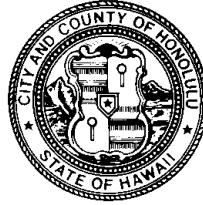


DEPARTMENT OF ENVIRONMENTAL SERVICES  
**CITY AND COUNTY OF HONOLULU**

REFUSE DIVISION

1000 ULUOHIA STREET, SUITE 212, KAPOLEI, HAWAII 96707  
TELEPHONE: (808) 768-3401 • FAX: (808) 768-3434 • WEBSITE: <http://envhonolulu.org>

PETER B. CARLISLE  
MAYOR



TIMOTHY E. STEINBERGER, P.E.  
DIRECTOR

WILMA NAMUMNART, P.E.  
ACTING CHIEF

IN REPLY REFER TO:  
RE 11-001

**CITY AND COUNTY OF HONOLULU  
MAYOR'S ADVISORY COMMITTEE ON LANDFILL SITE SELECTION  
MAYOR'S CONFERENCE ROOM  
MEETING NO. 6  
TUESDAY, JULY 19, 2011  
9:00 A.M. - 12:00 P.M.**

**AGENDA**

1. Welcome and Introduction  
  
Purpose: To report on progress made in completing the criteria data sheets; the Committee's assignment of weighting to their criteria; and discussing the Committee's next meeting.  
  
Outcomes: Obtaining the Committee's weighting for the criteria; and preparation for August workshop.
2. Review of Meeting No. 5
3. Public Comments
4. Data Sheets
5. Committee's Weighting of the Criteria
6. Committee's Next Meeting (August Workshop), Thank You and Adjournment

**Meeting No. 6 – Handout Materials**  
**Draft Landfill Criterion Evaluation Work Sheets**

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Mayor's Advisory Committee on Landfill Site Selection  
City and County of Honolulu  
July 19, 2011

# Landfill Criterion Evaluation Work Sheet

## Criterion #1, Landfill Capacity

### Site Name

A. Point Value:

B. Definitions:

- a. Criterion Definition: The landfill capacity is the volume in cubic yards of MSW that can be placed in the site. The total volume available at the site is reduced for the soil and other materials needed for the liner, leachate and gas controls, and for daily, intermediate and final cover. The area needed for landfill support facilities and for solid-waste related activities, if any, is also subtracted from the area available to estimate the total volume.
- b. Other Definitions: The available volume is converted to tons of MSW and H-POWER ash using the compacting factors that are being achieved at the WGS.

C. Rationale for this Criterion: The minimum capacity in years (15 years) was determined by the MACLSS with input from ENV. Fifteen years was felt to be the minimum life needed to justify the cost of acquiring, permitting, and constructing the new landfill. A site with a longer time it can be used was preferred.

D. Measurement Method: The measurement is the estimated number of years the landfill can be used at the expected fill rate.

The site with the greatest number of years of capacity has the highest Point Value. Capacity in years is listed in order from 15 and transformed to deciles with 1 indicating the least number of years of use and 10 the greatest number of years of use.

E. Data Sources: The City's TMK information and the City's GIS system.

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations:

# Landfill Criterion Evaluation Work Sheet

## Criterion #2, Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities

### Site Name

A. Point Value:

B. Definitions:

a. **Criterion Definition:** Educational institutions include any school for children up to age 18, public or private, academic or vocational, public and private colleges and universities. They exclude commercial training institutions for adults, included in criterion 5. Health care facilities include medical and dental health centers or offices, hospitals (general, specialized, rehab), skilled nursing facilities, and clinics (except school clinics), and day care, elderly day care, or outpatient surgery centers. Public recreational facilities include national, state, and county parks, sports facilities, playgrounds (except school playgrounds), zoos, and community meeting centers.

b. **Other Definitions:** *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. **Rationale for this Criterion:** The closer a potential site is to the facilities subject to this criterion the greater the potential impact of a landfill at that location. This criterion penalizes potential sites located close to such facilities

D. **Measurement Method:** Distance from the nearest landfill site boundary to the nearest boundary of an educational institution, health care facility, or park or recreational facility.

The site with the greatest distance from educational institutions, health care facilities, or parks and recreation facilities has the highest Point Value.

