



DEL MONTE CORPORATION (OAHU PLANTATION) SUPERFUND SITE

U.S. Environmental Protection Agency • Region 9
Fact Sheet Number 3 • January 1999 • Kunia, Hawaii

CLEANUP INVESTIGATION COMPLETED

Under an agreement with the United States Environmental Protection Agency (US EPA), Del Monte Fresh Produce (Hawaii), Inc., has completed the part of the Superfund cleanup process called the Remedial Investigation (RI).

This fact sheet summarizes the results of the soil, groundwater, surface water and sediment testing conducted during 1997 and 1998; explains the routes of potential exposure; identifies future activities; and provides information about how the community can learn about and become involved in the cleanup decision-making process.

A public meeting will be held at the Wahiawa Intermediate School library from 7:00pm - 9:00pm on January 27, 1999, to share the results of the RI with the community.

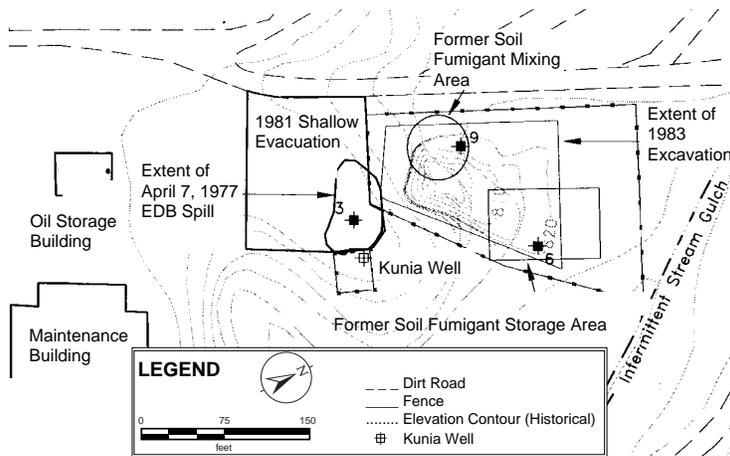


Figure 1: Kunia Village Area

chemicals were known to have been released in the past, such as the accidental spill of 495 gallons of the pesticide ethylene dibromide (EDB) in April 1977.

This area includes the Kunia Well Spill Area, the Former Fumigant Storage Area, and the Former Fumigant Mixing Area (see Figure 1).

In addition, soil samples were collected from the field where contaminated soil was spread during Del Monte's 1983 cleanup activity, and areas that were previously used for chemical storage and empty drum disposal. The RI refers to these areas as "Other Potential Source Areas" (see Figure 2 next page.)

THE REMEDIAL INVESTIGATION (RI)

The RI is a detailed technical study of the nature and extent of contamination for all chemicals known to have been used/released at the site.

Areas were investigated by collecting and analyzing samples of soil, perched (shallow) groundwater, basal (deep) groundwater, surface water and sediment.

A computer model was used to determine the distance that chemicals could have travelled in the groundwater at concentrations exceeding drinking water standards.

The RI refers to the "Kunia Village Area" as the place where

FINDINGS OF THE RI

SOIL SAMPLING RESULTS — KUNIA VILLAGE AREA

A total of 177 soil samples were collected and analyzed in the Kunia Village Area. Soil samples were collected from the surface to about 25 feet deep or until perched groundwater was encountered.

All samples were tested for the soil fumigants most commonly found in previous investigations, including

