

Appendix B

Kihei High School Impacts on Agriculture

Plasch Econ Pacific LLC – July 2011

***KĪHEI HIGH SCHOOL:
IMPACTS ON AGRICULTURE***

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State of Hawai'i, Department of Education

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July 2011

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employment or payroll. Haleakalā Ranch has sufficient land to move its cattle to other pastures.

Cumulative Impact on Haleakalā Ranch Cattle Operations

Over the next 20 years or so, planned and proposed projects on file with the County could result in the development of about 415 acres that are now used by Haleakalā Ranch to graze cattle, including about 44 acres for the School and about 371 acres for other projects. All of this land is located in Kīhei within the Urban Growth Boundary. This loss amounts to about 1.8% of the Ranch's grazing land, or about 0.9% of its available feed.

Haleakalā Ranch regards a 0.9% loss in feed as too small to have a significant effect on its cattle operation. Again, the Ranch has sufficient lands to move its cattle to other pastures.

b. Ka'ono'ulu Ranch

Impact of the School on Ka'ono'ulu Ranch Cattle Operations

Development of the School will remove about 32 acres of grazing land from Ka'ono'ulu Ranch, or about 0.4% of its total 9,000-acre supply of grazing land. The corresponding reduction in feed produced from all of its grazing land will be about 0.2%. Ka'ono'ulu Ranch anticipates that this relatively small reduction in feed will have no significant effect on its cattle operation, including no significant impact on the size of its herd, production, revenues, employment or payroll. The Ranch has sufficient land to move its cattle to other pastures.

Cumulative Impact on Ka'ono'ulu Ranch Cattle Operations

Over the next 20 years or so, planned and proposed projects on file with the County could result in the development of about 347 acres that are now used by Ka'ono'ulu Ranch to graze cattle, including about 32 acres for the School and about 315 acres for other projects. All of this land is located in Kīhei within the Urban Growth Boundary. This loss amounts to about 3.9% of the Ranch's grazing land, or about 2% of its available feed.

Ka'ono'ulu Ranch regards a 2% loss in feed as too small to have a significant effect on its cattle operation inasmuch as the Ranch has sufficient lands to move its cattle to other pastures.

c. Mitigating Measures

As discussed above, the School in combination with other projects will result in an insignificant impact on the cattle operations of Haleakalā Ranch and Ka'ono'ulu Ranch. In

EXECUTIVE SUMMARY

1. PROPOSED DEVELOPMENT

Kīhei High School ("the School") will be located on a 77.33-acre site in Kīhei, Maui. The School is initially being planned for 800 students in grades 9-12 (Phase I), with the potential to expand by an additional 850 students (Phase II), resulting in a potential total of 1,650 students.

The estimated construction period for Phase I of the School is about 2.25 years and about 2 years for Phase II. Phase II construction would be completed about 10 years after the completion of Phase I construction. Construction could require more or less time, depending on the need for additional school capacity and the availability of State funding for the School.

2. AGRICULTURAL CONDITIONS

The School site has high solar radiation, but the poor soils, low soil ratings, and the lack of an existing irrigation system indicate that the property is poorly suited for growing commercial field crops.

3. IMPACT ON CATTLE OPERATIONS

a. Haleakalā Ranch

Impact of the School on Haleakalā Ranch Cattle Operations

Development of the School will remove about 44 acres of grazing land from Haleakalā Ranch, or about 0.2% of its total 23,000-acre supply of grazing land. The corresponding reduction in feed produced from all of its grazing land will be about 0.1%. The lower percentage for feed reflects the fact that the arid Kīhei lands have lower yields than *mauka* pastures.

While Kīhei pastures are important for winter cattle grazing, Haleakalā Ranch anticipates that this relatively small reduction in feed will have no significant effect on its cattle operation, including no significant impact on the size of its herd, production, revenues,

view of this finding, mitigation measures for the impact of the School on cattle operations are not recommended.

4. IMPACT ON NEARBY FARM OPERATIONS

Seed corn and orchard operations are located about a half-mile north of the School site. Given the distance, these farms are not expected to cause nuisance problems for the School—i.e., tractor and truck noises, dust blown from fields, drifting of crop-protection products during occasional applications, etc. Consequently, these two farms will not have to change their operations because of the School.

In the long run, planned urban development will displace these two farms.

5. IMPACT ON THE GROWTH OF DIVERSIFIED CROP FARMING

The School will result in a small loss of low-quality agricultural land (about 77.3 acres) of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the School will have no impact on the growth of diversified crop farming.

6. OFFSETTING BENEFITS

The loss of 77.3 acres of low-quality agricultural land will be offset by the following benefits of the School:

- Education of High School Students

Kihei High School will be a modern school that will provide education to students grades 9 to 12. The School will accommodate 800 students at the end of Phase I construction, and up to 1,650 students at the end of Phase II construction, depending upon need and the availability of State funding.
- Construction and Related Jobs

Phase I construction will last about four years. During this period, construction activity will generate an average of about 460 direct and indirect jobs, of which about 370 jobs will be on Maui. Phase II construction (about 8 years) will generate about 50 direct and indirect jobs, of which about 40 jobs will be on Maui.