E. **Data Sources:** *Sources used, measurements taken, etc.*

F. **Complications getting the data:** *Describe, if any.*

G. **Complications in calculating the Point Value:** *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #3, Location Relative to Residential Concentrations

### Site Name

A. Point Value:

B. Definitions:

- a. Criterion Definition: A residential concentration is defined as one or more residential housing units.
- b. Other Definitions: This criterion does not include visitor accommodations covered in criterion 5, which considers local or visitor commercial facilities.

C. Rationale for this Criterion: The closer a potential site is to concentrations of residential development the greater the potential impact of a landfill at that location. This criterion penalizes potential landfill sites located close to residential concentrations.

D. Measurement Method: Distance from the nearest landfill site boundary to the nearest boundary of a residential concentration. The distance is measured directly as the shortest route from the landfill to the residential concentration and not indirectly from surface roads

The site with the greatest distance from residential concentrations has the highest Point Value.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #4, Location Relative to Visitor Accommodations

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: Visitor accommodations include hotels, motels, vacation condominium units, time-share units, and hostels.

b. Other Definitions: Bed and breakfast and temporary visitor rentals are covered in criterion 4, which addresses residential units.

C. Rationale for this Criterion: The closer a potential site is to visitor accommodations the greater the potential impact of a landfill at that location. This criterion penalizes potential sites located close to visitor accommodations.

D. Measurement Method: Distance from the nearest landfill site boundary to the nearest boundary of a visitor accommodations. The distance is measured directly as the shortest route from the landfill to the visitor accommodations and not indirectly from surface roads.

The site with the greatest distance from visitor accommodations concentrations has the highest Point Value.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #5, Location Relative to Local or Visitor Commercial Facilities

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: Commercial facilities include stores, shopping centers, and office buildings. Local and visitor facilities include visitor centers, major attractions (public and private), and museums.

b. Other Definitions: Medical office buildings are included in criterion 2.

C. Rationale for this Criterion: The closer a potential site is to visitor and commercial facilities the less desirable that site is because of the greater the potential impact of a landfill at that location. This criterion penalizes potential sites located close to visitor commercial facilities.

D. Measurement Method: Distance from the nearest landfill site boundary to the nearest boundary of a visitor or commercial facility. The distance is measured directly as the shortest route from the landfill to the visitor or commercial facility, and not indirectly along from surface roads.

The site with the greatest distance from visitor or commercial facility has the highest Point Value.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #6, Effect on Established Public View Planes

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: A view plane is the unobstructed view from an offsite location to the operating area of a landfill site. View planes have been established by the City and County for many areas, and those determinations will be used for this criterion.

b. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand. (maybe we don't or shouldn't state it this way).*

C. Rationale for this Criterion: Visual impact is one of the common impacts of a landfill if the operating area cannot be hidden by a ridge or vegetation. This criterion will provide a measure of the visual impact.

D. Measurement Method: *From the criterion list, add details as needed.*

a. Evaluate City-defined scenic viewplanes and applicability to the site.

b. Evaluate "visibility" or level of exposure of the site to public access roads. This would be a qualitative assessment of the site by the observer, e.g., suggest the visibility be measured by quarters, for example "50 percent of the site can be observed from along X road."

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:



# Landfill Criterion Evaluation Work Sheet

## Criterion #7, Wind Direction Relative to Landfill Site

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: The prevailing wind direction and velocity measured by data available for a location near each landfill relative to the location of residential concentrations, visitor accommodation facilities, and commercial land uses.

b. Other Definitions:

C. Rationale for this Criterion: This criterion measures the effects of wind on the transmittal of dust, litter, and odor from a landfill to a receptor.

D. Measurement Method: The wind speed and direction are combined into a single measure that is compared to the measures for the other landfill sites. The range of measurements are transformed into deciles where 1 is the least appropriate prevailing wind pattern and 10 is the most appropriate wind pattern for all sites.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #8, Effect on Local Roads and Traffic in Residential Neighborhoods

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: A landfill will generate additional local traffic, the majority of which will be heavy trucks. This criterion measures the impact of adding the trucks to the roads that provides direct access to the landfill site.

b. Other Definitions: The measure will reflect both the increased traffic and the length of a roadway passing through a residential neighborhood.

C. Rationale for this Criterion: The added landfill traffic to a residential area can be a difficult impact to mitigate. This criterion measures the impact of additional traffic in a residential area. The cost of upgrading the roadway as a mitigation is measured by criterion 9.