public meeting

WAHIAWA INTERMEDIATE
SCHOOL LIBRARY

275 Rose Street
Wahiawa, Hawaii

January 27, 1999

7:00 pm - 9:00 pm

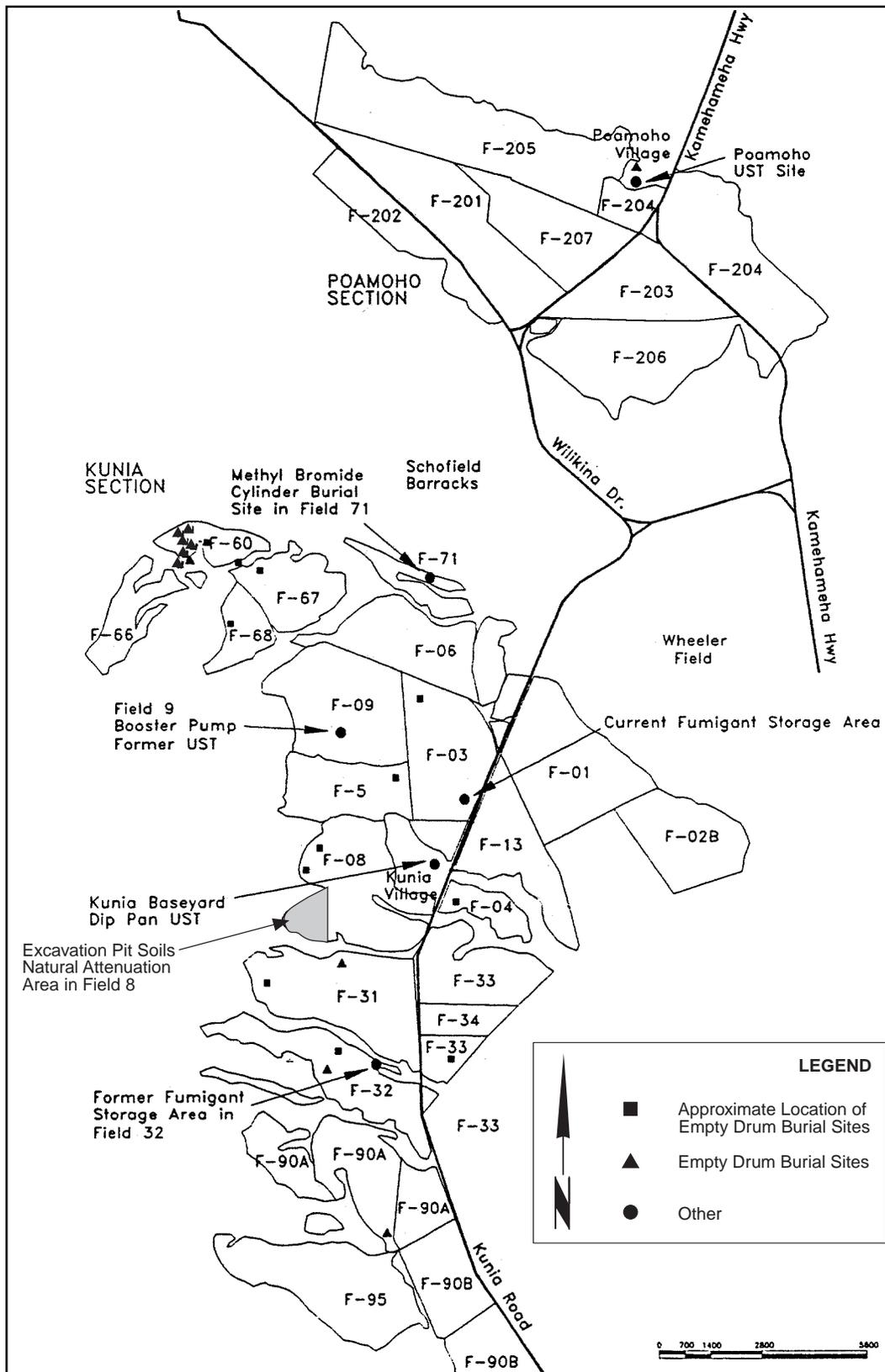


Figure 2: Location of Other Potential Source Areas

Preliminary Remediation Goals (PRGs)

PRGs are risk-based numbers used for evaluating and cleaning up contaminated sites. Chemical concentrations above these levels do not automatically trigger a cleanup action. Exceeding a PRG suggests that further evaluation of the potential risks that may be posed by site contaminants is appropriate.

ethylene dibromide (EDB) and 1,2-dibromo-3-chloropropane (DBCP), and other previously used pesticides and fuels. Soil gas samples were also collected to determine concentrations of chemicals potentially present as vapors in the spaces between soil particles.