— Operating and Related Jobs

At the completion of Phase I construction, School operations will provide about 190 direct and indirect jobs, of which nearly 170 jobs will be on Maui. Phase II will increase these figures to about 330 direct and indirect jobs, of which nearly 290 jobs will be on Maui.

7. CONSISTENCY WITH STATE AND COUNTY AGRICULTURAL POLICIES

a. Availability of Lands for Agriculture

The *Hawai'i State Constitution*, the *Hawai'i State Plan*, the *State Agriculture Functional Plan*, the *County of Maui 2030 General Plan*, the *County's Maui Island Plan (Draft)*, and the *County's Kihei-Mākena Community Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agriculture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured.

With regard to plantation agriculture, the Project site is not and never was part of a sugarcane or pineapple plantation.

With regard to diversified crop farming, there is no current or recent farming on the property. The Project will result in a small loss of low-quality agricultural land of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the Project will have no impact on the growth of diversified crop farming.

With regard to ranching, about 76 acres of the School site are used for grazing cattle. However, feed production is low due to arid conditions. Also, the acreage loss will be too small to effect cattle operations.

b. Conservation of Agricultural Lands

In addition to the above, State and County policies call for conserving and protecting prime agricultural lands, including protecting farmland from urban development.

The School will result in the loss of 1.7 acres of land that is rated as Prime under the ALISH system but is rated as poor under the NRCS and LSB rating systems. All of the remaining 75.6 acres have poor soils.

c. Kīhei-Mākena Community Plan

The proposed School is partially consistent with the County's Kīhei-Mākena Community Plan in that the southern portion of the property (44.73 acres) is designated Public/Quasi Public while the northern portion (32.6 acres) is designated Agriculture. Development of the School will require changing the Community Plan so that all of the property is designated Public/Quasi Public.

KĪHEI HIGH SCHOOL: IMPACTS ON AGRICULTURE

1. INTRODUCTION

a. Content and Purpose

This report addresses the agricultural impacts of Kīhei High School ("the School") which is planned by the State of Hawai'i for a site in Kīhei, Maui. The purpose of the report is to provide State and County officials with information relevant to their decisions about the School.

b. Organization of the Report

The material below gives the following information about the School and its agricultural impacts: the School location, description, and required approvals; the agricultural conditions at the School site; potential crops; locational advantages and disadvantages for farming; surrounding land uses; the impact of the School on cattle operations; the impact of the School on nearby farming operations; the impact of the School on the growth of diversified crop farming; benefits of the School that would offset adverse agricultural impacts; and consistency of the School with State and County agricultural policies related to agricultural land. The Appendix provides State and County goals, objectives, policies and guidelines related to agricultural lands. Relevant maps are at the end of the report.

c. Economic Consultant

The analysis was conducted by Plasch Econ Pacific LLC, a Hawai'i-based economic consulting firm specializing in economic development, land and housing economics, feasibility studies, valuations, market analysis, public policy analysis, and the economic and fiscal impacts of projects.

2. SCHOOL DESCRIPTION AND REQUIRED APPROVALS

a. School Location and Area

The School will be located on a 77.33-acre site in Kihei, Maui. As shown in Figure 1, the site is *mauka* of Pi'ilani Highway, and between Kūlanihāko'i Gulch to the north and Waipū'ilani Gulch to the south. The School site covers portions of two Tax Map Keys:

- (2) 2-2-002:015 (32.6 acres)
- (2) 2-2-002:054 (44.73 acres)

The School will utilize about 70 acres (91%) of the site.

b. School Size and Components

The School is being planned for 800 students in grades 9-12 (Phase I), with the potential to expand by an additional 850 students (Phase II), resulting in a potential total of 1,650 students.

Initial school improvements (Phase I) will include the following: classrooms, administration and student center, library and media arts center, cafeteria and custodial service center, technology and electives center, music building, gymnasium, locker facilities, storage buildings, concessions building, JROTC (Army) classroom building, football/soccer field, track, softball field, baseball field, practice field, grassed playground, basketball courts, tennis courts, bleachers, walkways, driveways, parking, lighting, landscaping, utilities, highway improvements, etc. (see Figure 2). Depending upon need and available funding, future improvements (Phase II) will include the following: additional classrooms, auditorium, swimming pool complex, choral room, food kiosk, and additional teachers.

c. Development Schedule

The estimated construction period for Phase I of the School is about 2.25 years and about 2 years for Phase II. Phase II construction would be completed about 10 years after the completion of Phase I construction. Construction could require more or less time, depending on the need for additional school capacity and the availability of State funding for the School.

d. Required Approvals

State Land Use District Boundary Amendment

The School site is currently in the State Agricultural District (see Figure 3). Development will require a State Land Use District Boundary Amendment from Agricultural to Urban.