D. Measurement Method: Measure the estimated distance that must be traveled through residential neighborhoods from the point at which refuse trucks leave state numbered roadways. That distance will be weighted by the number residential parcels along those roads.

The calculation of distance and number of residences is adjusted by the change in traffic congestion caused by landfill-related traffic.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #9, Wear and Tear on Highways and Roadways Caused by Landfill Related traffic

### Site Name

- A. Point Value:
- B. Definitions:
- Criterion Definition: This criterion measures the estimated cost of upgrading affected roadways serving each site to a standard suitable for usage by landfill-associated traffic.
  - Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*
- C. Rationale for this Criterion: The primary mitigation for the additional landfill traffic is to upgrade the roadway to handle the traffic. This criterion is a measure of the additional cost to upgrade roadways and will penalize a site located on a residential roadway as contrasted with one located on a roadway constructed to accommodate heavy trucks.
- D. Measurement Method: Calculate the cost of upgrading in current dollars. Include construction and maintenance costs for 15 years. Values are expressed as the average cost per mile. Estimates of the required level of change will be based on current roadway type (e.g., some roadways are designed for heavy truck traffic and others for residential traffic).
- The range of costs for all sites is transform deciles where 1 is the highest cost and 10 is the lowest cost.
- E. Data Sources: *Sources used, measurements taken, etc.*
- F. Complications getting the data: *Describe, if any.*
- G. Complications in calculating the Point Value: *Describe, if any.*

Calculations:

# Landfill Criterion Evaluation Work Sheet

## Criterion #10, Location Relative to Identified Community Disamenities

### Site Name

- A. Point Value:
- B. Definitions:
- a. Criterion Definition: Community disamenities include wastewater treatment plants, slaughterhouses, other landfill sites, public housing, correctional facilities, operating quarry sites, and power plants.
  - b. Other Definitions: The ahupua'a maps available from Bishop Museum (circa 1850) are used to describe the areas within which the number of disamenities will be counted.
- C. Rationale for this Criterion: The MACLSS wanted to avoid locating a landfill in an area that already has community disamenities. This criterion is to measure the number of community disamenities already existing in an area
- D. Measurement Method: Count the number of community disamenities within ahupua'a containing a landfill site. Transform the range into deciles where 1 is the highest number of disamenities existing in a landfill area and 10 is the lowest number of disamenities (including zero) within a landfill area.
- E.
- F. Data Sources: *Sources used, measurements taken, etc.*
- G. Complications getting the data: *Describe, if any.*
- H. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #11, Location Relative to H-POWER

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: This criterion is the measure of the distance along suitable truck accessible roadways from the H-POWER facility to the landfill site.

b. Other Definitions:

C. Rationale for this Criterion: The H-POWER contract has cost adjustments for distances greater than 12 miles. This criterion measures the additional cost of a site if it is more distant from H-POWER.

D. Measurement Method: Measure the distance in miles along suitable truck accessible roadways from the H-POWER facility to each landfill site. Transform the range into deciles where 1 is the greatest distance and 10 is the shortest distance.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #12, Effect of Precipitation on Landfill Operations

### Site Name

- A. Point Value:
- B. Definitions:
- a. Criterion Definition: Precipitation is the predicted amount of rainfall at the landfill site.
  - b. Other Definitions: The 24-hour duration and the 25-year average recurrence interval are used to select the rainfall data to be used. These duration and recurrence intervals are the State landfill design and operating requirements.
- C. Rationale for this Criterion: Precipitation impacts landfill operations because it affects earthmoving machinery, generates leachate, and contributes to difficulty managing discharge from the site. Peak events will exacerbate the potential impacts to landfill operations.
- D. Measurement Method: Transform the range of predicted rainfall into deciles where 1 is the greatest rainfall and 10 is the least rainfall.
- E. Data Sources: Data for the nearest rainfall measuring station for which data is reported to the National Weather Service. The data used is the average recurrence interval and duration.
- F. Complications getting the data: Some sites have no weather station nearby, so the data may not reflect the conditions at all sites equally well.
- G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #13, Landfill Development, Operation and Closure Cost

### Site Name

A. Point Value:

B. Definitions:

- a. Criterion Definition: This criterion is an estimate the cost of landfill operations in 2021 (the first year of operation). The net present value of the cost of acquisition, development, and closure over the number of years the landfill will be in operation is added to get a total estimated annual cost
- b. Other Definitions: In addition to cost to purchase the land, costs will include storm water control and treatment, drainage facilities to handle peak rain events, soil suitability for daily cover; and cost to purchase the land.