None of the soil samples detected EDB, DBCP or other chemicals above EPA Preliminary Remediation Goals (see box above). However, one soil sample contained petroleum contamination that exceeded Hawaii Department of Health's (HDOH) cleanup criteria. Petroleum contamination is not addressed under Superfund, so the soil was excavated and sent to a treatment facility under local cleanup authority.

The soil gas samples did not contain concentrations of chemicals that would cause a risk if the chemicals moved upward into the open air.

Forty-two soil samples were collected in the Former Fumigant Storage Area in August 1998. This sampling was needed to complete the RI and to determine the best locations for installing perched groundwater extraction wells to be used in a Phytoremediation Treatability Study (see page 6). A number of chemicals, including EDB, DBCP and DCP were found at concentrations that exceeded PRGs.

SOIL SAMPLING RESULTS — OTHER POTENTIAL SOURCE AREAS

No chemicals were detected at concentrations exceeding PRGs in any of the “Other Potential Source Areas.”

Petroleum contamination exceeding the Hawaii Department of Health’s (HDOH) cleanup criteria was detected at the location of a former underground storage tank at the Field 9 booster pump. As noted above, petroleum contamination is not addressed under Superfund, so the soil was excavated and sent to a treatment facility under local cleanup authority.

SURFACE WATER AND SEDIMENT SAMPLING RESULTS

Fourteen sediment samples and three storm water runoff samples were collected from a gulch and ravine north of the Former Fumigant Storage Area that has seasonal

rainwater flows. No chemicals were detected above PRGs in the sediment samples.

Both EDB and DBCP were detected in the stormwater of the gulch at concentrations similar to levels detected in a sample of water collected in the excavated pit (near the Kunia Well).

The investigators concluded that the pit had overflowed due to unusually high water levels. An earthen berm has since been constructed to prevent future storm water discharges from the pond.

GROUNDWATER SAMPLING

Groundwater occurs within two distinct zones in the Kunia Village Area: the perched (shallow) groundwater zone and the basal (deep) groundwater zone (see Figure 3). The perched groundwater is not used for any purpose, but water from the perched zone does infiltrate down to the basal zone. The basal groundwater is used for drinking water, irrigation and other purposes.

Perched groundwater was encountered near ground surface where soils had been previously excavated and at depths of about 25 feet in other portions of the Kunia Village Area. Perched groundwater extends to

depths of about 100 feet below ground surface (BGS). The basal groundwater begins approximately 850 feet below ground surface.

PERCHED GROUNDWATER RESULTS

Eight piezometers (small diameter shallow wells) and six monitoring wells were installed and sampled. Several rounds of sampling were conducted in each of the monitoring wells.

The chemicals EDB, DBCP, 1,2-dichloropropane (DCP), 1,2,3-trichloropropane (TCP), benzene and lindane were detected in the perched groundwater at concentrations exceeding EPA or HDOH