County Community Plan Amendment

The School site is located within the County's Kihei-Mākena Community Plan region. As shown in Figure 4, the northern portion of the property (32.6 acres of TMK (2) 2-2-002:015) is designated Agriculture, while the southern portion (44.73 acres of TMK (2) 2-2-002:054) is designated Public/Quasi Public. Development of the School will require changing the Kihei-Mākena Community Plan so that all of the property is designated Public/Quasi Public.

County Change in Zoning

The School site is currently zoned Agricultural. Development will require a change in County zoning to P-1 Public/Quasi-Public.

County Subdivision Approval

The School will also require subdivision approval from the County.

3. AGRICULTURAL CONDITIONS

a. Soil Types and Characteristics

According to the soil survey by the Natural Resources Conservation Service (NRCS), formerly known as the Soil Conservation Service, the School site includes two soil types (see Figure 5):

- AaB: Alae sandy loam, 3% to 5% slopes (1.1 acres)

This soil type occurs on smooth alluvial fans that developed from volcanic ash and basic igneous rock. Although the slopes are generally 3% to 5%, some small areas are nearly level. In a representative profile, the surface layer is about 7 inches thick, and consists of sandy loam that has granular structure. There are no cobbles on the surface. In some places, there are a few to many pebble-size rock fragments in the surface layer. The substratum extends to a depth of 48 inches or more, and consists of sandy loam as well as coarse and very coarse sand. In some places roots penetrate to a depth of 4 feet or more.

Permeability is rapid, runoff is slow, and the erosion hazard is slight. The soil is neutral or mildly alkaline in the surface layer and mildly to moderately alkaline in the substratum.

Most of this soil type is used for sugarcane and pasture, but some is used for truck crops.

— WID2: Waiakoa extremely stony silty clay loam, 7% to 15% slopes (76.2 acres)

This soil type developed from weathered basic igneous rock, with the upper soils influenced by volcanic ash. Although the slopes are generally 7% to 15%, some small areas have steeper slopes. In a representative profile the surface layer is silty clay loam about 2 inches thick. The subsoil is about 23 inches thick, and consists of silty clay loam that has a prismatic structure or is massive. The substratum is silty clay loam and hard, basic igneous rock. In places roots penetrate to bedrock.

This soil is eroded and stones cover 3 to 15 percent of the surface. In most areas about 50 percent of the surface layer has been removed by erosion. Permeability is moderate, runoff is medium, and the erosion hazard is severe. The soil is neutral in the surface layer and slightly acid to neutral in the subsoil.

This soil type is used for pasture and wildlife habitat.

b. Soil Ratings

Three classification systems are commonly used to rate soils in Hawai'i: (1) Land Capability Grouping, (2) Agricultural Lands of Importance to the State of Hawai'i, and (3) Overall Productivity Rating.

Land Capability Grouping (NRCS Rating)

The 1972 Land Capability Grouping by the NRCS rates soils according to eight levels, ranging from the highest classification level "I" to the lowest "VIII."

Soil type AaB (1.1 acres) has a rating of IVs if irrigated. Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both. The subclassification "s" indicates that the soils are stony, shallow, have unfavorable texture, or have low water-holding capacity.

Soil type WID2 (76.2 acres) has a rating of VII. Class VII soils have very severe limitations that make them unsuitable for cultivation and restrict their use largely to pasture or range, woodland, or wildlife habitat. In this case, the subclassification "s" indicates that the soils have an unfavorable texture, or are extremely rocky or stony.

Agricultural Lands of Importance in the State of Hawai'i (ALISH)

ALISH ratings were developed in 1977 by the NRCS, the University of Hawai'i College (UH) of Tropical Agriculture and Human Resources, and the State Department of

Agriculture. This system classifies land into three broad categories: (1) Prime agricultural land which is land that is best-suited for the production of crops because of its ability to sustain high yields with relatively little input and with the least damage to the environment; (2) Unique agricultural land which is non-Prime agricultural land used for the production of specific high-value crops; and (3) Other agricultural land which is non-Prime and non-Unique agricultural land that is important to the production of crops. Unclassified lands have poor conditions for cultivating crops.

The ALISH soil ratings are shown in Figure 6. About 1.7 acres of the School site are rated Prime, and about 75.6 acres are Unclassified.

Overall Productivity Rating (LSB Rating)

In 1972, the UH Land Study Bureau (LSB) developed the Overall Productivity Rating, which classifies soils according to five levels, with "A" representing the class of highest productivity and "E" the lowest.

All of the soils within the School site are rated "E" (see Figure 6).

Summary Evaluation of Soil Quality

The three rating systems indicated that all or nearly all of the School site has poor soils for growing crops with, at most, 1.7 acres of the School site (about 2.2%) having soils suitable for crop farming.

c. Elevation and Slopes

The School site ranges in elevation from about 30 feet to about 100 feet, with an average slope of less than 3.5%.

d. Climatic Conditions

Hawai'i has a mild *semitropical* climate which is due primarily to three factors: (1) Hawai'i's mid-Pacific location near the Tropic of Cancer, (2) the surrounding warm ocean waters that vary little in temperature between the winter and summer seasons, and (3) the prevailing northeasterly tradewinds that bring air having temperatures that are close to those of the surrounding waters. But because Haleakalā blocks the tradewinds, Kihei has a semi-arid climate.

