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State Of Hawai'i
Department of Health
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To whom it may concern:

I would like to register my comments on the Scope of the Environmental Impact Statement (EIS) concerning the proposed industrial dairy at Maha'ulepu, Kaua'i. I understand that after describing my concerns, I will be allowed to continue in the EIS process and be assured the ability to provide future comments. I am concerned with all 13 Categories of Significance Criteria identified in the HAR Chapter 200, but I would like to concentrate my comments on Criteria 7, 10, and 11. My concerns revolve primarily, around the environmental issues involved with Hawaii Dairy Farms (HDF) planned industrial dairy operation.

Although I am not a resident of Hawai'i, I have spent annual vacations on Kauai for the past 16 years. To provide an understanding of my background, I attended the University of Hawai'i – Manoa in 1974, received a bachelor's degree at Drake University and a Masters Degree in Water Resources Management at the University of Wisconsin – Madison. The emphasis of my Masters work was 208 Water Quality planning in association with dairy farms in southern Wisconsin. I am quite familiar with dairies and their impact on streams and the environment. For the past 30 years, I have been on the faculty at Oregon State University as a fish biologist and stream ecologist.

It will be impossible for HDF's large scale dairy operation to be a "Zero-point source discharge, meaning 100 percent of the cow's manure will remain on the farm as fertilizer for the pasture grass" as stated in the HDF Environmental Impact Statement Preparation Notice.

Kaua'i receives some of the greatest amounts of rainfall anywhere on earth. Even the dryer south side of the island can receive large quantities of rain within a 24 hour interval. In addition, long intervals of 10 to 20 consecutive days can receive moderate to heavy rainfall. Incidents of heavy rain for the Maha'ulepu area can be observed by using rainfall records from the nearby rain gauge. Rainfall records from the weather gauge at Po'ipu /Maha'ulepu indicate that, in the past 5 years, there have been numerous rain events within a 24 hour interval which have exceeded 2 inches.

Below is a summary of my concerns with HDF's planned industrial dairy operation at Maha'ulepu:

SOILS

In the document entitled "NRCS Conservation Service Plan" prepared by HDF, it indicates that the soils at the site are volcanic in origin and would be readily absorbed rainfall. For this dairy to operate at a zero-point source level, soils would need to be favorable for nutrient absorption. However, recent documents from HDF indicate that the soils at the site are not porous volcanic soils but are, instead, poorly drained clay like soils. Soils at the site now have been indicated as being Ka'ena clay and Kalihi clay. These soils are not porous and will lead to overland flow of rainfall and applied diluted effluent by irrigation. The draft EIS will need to address, in detail, the extent of these poorly draining soils and their proximity to Waiopili Stream as well as Mill Ditch and all other ditches that have flowing water within the dairy operation.

BUFFER STRIPS

After studying the environmental implications from dairy operations for my Masters degree at Wisconsin, "America's Dairyland", a common practice for limiting runoff from dairy operations into surface waters is with the use of buffer strips. Buffer strips of well vegetated zones consisting of grass and shrubs/trees along the sides of a stream can act to limit, and even absorb, nutrient runoff from nearby dairy operations. Typically, buffer widths of 200 feet are implemented if downstream uses of water are for recreation, drinking water, or if endangered species inhabit stream waters. If none of these issues exist, then buffer strips of 100 feet can be used, but the ability of nutrient absorption is reduced. The downstream reaches of Waiopili stream, specifically the area where the stream enters the ocean at Gillin's Beach, is used extensively by visitors and residents alike for recreation.

HDF's plan indicates a buffer strip of 50 feet for streams, agricultural water and natural water resources. Fifty feet of riparian buffer will be inadequate to stop manure from entering surface waters. Waiopili stream will receive dairy effluent during storm events and will transport the material to the ocean at Gillin's Beach. Over the years, I have witnessed and documented numerous events where the ocean is brown with runoff materials at Maha'ulepu. This runoff is partially coming from the low levels of cattle grazing already operating in the area. Even with this existing low level of grazing, Waiopili stream is providing large amounts of sediment to the ocean and is limiting the recovery of corals in the area.

Water quality monitoring by both Hawaii Department of Health and by Kauai Surfrider indicate high levels of E. coli in Waiopili Stream as well as in the ocean directly out from Gillin Beach. With the levels of E. coli presently being the highest of all streams on Kauai, there is a responsibility of the state to limit development in the area so that these already high levels of E. coli do not continue to increase.

In HDF's EIS Preparation Notice, they state in the section labeled Surface Water Resources, the "Area has a system of ditches ('auwai)." Furthermore they state "Several ditches exist between these north-south running ditches to drain the fields. Mill ditch forms the southern boundary of the parcel, which flows into Waiopili Stream and then discharges to the ocean at Maha'ulepu. Beach". If these ditches "Drain the fields" as stated in the Notice and enter the stream ecosystem, they will eventually end up

into the marine environment. This is definitely not a “zero-discharge system”. A thorough and detailed examination of the likelihood of nutrients entering the freshwater ditches and streams of the area will need to be addressed in the prepared EIS.

Furthermore HDF’s Preparation Notice, Section 3.3 INFRASTRUCTURE, subsection Drainage and Storm Water Runoff, gives more details about the ditch system by stating: “The project has been used for previous agricultural and grazing activities, and has a system of ditches to channel storm water through the area as well as to drain the fields”. Draining the fields where grazing cows are defecating/urinating is EXACTLY what is to be avoided. The EIS will need to document, in detail, how storm waters will be managed and how they will be prevented from entering surface waters systems.