This criterion does not include costs for off-site road improvements and upgrading local roads (criterion 9), transportation from H-POWER for distances greater than 12 miles (criterion 11), or business displacement cost (criterion 14).

C. Rationale for this Criterion: The cost of a new landfill is an important consideration. Site-specific factors can make the cost of one site significantly different than another. This criterion measures that difference.

D. Measurement Method: The net present value of annualized cost of acquisition, development, operation, and closure over the number of years the site` will be active is calculated. The costs for all the sites are transformed into deciles where 1 is the highest estimated annual cost and 10 is the lowest estimated annual cost.

E. Data Sources:

Cost of acquisition — The property value as listed on the City & County Department of Planning & Permitting property database.

Unit costs for landfill construction — Local costs for similar construction.

Landfill equipment — Assumed to be purchased new.

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #14, Displacement Cost

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: This criterion is an estimate of the loss of jobs, employment income, and taxes due to lost direct, indirect, and induced economic activity .

b. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. Rationale for this Criterion: if a site has an existing business operating on it, the benefits from that activity will be lost if a new landfill is established there. This criterion is to measures the economic value of the lost activity.

D. Measurement Method: Calculate the net present value of estimated lost income and taxes in 2011 dollars. Transform the range into deciles where 1 is the highest estimated displacement cost and 10 is the lowest estimated displacement cost.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:



# Landfill Criterion Evaluation Work Sheet

## Criterion #15, Potential for Solid Waste-Related Land Uses

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: This criterion measures acres of land within the site to accommodate businesses that would benefit from operating close to the landfill (e.g., metal and other material recyclers).

b. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. Rationale for this Criterion: If a site has adequate space for solid waste related activities it can be more cost effective for such activities to co-locate with the landfill. This criterion identifies whether a site has space that could be used for other activities and is not needed for landfill-related activities.

D. Measurement Method: Estimated the acres of developable land not suited for landfill. Transform the range of acres into deciles where 1 is the least acreage available for solid waste related uses and 10 is the greatest acreage available

E. Data Sources: The topographic map of the site and the preliminary landfill layout.

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #16, Location Relative to Wetlands and Natural Area Reserve System Land

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: This criterion measures the distance from the nearest landfill boundary to the nearest boundary of a parcel classified as containing a wetland(s) or is designated as part of the Natural Area Reserve System (NARS) by the State Department of Land and Natural Resources.

b. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. Rationale for this Criterion: A better landfill site will not be located close to a wetlands or a NARS.

D. Measurement Method: This criterion measures the number of miles along a point-to-point aerial path from the wetlands or NARS site to the potential landfill site. The range of measurements is transformed into deciles where 1 is the shortest distance from the nearest wetlands/NARS and 10 is the greatest distance to the nearest wetlands/NARS.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #17, Location Relative to Listed Threatened and Endangered Species

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: : This criterion measures the distance from the nearest landfill boundary to the nearest boundary of a parcel classified as a habitat for listed threatened or endangered plants or animals.

b. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. Rationale for this Criterion: A better landfill site will not be located close to a habitat for listed threatened or endangered plants or animals.

D. Measurement Method: This criterion measures the number of miles along a point-to-point aerial path from a habitat for listed threatened or endangered plants or animals to the site. The range of measurements is transformed into deciles where 1 is the shortest distance from the nearest a habitat for listed threatened or endangered plants or animals and 10 is the greatest distance.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #18, Surface Water Resources

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: This criterion measures the potential to discharge untreated storm water from the landfill to identified perennial or intermittent streams classified as important streams or into class AA marine waters.

b. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. Rationale for this Criterion: Avoiding a discharge to streams and to the ocean is important. This criterion measures if a landfill site has the potential for such a discharge.