Solar Radiation

The School site receives considerable sunshine, with average daily insulation of about 500 calories per square centimeter.

Rainfall

Annual rainfall in Kihei averages less than 15 inches. Most of this rainfall occurs during the winter rainy season (October through April), while the summer months (May through September) are hot and dry.

Temperatures

Temperature in Kihei range from an average low of 64°F in the winter to an average high of 87°F in the summer.

Winds

The prevailing tradewinds blow across the isthmus and out to sea at a mean speed of about 11 miles per hour in the winter and 15 miles per hour in the summer.

e. Irrigation Water

The School site has no existing water system to irrigate crops.

f. Road Access

Dirt roads provide access from Pi'ilani Highway to the property.

g. Summary

The School site has high solar radiation, but the poor soils, low soil ratings, and lack of irrigation water indicate that the property is poorly suited for growing commercial field crops.

4. POTENTIAL CROPS

The School site is unsuitable for most commercial field crops grown in Hawai'i. Nevertheless, seed-corn operations in Kihei indicate that high-value crops could be grown provided that the land is cleared of rocks, *kiawe*, grasses and weeds; the soil is amended; and

water is obtained. Also, crops which do not require good soil—such as hydroponic crops and algae—could be grown provided that water is available.

It should be noted, however, that Kihei has a large supply of low-quality agricultural land similar to that of the School site (see Section 9). Also, high-quality farmland is available in Central and West Maui due to past closures of sugarcane and pineapple plantations.

5. LOCATIONAL ADVANTAGES AND DISADVANTAGES FOR FARMING

a. Maui Island Market

Farmers in Central Maui are well-situated for supplying the Maui Island market because of the short trucking distance to Kahului, which is the island's commercial, industrial, distribution and transportation center. While the Maui Island market is significant, it is comparatively small: in 2009, Maui County had a *de facto* population of about 181,050 residents and visitors.

b. Honolulu Market

All farmers on Maui are at a disadvantage in competing against farmers on O'ahu for supplying the Honolulu market due to the interisland shipping costs, delays and extra handling. In comparing barge and air-cargo services, shipping by barge is less expensive and larger loads can be shipped, but the shipments are slow and infrequent. Air service is faster and frequent, but it is far more expensive and capacities are limited.

In 2009, O'ahu had a *de facto* population of about 936,600 residents and visitors. Thus, the Honolulu market is over five times larger than the Maui market.

c. Mainland Market

Compared to Hawai'i, the mainland market is enormous: in 2010, the U.S. population totaled 308.7 million. In supplying this market with products that can be carried by container ship because they have long shelf-lives (e.g., canned fruit), farmers on Maui are competitive with farmers on O'ahu and the other islands. Even though freight from Maui must first be barged to Honolulu then transferred onto a container ship, Matson's overseas shipping service includes inter-island barge service at no additional fee: with the exception of some minor port charges, Matson charges a common fare for all islands.

In the case of fresh products that must be shipped by air to the mainland because of their short shelf-lives, farmers on Maui are at a disadvantage compared to farmers on O'ahu because most mainland air cargo is shipped via the Honolulu International Airport. Con-

pared to farmers on O'ahu, Maui farmers encounter additional costs, delays, and handling for interisland air-cargo service and for transferring the fresh products from small interisland aircraft to large overseas aircraft.

However, overseas air-cargo service from Maui has improved somewhat because the current generation of aircraft can depart from the short runway at Kahului with a full load of passengers and a full load of cargo in the hold. This direct service allows Maui farmers to be more competitive in mainland markets. However, the lift capacity from Maui is limited by the number of direct flights.

In the U.S. mainland market, farmers in Hawai'i must also compete against farmers on the mainland and in Mexico, Central and South America, the Caribbean, Australia, New Zealand, Southeast Asia, etc. Most of the competing farm areas have lower production and delivery costs than Hawai'i does. Competing against Mexico is particularly difficult given the North America Free Trade Agreement (NAFTA) and Mexico's proximity to major U.S. markets.

d. Summary

In terms of location, farmers in Central Maui are well-situated to supply the small Maui Island market. And compared to other farmers in Hawai'i, they can also compete reasonably well in supplying mainland markets, as long as their products have long shelf-lives and so can be shipped by surface vessel.

However, compared to farmers on O'ahu, they are at a disadvantage in supplying the Honolulu market. Furthermore, they are at a disadvantage in supplying mainland markets if their products have short shelf-lives and so must be shipped by air. Also, farmers on Maui are at a disadvantage in competing against the low-cost producers who supply mainland markets.

6. SURROUNDING LAND USES

Current, planned, and proposed land uses surrounding the School site are as follows:

— North

Currently, grazing operations of Ka'ono'ulu Ranch abut and extend north about a half-mile from the School site (see Figure 1). Beyond a half-mile are commercial and industrial operations, a seed-corn farm, and an orchard.