A secondary route where urine/manure can enter the freshwater ecosystem is through the aerial application of diluted effluent onto the pastures. Spray drift is a common problem and wind conditions are critical factors for proper application of effluent upon these systems. Literature that HDF has provided does not indicate what the maximum threshold wind spread limit is when the irrigation of effluent is terminated. Will the effluent be irrigated if the typical trade winds are prevailing? After several years of preparation work at the site, HDF must realize that strong winds are common. Winds will carry the aerial application of effluent past intended pastures and into areas such as ditches, streams, and riparian buffer zones. How will the wind speed be determined at the site? Will wind speeds be measured by the use of anemometers and how many units will be located at the site? Where will anemometers be placed? How often will wind speed levels be measured? Who will be measuring the wind speed or will it be done automatically? Are aerial applications of the effluent through irrigation done day and night? All of these factors will need to be addressed in the prepared EIS.

When effluent enters the ditch system, either by overland flow or by spray drift from aerial effluent application, what will be the protocols for documenting the oversight? Will there be a system in place to filter the fresh water ditch system of contaminants? Who will be monitoring the water quality in the ditch system and in Waiopili Stream? How often will water quality be monitored in these surface waters?

During heavy or prolonged rainfall events contaminated waters will flow through the ditch system, including Mill ditch, and into Waiopili Stream and eventually into the ocean. There are numerous species, endemic and endangered within the freshwater system that will be affected. The following are some, but not all, of the freshwater species that will be affected and thus will need to be addressed within the EIS.

Waterfowl:

There are five waterfowl species presently listed as endangered by the IUCN (International Union for the Conservation of Nature). This organization is the world’s main authority on the conservation status of sensitive species. Species known to be present at the proposed dairy site are:

Hawaiian Duck (*Anas wyvilliana*)

Hawaiian goose (*Branta sandvicensis*)

Hawaiian common moorhen (*Gallinula chloropus sandvicensis*)

Hawaiian coot (*Fulica americana alai*)

Hawaiian stilt (*Himantopus mexicanus knudseni*)

I have witnessed and photographed the Hawaiian duck feeding and loafing in Waiopili Stream near its junction with the ocean at Maha'ulepu beach. This species, along with the other four species, would be adversely affected if the water quality of Waiopili stream becomes more degraded than its present level. The EIS preparation will need qualified personnel to conduct rigorous surveys detailing the level of use by these five endangered birds known to occupy the area.

AQUATIC INVERTEBRATES:

There is nothing indicated in the Preparation Notice concerning aquatic invertebrate surveys. A survey of aquatic invertebrates will need to be conducted in order to understand the possible impacts from the proposed dairy on these organisms. The five listed bird species in the area all feed on aquatic invertebrates such as Odonata and Diptera. Understandably, terrestrial arthropods need to be surveyed but aquatic invertebrates should not be overlooked as important organisms that will be affected by changes in stream water quality. There are 23 species and subspecies of damselflies that are endemic to the Hawaiian Islands along with 5 endemic dragonfly species. Have surveys been conducted for the presence of the endangered Pacific Hawaiian damselfly (*Megalagrion pacificum*) at this proposed site? The EIS will need to document if any of these endemic or endangered organisms are present in Waiopili Stream or any other waters running through the proposed site.

FISH:

There is nothing stated in the EIS Preparation Notice concerning the presence of fresh water fish in Waiopili Stream. I have observed fish in this stream on numerous occasions. Without the necessary permits and collecting gear (backpack electrofisher, seine) I do not know the species of these observed fish. Since Mill Ditch is fairly large in size and with perennial flow, I would postulate that it too has a native fish community. No information is provided on how the native fish community will be affected with this proposed industrial dairy.

Kauai has five freshwater endemic fish species. All are anadromous, with the adults living and spawning in streams but hatching larvae drift downstream to the ocean to live part of their life cycle. The five species of freshwater fish are:

Strangetailed flagtail (*Kuhlia xenura*)

Hawaiian freshwater goby - Oopu alamoo (*Lentipes concolor*)

O'opu naniha (*Stenogobius hawaiiensis*)

Sandwich Island sleeper (*Eleotris sandwicensis*)

Stimpson's goby (*Sicyopterus stimpsoni*)

Both *Stenogobius hawaiiensis* and *Eleotris sandwicensis* are endemic and are unable to pass steep torrents. These species may be present in the freshwaters of Waiopili Stream and the ditch system at

the proposed dairy site. Fish surveys using backpack electrofishers and/or seines will need to be conducted for the EIS to determine their presence and abundance.

In section 4.2 HDF states that “Long-term effects to the environment are expected to be minimal”. I believe strongly that this statement is incorrect and there will be short and long term environmental damages from this industrial dairy operation. In addition to the effects on individual components of the ecosystem, there are obvious cumulative effects from this proposed dairy facility that would greatly alter the economy and environment of the Island of Kauai’i. Both freshwater and marine systems in the south shore area of Kauai would suffer substantially, tourism and the personnel employed by the tourism industry would be greatly altered and in all reality, HDF would be liable for such damages, from state and federal agencies, as well as from private individuals and corporations.

I truly hoped an independent contractor would be preparing the EIS for this proposed dairy operation. Group 70 International, Inc., who has worked closely with HDF in the past, is preparing this EIS. This leads me to believe the document may be biased and the public and the State of Hawai’i should not conclude that all statements in the EIS are based on sound science or objectivity.

Thank you for your time and please feel free to contact me if you have any questions. I look forward to following the process of this EIS.

Sincerely,

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