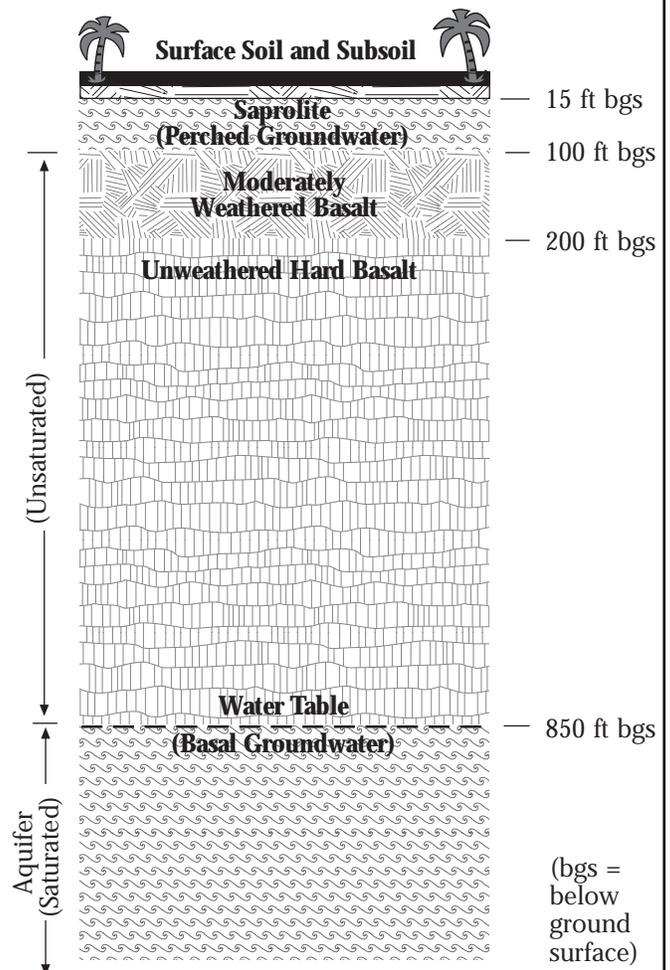


Figure 3: Groundwater Levels

TABLE 1: CHEMICALS EXCEEDING MCLS IN KUNIA VILLAGE AREA PERCHED GROUNDWATER WELLS

| COMPOUND | CONCENTRATION (ppb) | MCL (ppb) |
|----------|---------------------|-----------|
| EDB | 6,800 | 0.04 |
| DBCP | 78,000 | 0.04 |
| DCP | 7,200 | 5.0 |
| TCP | 55 | 0.8 |
| Benzene | 74 | 5.0 |
| Lindane | 260 | 0.2 |

drinking water standards, known as Maximum Contaminant Levels or MCLs.

(MCLs are expressed in parts per billion (ppb) which is one part of a chemical in one billion parts of groundwater.)

The highest concentrations were found in groundwater beneath the Former Fumigant Storage Area and are shown in Table 1.

The lowest concentrations of chemicals were found in the Kunia Well Spill Area and the Former Fumigant Mixing Area. This is likely due to the previous cleanup actions conducted by Del Monte in 1981 and 1983 to excavate contaminated soil and extract perched groundwater.

The RI sampling results indicate that contaminated perched groundwater remaining in the Kunia Village Area encompasses an area of approximately 300 feet by 300 feet.

BASAL GROUNDWATER SAMPLING RESULTS

The basal groundwater in the Kunia Village Area was investigated by sampling the Kunia Well, and installing and sampling a new well located about 150 feet downgradient of the Kunia Well. The only chemicals detected in either well exceeding drinking water MCLs are EDB, DBCP, and TCP. The range of concentrations detected in several rounds of sampling is shown in Table 2 (next page).

OTHER BASAL WELL SAMPLING RESULTS

To better understand the condition of basal groundwater in the surrounding region, several drinking water wells located upgradient and downgradient of the Kunia Well were sampled several times. A summary of