The Kihei-Mākena Community Plan designates a portion of the grazing land to the north as Light Industrial (see Figure 4). This area is about 100 yards north

of the School site, and extends about one-third of a mile *mauka* from Pi'ilani Highway. Beyond a half-mile north, the land currently being used for an orchard is designated Light Industrial, while the land used for seed corn is designated Single Family.

Proposed development includes residential and related neighborhood commercial development to the north of the School site on land designated as Agriculture and Single Family. A park would abut the School site.

— East

Currently, grazing operations of Ka'ono'ulu Ranch (TMK (2) 2-2-002:015) and Haleakalā Ranch (TMK (2) 2-2-002:054) abut the east side of the School site and extend *mauka* (see Figure 1).

The Community Plan designates the abutting Haleakalā Ranch lands as Public/Quasi Public, while the abutting Ka'ono'ulu Ranch would remain as Agriculture (see Figure 4).

Proposed development includes residential and related neighborhood commercial development that would extend about 0.7 mile *mauka* of the School site.

— South

Currently, south of the School site are Ellear Maui Golf Club and some Haleakalā Ranch grazing lands (see Figure 1).

The Community Plan designates these grazing lands as Public/Quasi Public (see Figure 4).

Residential development of the grazing lands are proposed as part of the expansion of the Maui Research and Technology Park.

— West

Makai of the School site are Pi'ilani Highway, Pi'ilani Village, and some vacant land (see Figure 1).

The Community Plan designates the vacant land as Multi-Family (see Figure 4).

7. IMPACT ON CATTLE OPERATIONS

The School site is currently used for grazing cattle by two ranches: Haleakalā Ranch south of the property line which crosses the School site as shown in Figure 1, and Ka'ono'ulu Ranch north of the property line.

a. Haleakalā Ranch

Haleakalā Ranch Cattle Operations

Incorporated in 1888, Haleakalā Ranch is the oldest and largest cattle ranch on Maui. This family-owned ranch has about 23,000 acres used for grazing cattle, about 1,700 breeding cows, and about 30 employees involved with its cattle operation.

To increase the available feed, the Kīhei lands were planted in buffelgrass in the early 1900s. Buffelgrass is drought-resistant, so is able to survive the dry summer months in Kīhei. Native to Africa, this grass was introduced to improve cattle forage in many tropical and subtropical regions of the world. Cattle grazing on Kīhei pastures occurs in the winter months when the grass is more plentiful following winter rains. The number of cattle on these lands and the duration of their grazing depend upon rainfall. Due to the arid conditions, annual per-acre yields of forage from Kīhei pastures are about 50% of those for Haleakalā Ranch as a whole.

Impact of the School on Haleakalā Ranch Cattle Operations

Development of the School will remove about 44 acres of grazing land from Haleakalā Ranch, or about 0.2% of its total 23,000-acre supply of grazing land. The corresponding reduction in feed produced from all its grazing land will be about 0.1% (0.2% x 50% adjustment for the lower yields from the Kīhei pastures).

While Kīhei pastures are important for winter cattle grazing, Haleakalā Ranch anticipates that this relatively small reduction in feed will have no significant effect on its cattle operation, including no significant impact on the size of its herd, production, revenues, employment or payroll. Haleakalā Ranch has sufficient land to move its cattle to other pastures.

Cumulative Impact on Haleakalā Ranch Cattle Operations

Over the next 20 years or so, planned and proposed projects on file with the County could result in the development of about 415 acres that Haleakalā Ranch uses now to graze cattle, including about 44 acres for the School and about 371 acres for other projects. All of this land is located in Kīhei within the Urban Growth Boundary. This loss amounts to about 1.8% of the Haleakalā Ranch grazing land (415 acres ÷ 23,000 acres), or about 0.9% of its available feed (1.8% x 50% adjustment for the lower yields from the Kīhei pastures).

Haleakalā Ranch regards a 0.9% loss in feed as too small to have a significant effect on its cattle operations. Again, the Ranch has sufficient lands to move its cattle to other pastures. Even if Haleakalā Ranch were operated at its maximum carrying capacity and

replacement pastures were not available, the impact would be small: about 15.3 fewer breeding cows (about 0.9% x about 1,700 cows), about 11.5 fewer calves per year (about 75% x the number of cows), about \$4,600 less in annual revenues (about \$400 x the number of calves), and the loss of about 27% of one job (0.9% x 30 jobs).

b. Ka'ono'ulu Ranch

Ka'ono'ulu Ranch Cattle Operations

Ka'ono'ulu Ranch is a family-owned and operated cattle ranch that comprises most of the Ka'ono'ulu Ahupua'a which was purchased by the family in 1916. Ka'ono'ulu Ranch has about 9,000 acres used for grazing cattle, about 1,100 breeding cows on average, and about 4.5 employees involved with its cattle operation. Annual per-acre yields of forage from its Kīhei pastures amount to about 50% of those for Ka'ono'ulu Ranch as a whole.

