, Keawakapu, Makena, and other beaches that are not County beach parks. Using a standard of 40 square feet of beach park space per person, and based on population projections of the Maui Planning Department, the *Public Facilities Assessment Update County of Maui* (R.M. Towill Corporation 2007) projects a need for an additional 37 acres of County beach park space by 2030¹⁶.

In addition to County parks, Mākena State Park is located in the Kīhei-Mākena region. This 164-acre scenic wildland beach park is characterized by prominent cinder cone Pu'u Ōla'i and a large white sand beach. Because it is a State park, the 164 acres of Makena State Park is not included in the inventory of County beach parks provided in the *Public Facilities Assessment Update County of Maui* (R.M. Towill Corporation 2007), nor is the area of Makena State Park considered in relation to the projected need for an additional 37 acres of County beach park space by 2030.

Wailea Resort contains several recreational facilities, including the three championship golf courses, an 11-court tennis center, and white sand beaches with public access, as well as amenities within the Wailea Resort. Public beaches fronting or near the the Wailea Resort include: Ulua Beach, Wailea Beach, and Polo Beach. The Mākena Resort includes the Mākena North and South golf courses as well as the Mākena Tennis Club. Public beaches fronting or near the the Mākena Resort include: Palauea Beach and Po'olenalena Beach.

In addition to parks and related recreation facilities, the Kīhei-Mākena region also contains facilities for recreational boaters at the Kīhei Ramp. The 11.5 acre Kīhei Ramp facility is manged by the Department of Land and Natural Resources, Division of Boating and Ocean Recreation and contains three boat ramps (accommodated by one 35 foot-wide ramp), two loading docks, and parking for cars and trailers. The *Public Facilities Assessment Update County of Maui* (R.M. Towill Corporation 2007) projects the need for

¹⁶ The park planning standards used in the *Public Facilities Assessment Update County of Maui* were obtained from: 1) Department of Parks and Recreation, City and County of Honolulu (1980); 2) Department of Parks and Recreation, County of Maui, *Open Space and Outdoor Recreation Plan* (2002); and 3) National Recreation and Parks Association (NHPA 2000).

three additional boat ramps island wide by 2030 based on island-wide population increases projected by the Maui Planning Department.

POTENTIAL IMPACTS AND MITIGATION MEASURES

Honua'ula will include: 1) neighborhood parks open to the public but privately maintained; 2) over 12 miles of pedestrian and bike trails along the community's roadways, gulches, and drainage ways, including a scenic trail along portions of the golf course that will link to several other trail segments and a Nature/Cultural trail that will border the Native Plant Preservation Area and traverse an adjacent Native Plant Conservation Area (Figure 12); and 3) an 18-hole homeowner's golf course and related recreational facilities.

To provide the greater community the opportunity to enjoy the recreational benefits of the golf course, in compliance with County of Maui Ordinance No. 3554 Honua'ula Partners, LLC will:

- Allow one non-profit organization per quarter, other than Maui Junior Golf Association ("Maui Junior Golf"), to use the golf course and clubhouse for a fund-raising activity (Condition 12a);
- Develop an organized instructional program for junior golfers from September to January each year, allow Maui Junior Golf to use the golf course in accordance with an instructional program, and sponsor one Maui Junior Golf fund-raising tournament per year (Condition 12b);
- Allow for the Maui Interscholastic League and the Hawai'i High School Athletic Association to each use the golf course once per year for an official golf tournament or regular season playoff if requested (Condition 12c); and
- Allow for Maui residents to play at the golf course on Tuesday of each week at a discounted rate that does not exceed 40 percent of the average market rate in South Maui for green fees and golf cart rental fees (Condition 12d).

To help alleviate the shortage of park space and facilities in the Kīhei-Mākena region, in compliance with County of Maui Ordinance No. 3554 (Condition 11), Honua'ula Partners, LLC will develop six acres of private parks and 84 acres of open space within Honua'ula. The private parks will be open to the public and privately maintained. Furthermore, the private parks and open space will not be used to satisfy the park assessment requirements under Section 18.16.320, MCC, or for future credits under the subdivision ordinance. The Director of Parks and Recreation and Honua'ula Partners, LLC agree that the park assessment will be satisfied with an in-lieu cash contribution for the entire project. The amounts and timing of payment of the in-lieu fees shall be subject to the provisions of Section 18.16.320, MCC. This cash contribution will be used to upgrade Maui County parks and facilities, which may include beach parks, as determined by the Department of Parks and Recreation in accordance with their park facility priorities.

Additionally, in compliance with County of Maui Ordinance No. 3554 (Condition 10), Honua'ula agrees that in-lieu of the dedication of a Little League Field and related amenities and based on current land and construction cost estimates for the Little League Field, not less than \$5,000,000 will be paid to the County upon Project District Phase II approval for the development of the South Maui Community Park. The amount shall not be credited against future park assessments.

In their comment letter on the EA/EISPN, the Department of Parks and Recreation (DPR) stated that they have no objections to Honua'ula. DPR stated further:

The 6 acres of private parks and 84 acres of open space proposed to be developed outside of park assessment requirements, in addition to the agreement to satisfy the provisions of Section 18.16.320, Maui County Code, with an in-lieu cash contribution for the entire project, meets with our approval. The applicant's offer of payment not less than \$5,000,000 to the County in lieu of the dedication of a Little League Field, upon Project District Phase II approval for the development of the South Maui Community Park is also acceptable. Finally, the applicant's agreement to support Maui Junior Golf, MIL athletic groups, and provide reduced rates for kama'aina is a favorable commitment.

In addition, in their comment letter on the Draft EIS DPR stated:

The Draft Environmental Impact Statement for the subject project adequately addresses the concerns of the Department of Parks and Recreation. We have no additional comments or objections to the subject project at this time.

Regarding beach use by Honua'ula residents, it is assumed that some Honua'ula residents will go to Maui beaches; however the number of Honua'ula residents going to a specific beach on any given day cannot be known and it cannot be assumed that Honua'ula residents will patronize only the beaches nearby Honua'ula, such as Ulua, Wailea, Polo, Palauea, Po'olenalena, Keawakapu, and Makena beaches; rather it is likely that they could choose to go to any beach in the Kihei-Mākena region or on the entire island.

Maui Planning Department population projections indicate that the Maui and the Kihei-Mākena populations are increasing. This increase is projected with or without Honua'ula. The additional population will use public facilities, such as beaches. Therefore increased beach use and associated impacts will occur with or without Honua'ula.

Furthermore many of Honua'ula's future residents may already be existing Maui residents making periodic use of public facilities such as beaches because Honua'ula's 450 on-site workforce affordable homes must be offered for sale to Maui residents. Based on a household size of 2.5 people per household approximately 1,125 (73 percent) of Honua'ula's future 1,541 full-time residents may be existing Maui residents.

Regarding the Kīhei Boat Ramp and boat ramp facilitates on Maui in general, it is not anticipated that Honua'ula will trigger the need for additional boat ramp facilitates considering that: 1) the County projects a population increase with or without Honua'ula; 2) approximately 73 percent of Honua'ula's future residents may already be exiting Maui residents; and 3) relatively few new boat ramps will be necessary by 2030 to support the island wide population increase projected by the County.