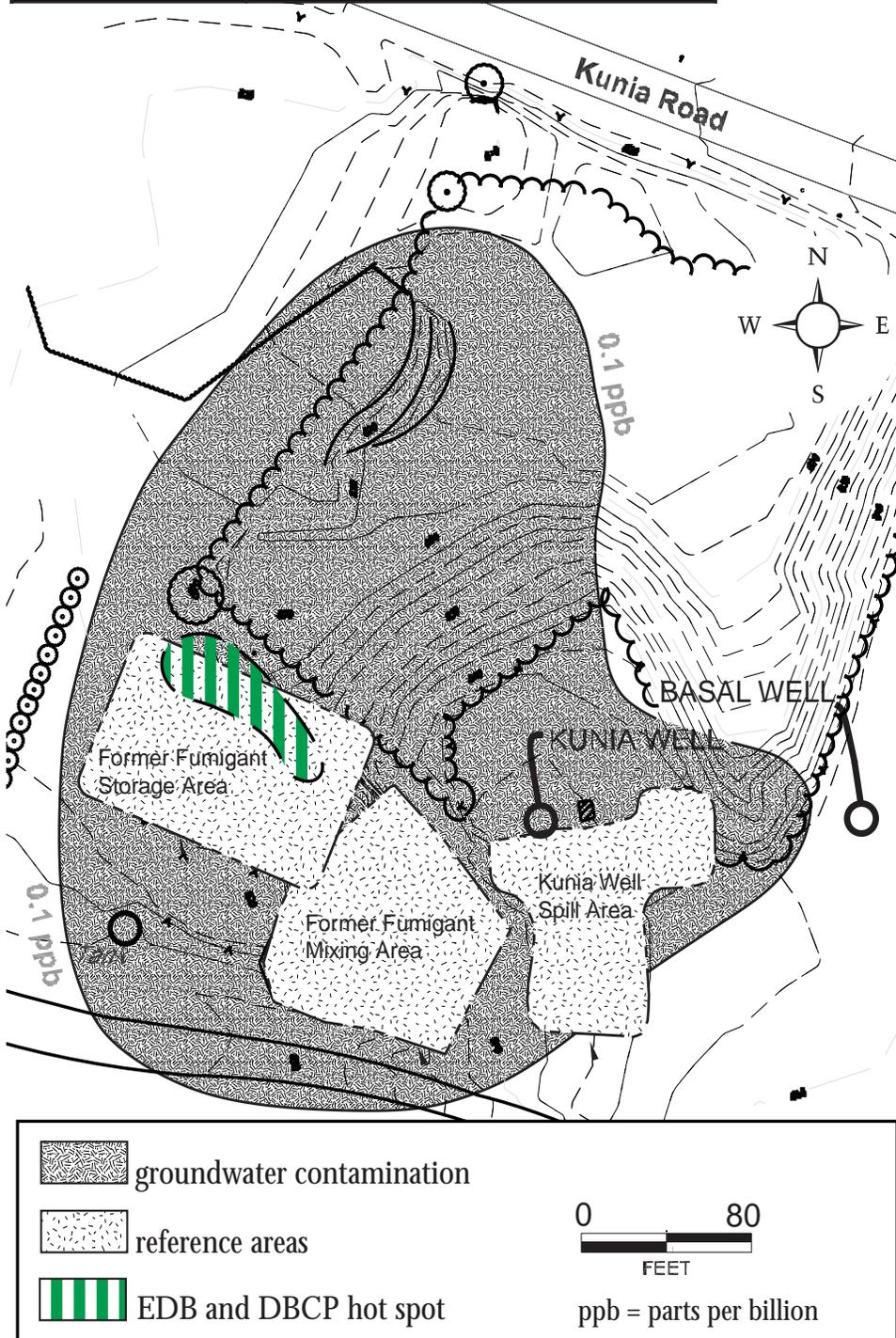


Figure 4: Extent of Contamination in Perched Acquifer

the sampling results is as follows:

The "Navy Well," which is currently used to supply water to Kunia Village, is located upgradient of the Kunia Village Area. TCE was detected in the Navy Well at a concentration slightly less than the MCL. It is important to note that all of the drinking water for Kunia Village is treated to drinking water standards prior to use by residents. The TCE in the Navy Well may be migrating from the Schoefield Barracks Superfund Site.