Impact of the School on Ka'ono'ulu Ranch Cattle Operations

Development of the School will remove about 32 acres of grazing land from Ka'ono'ulu Ranch, or about 0.4% of the 9,000 acres of their grazing land. The corresponding reduction in feed produced from all of its grazing land will be about 0.2% (0.4% x 50% adjustment for the lower yields from the Kīhei pastures).

While Kīhei pastures are important for winter cattle grazing (similar to the situation with Haleakalā Ranch), Ka'ono'ulu Ranch anticipates that this relatively small reduction in feed will have no significant effect on its cattle operation, including no significant impact on the size of its herd, production, revenues, employment or payroll. Ka'ono'ulu Ranch has sufficient land to move its cattle to other pastures.

Cumulative Impact on Ka'ono'ulu Ranch Cattle Operations

Over the next 20 years or so, planned and proposed projects on file with the County could result in the development of about 347 acres that Ka'ono'ulu Ranch uses now to graze cattle, including about 32 acres for the School and about 315 acres for other projects. All of this land is located in Kīhei within the Urban Growth Boundary. This loss amounts to about 3.9% of its grazing land (347 acres ÷ 10,000 acres), or about 2% of its available feed (3.9% x 50% adjustment for the lower yields from the Kīhei pastures).

Ka'ono'ulu Ranch regards a 2% loss in feed as too small to have a significant effect on its cattle operations inasmuch as it has sufficient lands to move its cattle to other pastures. Even if Ka'ono'ulu Ranch were operated at its maximum carrying capacity and replacement pastures were not available, the impact would be small: about 22 fewer breeding cows (about

2% x about 1,100 cows), about 16.5 fewer calves per year (about 75% x the number of cows), about \$6,600 less in annual revenues (about \$400 x the number of calves), and the loss of about 9% of one job (2% x 4.5 jobs).

c. Mitigating Measures

As discussed above, the School in combination with other projects will result in an insignificant impact on the cattle operations of Haleakalā Ranch and Ka'ono'ulu Ranch. In view of this finding, mitigation measures for the impact of the School on cattle operations are not recommended.

8. IMPACT ON NEARBY FARM OPERATIONS

Seed corn and orchard operations are located about a half-mile north of the School site (see Figure 1). Given the distance, these farms are not expected to cause nuisance problems for the School—i.e., tractor and truck noises, dust blown from fields, drifting of crop-protection products during occasional applications (e.g., fertilizers, soil amendments, dust-control agents, pesticides, etc.). For comparison, many homes in northern Kīhei are less than 120 feet downwind of seed-corn operations. In view of the above, the two farms north of the School site will not have to change their operations because of the School.

In the long run, planned urban development will displace these two farms.

9. IMPACT ON THE GROWTH OF DIVERSIFIED CROP FARMING

The School will commit about 77 acres of land now in the Agricultural District to a non-agricultural use. However, as summarized in Subsection 3.g, this land is poorly suited for growing commercial field crops due to poor soils and the lack of water for irrigating crops.

Maui has a large supply of low-quality agricultural land, including about 20,000 acres *mauika* of Kīhei that is similar in quality to the land that will be used for the School. And since 1990, the contraction and eventual closure of Pioneer Mill (sugarcane) and Maui Pineapple Co. released over 19,000 acres of good farmland in Central and West Maui. While some of this former plantation land was planted in other crops (e.g., seed corn and coffee) and some was developed for homes, most of it remains available for farming. For comparison, the entire County has about 1,700 acres in food crops that are grown for the Hawai'i market, including about 400 acres in vegetables and melons, about 300 acres in fruits other than pineapple, and about 1,000 acres in pineapple.

In summary, the School will result in a small loss of low-quality agricultural land of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the School will have no impact on the growth of diversified crop farming.

10. OFFSETTING BENEFITS

The loss of 77 acres of low-quality agricultural land will be offset by the following benefits of the School:

— Education of High School Students

Kīhei High School will be a modern school that will provide education to students grades 9 to 12. The School will accommodate 800 students at the end of Phase I construction, and up to 1,650 students at the end of Phase II construction, depending upon need and the availability of State funding.

— Construction and Related Jobs

Phase I construction will last about four years. During this period, construction activity will generate an average of about 460 direct and indirect jobs, of which about 370 jobs will be on Maui. Phase II construction (about 8 years) will generate about 50 direct and indirect jobs, of which about 40 jobs will be on Maui.

— Operating and Related Jobs

At the completion of Phase I construction, School operations will provide about 190 direct and indirect jobs, of which nearly 170 jobs will be on Maui. Phase II will increase these figures to about 330 direct and indirect jobs, of which nearly 290 jobs will be on Maui.

11. CONSISTENCY WITH STATE AND COUNTY AGRICULTURAL POLICIES

a. Availability of Lands for Agriculture

The *Hawai'i State Constitution*, the *Hawai'i State Plan*, the *State Agriculture Functional Plan*, the *County of Maui 2030 General Plan*, the *County's Maui Island Plan (Draft)*, and the *County's Kīhei-Mākena Community Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agri-

culture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured.