D. Measurement Method: This criterion is a binary measure; 1 or 10. A 1 is assigned to a site with any potential to discharge untreated storm water runoff into perennial or intermittent streams or to class AA marine waters; a 10 is assigned if there is no potential discharge into streams or AA waters.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #19, Archaeological and Culturally Significant Resources

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: Archaeological and cultural resources include all sites listed or eligible for listing on the State Register of Historic Places or are identified as a culturally significant site by the DLNR, State Historic Preservation Division (SHPD).

a. Other Definitions: *Definitions of terms used in the criterion definition that may be difficult for some reads to understand.*

C. Rationale for this Criterion: A better landfill site will not be located close to archaeological and cultural resources.

D. Measurement Method: This criterion measures the number of miles along a point-to-point aerial path from the archaeological and cultural resources to the site. The range of measurements is transformed into deciles where 1 is the shortest distance from the nearest the archaeological and cultural resources; and 10 is the greatest distance.

E.

F. Data Sources: *Sources used, measurements taken, etc.*

G. Complications getting the data: *Describe, if any.*

H. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

# Landfill Criterion Evaluation Work Sheet

## Criterion #20, Quality of Agricultural Lands

### Site Name

A. Point Value:

B. Definitions:

a. Criterion Definition: This criterion measures the suitability of the soils at the site for agricultural uses. Points are assigned if at least 80 percent of the site is classified as ALISH prime, unique, and other agricultural land.

b. Other Definitions: The value of agricultural lands will be identified using the ALISH classification system.

C. Rationale for this Criterion: The MACLSS wanted to avoid using prime agricultural lands or ALISH prime lands as the landfill site. This criterion evaluates the quality of agricultural lands, if any, at the landfill site.

D. Measurement Method: Points are assigned to each land type. One point is assigned for *prime* agricultural land; five for *unique* agricultural land, and 10 for all other land.

E. Data Sources: *Sources used, measurements taken, etc.*

F. Complications getting the data: *Describe, if any.*

G. Complications in calculating the Point Value: *Describe, if any.*

Calculations: Note:

**Meeting No. 6 – Handout Materials**  
**BWS Response to Dept. of Environmental Services**

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Mayor's Advisory Committee on Landfill Site Selection  
City and County of Honolulu  
May 20, 2011

# BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU, HI 96843



May 20, 2011

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Manager and Chief Engineer

DEAN A. NAKANO  
Deputy Manager

TO: TIMOTHY E. STEINBERGER, DIRECTOR  
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: DEAN A. NAKANO, ACTING MANAGER

SUBJECT: YOUR LETTER OF MARCH 29, 2011, REGARDING THE  
MAYOR'S ADVISORY COMMITTEE ON LANDFILL SITE SELECTION

Thank you for your request for information and policy on groundwater protection from landfills. We provide the following response:

**1. Whether the Board considers the Groundwater Protection Zone to have been superseded by the No Pass Zones.**

No. The No Pass Zones were established through the authority of the Board of Water Supply (BWS) Rules and Regulations, Chapter III, Water Resource Protection, Development and Conservation. BWS Rules and Regulations have the force and effect of law and the applicable section follows:

*Sec. 3-301 Waste Disposal Facilities*

*1. All plans proposing the following waste disposal facilities must have the written approval of the Manager:*

*a. Sewage disposal systems.*

*(1) Cesspools.*

*(2) Septic tank systems.*

*(3) Individual household aerobic treatment units.*

*b. Disposal wells.*

***c. Sanitary landfills.***



- d. Refuse disposal dumps.*
  - e. Sewage treatment plants.*
  - f. Stabilization ponds.*
  - g. Any other wastewater disposal facilities.*
- 2. The Department may establish "No Pass Zones" which shall be delineated on "No Pass Zone" maps. These maps shall be used as guidelines in implementing this Section.*
  - 3. The Manager may at his discretion, withhold his approval, if there is any basis to expect that the operation of the proposed waste disposal facility and any wastewater therefrom may to any degree affect the quality and/or quantity of water resources used or expected to be used for domestic water.*
  - 4. If the Manager disapproves a proposal, he shall inform the applicant in writing of the facts and reasons upon which his disapproval is based and afford the applicant an opportunity for an informal appeal hearing. Any applicant who is aggrieved by the Manager's decision and desires reconsideration of such decision shall petition the Manager in writing within 30 days from the date of receiving such decision. The applicant should base his request for reconsideration on pertinent technical data, including boring logs, which indicate that the proposed waste disposal facility in the "No Pass Zone" would not contaminate groundwater resources used or expected to be used for domestic water supplies. If after the hearing, the request for reconsideration is disapproved by the Manager, the applicant may appeal the decision to the Board, which shall have the power to affirm, modify or reverse the decision of the Manager so appealed from. Such appeal shall be taken within 30 days after the final decision of the Manager.*