The Hawaii Country Club Well (HCC), located approximately 1.5 miles south of Kunia Village Area, is the nearest potentially downgradient well. There is some uncertainty as to whether the HCC well is located in the same aquifer as the Kunia Well. However, the RI conservatively assumed that the HCC well is in the same aquifer as the Kunia Well. DBCP has been detected periodically in the HCC well at concentrations slightly above or slightly below the MCL. Water at the HCC clubhouse is treated to drinking water standards.

The Air Force Waikakalaua Fuel Storage Annex monitoring well contained TCE below the MCL, but is located in a different aquifer than the Kunia Well.

The Honouliuli II wells are about 4 miles downgradient from the Kunia Village Area and are located in the same aquifer as the Kunia Well. No chemicals were detected in the Honouliuli II wells.

BASAL WELLS SERVING VILLAGE PARK

An important finding of the RI, which has also been confirmed by the U.S. Geological Survey, is that the Kunia Well is located in a

TABLE 2: MAXIMUM LEVEL OF CHEMICALS DETECTED IN BASAL GROUNDWATER

| COMPOUND | CONCENTRATION (ppb) | MCL (ppb) |
|----------|---------------------|-----------|
| EDB | ND - 0.22 | 0.04 |
| DBCP | 0.66 - 1.4 | 0.04 |
| TCP | ND - 1.0 | 0.8 |

ND = NOT DETECTED

different aquifer than the drinking water wells that serve Village Park (the Kunia I/II wells). This means that the drinking water wells that serve Village Park cannot be contaminated by any chemicals found in groundwater at the Kunia Village Area.

The analysis shows that the Kunia I/II wells are located in the Koolau aquifer and the Kunia Village Well is located in the Waianae aquifer. The Koolau aquifer and the Waianae aquifer are separated by a geologic boundary or discontinuity.

GROUNDWATER MODELLING RESULTS

A computerized groundwater model combined with field sampling results indicated that, prior to 1980, the contaminated groundwater plume was completely contained on site due to pumping of the Kunia Well before it was disconnected from the potable water supply in April 1980.

The results of modelling from 1980 to the present indicate that using "reasonable worst-case" assumptions, the chemicals could have migrated at most about 4,500 feet downgradient of the Kunia Village Area at MCL concentrations. The "reasonable best-case" scenario indicates that EDB-contaminated groundwater has probably travelled about 1,800 feet and the DBCP

contamination has moved perhaps 2,000 feet at the MCL concentration.

The potential future travel of the groundwater plume was estimated using a model based on groundwater concentrations for EDB and DBCP currently observed in the Kunia Village Area. The model indicates that the maximum future estimated travel distance from the Kunia Village Area to an MCL is about 2,000 feet for EDB and 3,000 feet for DBCP.

All estimated distances position the plume of contamination within the boundaries of the Del Monte Plantation, below the agricultural fields (see Figure 5).

There is little likelihood of future impacts to any existing downgradient wells at levels above MCLs, even if current concentrations remain constant in the Kunia Village Area.

ROUTES OF POTENTIAL EXPOSURE

Based on the results of the RI, the only current potential for human exposure to site contaminants is through inhalation of chemicals volatilizing from the exposed perched groundwater within the pond (the area excavated in 1981 and 1983). There is the potential for future exposure if water supply wells were drilled within the contaminated area of the basal aquifer.

The risks associated with these exposure pathways will be evaluated in the Baseline Human Health Risk Assessment and the cleanup alternatives proposed in the Feasibility Study, as explained below.

SITE BOUNDARY CLARIFICATION

An area where empty fumigant drums were buried behind the Poamoho Crateyard was investigated as part of the RI. Analysis of soil samples detected only heptachlor at a concentration well below the PRG. Soil gas samples did not contain concentrations of chemicals that would cause a risk if the chemicals moved upward into the open air. Basal groundwater flows south, and while the perched aquifer flows north, it is a small plume in the immediate vicinity of the Kunia Well. Since the Poamoho lands are located several miles north of the Kunia Well, EPA does not anticipate that groundwater contamination will migrate to the Poamoho lands.