With regard to plantation agriculture, the Project site is not and never was part of a sugarcane or pineapple plantation.

With regard to diversified crop farming, there is no current or recent farming on the property. The Project will result in a small loss of low-quality agricultural land of which there is a large supply on Maui, but will not affect the supply of good farmland of which there is also a large supply. Consequently, the Project will have no impact on the growth of diversified crop farming.

With regard to ranching, about 76 acres of the School site are used for grazing cattle. However, feed production is low due to arid conditions. Also, the acreage loss will be too small to effect cattle operations.

b. Conservation of Agricultural Lands

In addition to the above, State and County policies call for conserving and protecting prime agricultural lands, including protecting farmland from urban development.

The School will result in the loss of 1.7 acres of land that is rated as Prime under the ALISH system but is rated as poor under the NRCSS and LSB rating systems. All of the remaining 75.6 acres have poor soils.

c. Kīhei-Mākena Community Plan

As shown in Figure 4, the proposed School is partially consistent with the County's Kīhei-Mākena Community Plan in that the southern portion of the property (44.73 acres) is designated Public/Quasi Public while the northern portion (32.6 acres) is designated Agriculture. Development of the School will require changing the Community Plan so that all of the property is designated Public/Quasi Public.

12. FEDERAL FARMLAND PROTECTION

The Federal Farmland Protection Policy Act has as its purpose "... to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses ...". To help accomplish this purpose, Form AD-1006 is to be completed for Federal projects or Federally funded projects that convert farmland to a nonagricultural use.

Form AD-1006 was not required for the following reasons:

- No Federal funding or federal assistance was or will be involved with the design and construction of the School.
- The property consists of grazing land, not farmland.
- Only 1.7 acres (2%) of the property have soils that are rated Prime.
- The site does not have an existing water system to irrigate crops.
- No crops are grown on the property, and the site is regarded as unsuitable for growing crops. The only agricultural use is cattle grazing.

13. REFERENCES

- Appendix. "Selected State and County Goals, Objectives, Policies and Guidelines Related to Agricultural Lands."
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- U.S. Department of Agriculture. "Farmland Conversion Rating." Form AD-1006 (03-02).

- (1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.

- (10) Support the continuation of land currently in use for diversified agriculture.

Section 226-104 Population growth and land resources priority guidelines.

- (b) Priority guidelines for regional growth distribution and land resource utilization:

- (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

3. AGRICULTURAL STATE FUNCTIONAL PLAN (1991)

(Functional plans are guidelines for implementing the State Plan. They are approved by the Governor, but not adopted by the State Legislature.)

Objective H: Achievement of Productive Agricultural Use of Lands Most Suitable and Needed for Agriculture.

Policy H(2): Conserve and protect important agricultural lands in accordance with the Hawaii State Constitution.

Action H(2)(a): Propose enactment of standards and criteria to identify, conserve, and protect important agricultural lands and lands in agricultural use.

Action H(2)(c): Administer land use district boundary amendments, permitted land uses, infrastructure standards, and other planning and regulatory functions on important agricultural lands and lands in agricultural use, so as to ensure the availability of agriculturally suitable lands and promote diversified agriculture.

4. COUNTY OF MAUI 2030 GENERAL PLAN, COUNTYWIDE POLICY PLAN (2010)

Countywide goals, objectives, policies and actions

F. Strengthen the Local Economy

Objective

2. Diversify and expand sustainable forms of agriculture and aquaculture.

Policies

- b. Prioritize the use of agricultural land to feed the local population, and promote the use of agriculture lands for sustainable and diversified agricultural activities.

APPENDIX

**STATE AND COUNTY GOALS, OBJECTIVES, POLICIES
AND GUIDELINES RELATED TO AGRICULTURAL LANDS**

1. HAWAII STATE CONSTITUTION (Article XI, Section 3):

...to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands...

2. HAWAII STATE PLAN (Chapter 226, Hawaii Revised Statutes, as amended):

Section 226-7 Objectives and policies for the economy--agriculture.

(a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:

- (1) Viability in Hawaii's sugar and pineapple industries.
- (2) Growth and development of diversified agriculture throughout the State.
- (3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.
- (b) To achieve the agricultural objectives, it shall be the policy of the State to:
 - (2) Encourage agriculture by making best use of natural resources.
 - (10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.
 - (16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.

Section 226-103 Economic priority guidelines.

- (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries:
 - (1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.
 - (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:

- c. Support ordinances, programs, and policies that keep agricultural land and water available and affordable to farmers.

Implementing Actions

- c. Create agricultural parks in areas distant from genetically modified crops.

J. Promote Sustainable Land Use and Growth Management

Objective

- 2. Improve planning for and management of agricultural lands and rural areas.

Policies

- a. Protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies.
- c. Discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses.