Based on these RI sampling results, EPA has determined that it is appropriate to clarify the boundaries of the Del Monte Superfund site so that the site no longer includes the Poamoho lands.

FUTURE ACTIVITIES

Del Monte is working to complete three additional phases of work for the Superfund process: a Phytoremediation Treatability Study, a Baseline Human Health Risk Assessment and the Feasibility Study.

The Treatability Study is an evaluation of a promising technology called phytoremediation which uses plants to break down chemical contamination in groundwater into non-toxic compounds. The Treatabil-

ity Study will evaluate the effectiveness of phytoremediation in treating contaminated perched groundwater.

The Baseline Human Health Risk Assessment will evaluate the risks to human health from potential exposure to contamination from the site identified in the RI. The results

of this Risk Assessment are then used to help define the cleanup levels that will protect human health.

The Feasibility Study (FS) will evaluate potential cleanup alternatives in light of the RI and other information, such as the Treatability Study and Risk Assessment.

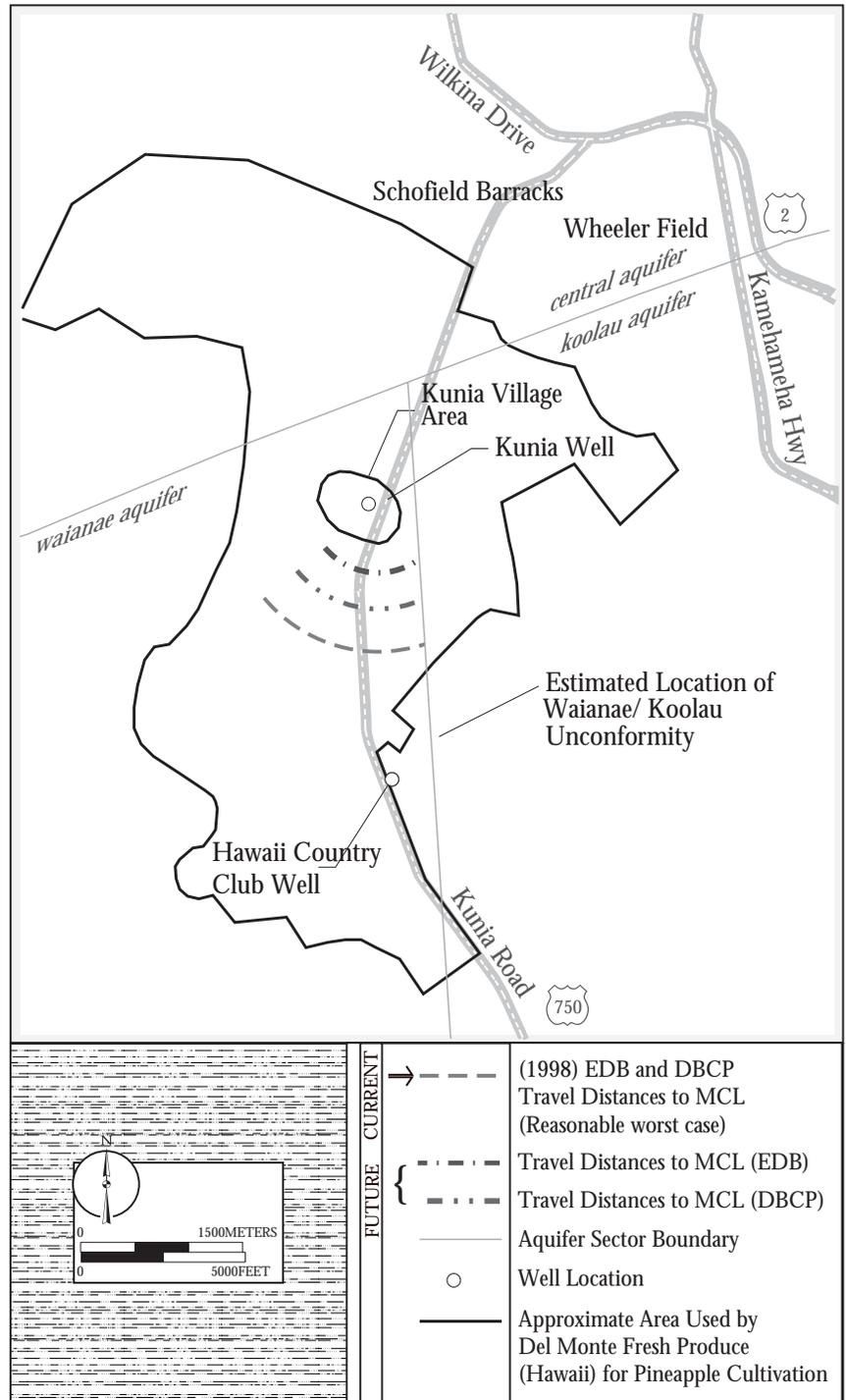


Figure 5: Current and Future Estimated Travel Distances for EDB/DBCP

When these additional studies are completed, EPA will prepare a Proposed Plan which describes all of the cleanup alternatives evaluated by EPA and identifies the one it considers the best. The RI/FS documents, Treatability Study, Health Risk Assessment, Proposed Plan and other pertinent documents will be available for public review at the Information Repository in the Wahiawa Public Library.

When the Proposed Plan is completed, EPA will release a fact sheet summarizing it and announce the beginning of a minimum 30-day public comment period. Copies of the fact sheet will be mailed to everyone on EPA's mailing list and be available at the Wahiawa Public Library.

Mid-way through the comment period, EPA will hold a formal public hearing to solicit public input regarding the Proposed Plan. Comments may be made to EPA verbally or in

writing any time during the comment period. EPA anticipates that a Proposed Plan public hearing will be held in the Fall of 1999.