Implementing Actions

- a. Inventory and protect prime, productive, and potentially productive agricultural lands from competing non-agricultural land uses.

5. MAUI ISLAND PLAN, GENERAL PLAN 2030, DRAFT (2009)

Core Values

- E. Preserve rural and agricultural lands and encourage sustainable agriculture.

Agricultural Lands

Goal

- 7.1 Maui Island will have a prosperous agricultural industry and will protect agricultural lands.

Objective

- 7.1.1 Significantly reduce the loss of prime and productive agricultural lands.

Policies

- 7.1.1.a Allow limited clustering of development on prime and productive agricultural lands identified on Maui Island Plan Map #7-1 when approved as a Conservation Site Design (CSD) through regulations.

- 7.1.1.b Require the review and approval of Conservation Site Design (CSD) plans prior to the subdivision of prime and productive agricultural lands identified on Maui Island Plan Map # 7-1.

- 7.1.1.c Discourage developing or subdividing Prime, Productive or Important agricultural lands for residential uses in which the residence would be

- the primary use and any agricultural activities would be secondary uses.

- 7.1.1.e Focus urban growth, to the extent practicable, away from Prime, Productive or Important Agricultural Lands identified on Maui Island Plan Map #7-1.

- 7.1.1.f Strongly discourage the conversion of Prime, Productive or Important Agricultural Lands identified on Maui Island Plan Map #7-1 to rural or urban use, unless justified during the General Plan update, when other overriding factors are present.

- 7.1.1.h Protect Prime, Productive or Important Agricultural Lands identified on Maui Island Plan Map #7-1 from development through the use of TDR/PDR, tax credits, and easement programs.

- 7.1.1.j Require all major developments adjacent to agricultural lands to provide an appropriate and site-specific agricultural protection buffer as part of a required site plan.

- 7.1.1.k Support agricultural protection zoning as a vital component of an agricultural land preservation program.

6. COUNTY OF MAUI, KIHEI-MĀKENA COMMUNITY PLAN (1998)

LAND USE

Objectives and Policies

- p. Prevent urbanization of important agricultural lands
- r. Allow special permits in the State Agricultural Districts to accommodate unusual yet reasonable uses including: (1) limited agriculturally related commercial, public and quasi-public uses serving the immediate community; (2) uses clearly accessory or subordinate to a principal agricultural use on the property; (3) public facility uses such as utility installations or landfills whose location depends on technical considerations; and (4) extractive industries, such as quarrying, where the operation would not adversely affect the environment or surrounding agricultural uses.

ECONOMIC ACTIVITY

Objectives and Policies

- e. Provide for the preservation and enhancement of important agricultural lands for a variety of agricultural activities, including sugar cane, diversified agriculture and aquaculture.

7. REFERENCES

- Act 25, S.B. No. 1158, April 15, 1993.
- County of Maui, Planning Department, Long Range Division. *Maui Island Plan, General Plan 2030 (Draft)*. December 2009.
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FIGURE 1. LOCATION, KĪHEI HIGH SCHOOL



FIGURE 2. SITE PLAN, KĪHEI HIGH SCHOOL



FIGURE 3. STATE LAND USE DISTRICTS



FIGURE 4. COUNTY KĪHEI-MĀKENA COMMUNITY PLAN



FIGURE 5. SOIL TYPES

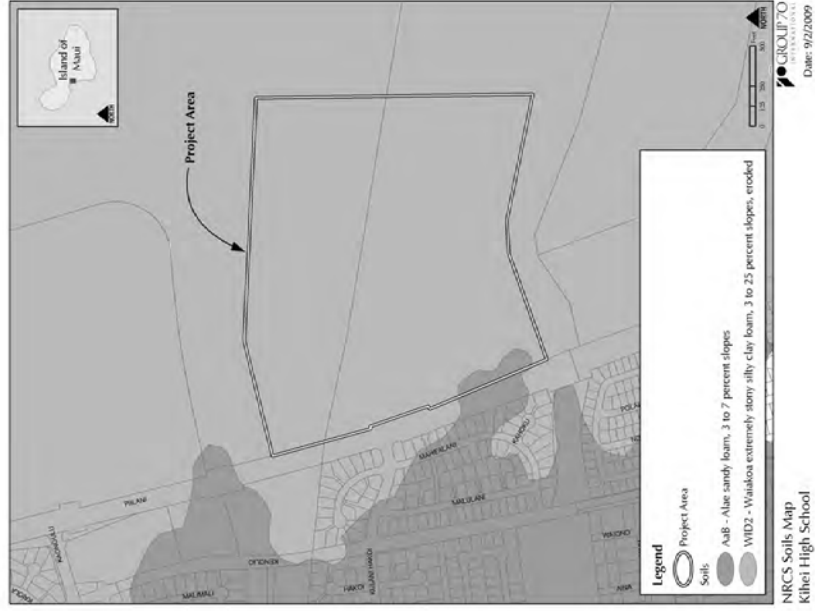


FIGURE 6. ALISH AND LSB SOIL RATINGS