EPA will acknowledge and address all comments to its Proposed Plan in a document called a Responsiveness Summary. A copy of this document will be available in the Information Repository to help the public understand the basis of EPA's final decision.

After considering public comments, EPA will choose a cleanup method and explain its choice in a document called the Record of Decision (ROD). This document is the basis for future EPA actions at the site.

PUBLIC PARTICIPATION

PUBLIC MEETING IN JANUARY

To assist the community in becoming involved in the decision-

making process at the Del Monte Plantation site, EPA will conduct its next public meeting in January (see box on Page One). The main purpose of the meeting will be to discuss the results of the Remedial Investigation.

TECHNICAL ASSISTANCE GRANT AVAILABILITY

EPA has a fund of \$50,000 to award a Technical Assistance Grant to an eligible community group that is interested in learning about the technical aspects of the cleanup process and the future proposed plan. The grant is available to fund the services of an independent technical advisor and to fund information outreach to the interested community.

Information about the TAG program and an application packet can be obtained by contacting the EPA Region 9 office toll-free at (800) 231-3075.



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To help us maintain an accurate mailing list, please mark the appropriate box below and complete the coupon. (If you are already on our list and do not have any changes, you do not need to respond). You may also call TOLL FREE, 1-800-231-3075, to provide us the information.

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Name: _____ Representing: _____

Address: _____

City/State/Zip: _____ Telephone (optional): _____

Return to: David Cooper, U.S. EPA, 75 Hawthorne Street, (SFD-3), San Francisco, CA 94105

INFORMATION REPOSITORY

The Remedial Investigation, Community Relations Plan and other site-related documents are available for public review at the Information Repository:



Wahiawa Public Library Hours of Operation:
820 California Avenue Mon, Wed, Sat > 10am - 5pm
Wahiawa, HI 96786 Tues, Thurs > 10am - 8pm
(808) 621-6331 Fri, Sun > Closed

FOR ADDITIONAL COPIES OF THIS FACT SHEET OR GENERAL INFORMATION ON THE SUPERFUND PROCESS, YOU MAY CONTACT:

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