*[Eff 5/10/76; am, renum and comp BWS Res. No. 427, 1976; am and renum BWS Res. No. 502, 1982]*

We understand the State Department of Health (DOH) established the Underground Injection Control Line for the regulation of injection wells to protect groundwater aquifers, Chapter 11-23, Hawaii Administrative Rules. The Underground Injection Control (UIC) and No-Pass Zone lines are similar in location and intent, with some differences in coverage and applicability. The No Pass Zone applies to all waste disposal facilities while the UIC line applies to injection wells. The BWS has no formal term called a Groundwater Protection Zone.

In 1988, BWS and DOH agreed that DOH would regulate sewage disposal systems into the ground (referencing Section 3-301.1.a, BWS Rules and Regulations), thereby reducing the regulatory duplication. All individual wastewater systems are now reviewed and approved by DOH. When applicable, DOH requests review and comments from BWS, especially when existing or proposed BWS sources could be impacted.

**2. Can Geographical Information System (GIS) NAD 83 datum file information be provided to better designate the location of the No Pass Zone.**

We are providing a GIS data file of the No Pass Zone; however, please note that the GIS file was digitized from a hand-drafted map created by our Hydrology-Geology Section in the 1970s. The No Pass Zone was derived from the review of soil maps and borings that define the areas of thick caprock around the island. The caprock aquifer is generally brackish nonpotable water and its geologic formation consists of coral and sediments formed when sea levels were much higher than today. The caprock formation sits above the underlying basalt with poorly permeable interfacial boundaries that prevent contaminants from percolating through to the basalt. The No Pass Zone lines are guidelines for the protection of groundwater resources; and therefore, when waste disposal systems are proposed near the boundary line, soil borings are recommended to verify the thickness of the caprock formation.

**3. Request for GIS data files regarding the Oahu Inactive Landfills, Relative Risk Evaluation, December 2006.**

Our consultant, URS Corporation, may have the GIS data files for the Oahu Inactive Landfills that you reference. However, please note that the locations of the closed landfills and dumps are approximate and were based on handwritten maps in a DOH folder file. Many of the older closed landfills sites were

Mr. Timothy E. Steinberger  
May 20, 2011  
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subsequently redeveloped or have been covered over with little or no trace. See the report's statement of limitations for the specific explanation.

**4. Request for policy guidance to the Mayor's Committee on Landfill Site Selection with regards to the importance of protecting Oahu's groundwater resources.**

In 2004, the DOH completed their Hawaii Source Water Assessment Program Report (SWAP), which evaluated public water systems in the State. The SWAP report established capture zone delineations through groundwater modeling, around each drinking water source where contaminants may travel to the drinking water supply. The report also inventoried land use activities that may lead to the release of microbiological or chemical contaminants within the delineated areas and evaluated their susceptibility to become contaminated from potential contaminating activities.

We enclose excerpts from the SWAP report including a description of the capture zones, report limitations and a map of Oahu showing the 2-year and 10-year travel time zones that contribute groundwater to each source well. Please note that the map was generated in 2004 and does not include our new sources such as the Ewa Shaft and Kunia Wells III in the Kunia area. DOH and the University of Hawaii are currently modeling the new sources with their respective capture zone delineations. Although our new sources are not yet included on the map, it shows areas in the No Pass Zone that are outside of the source water capture zone delineations and may provide guidance to the committee on the location of proposed landfills that may have the potential for contaminating our sources should contaminants leach into the underlying groundwater. Due to security reasons however, this report and maps should not be publicly distributed.

If you have any questions, please contact Barry Usagawa at 748-5900.

Enclosures

**Meeting No. 6 – Handout Materials**  
**Project Meeting with Board of Water Supply**

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Mayor's Advisory Committee on Landfill Site Selection  
City and County of Honolulu  
July 12, 2011

Mayor's Advisory Committee on Landfill Site Selection  
Project Meeting with Board of Water Supply  
City and County of Honolulu

July 12, 2011

Attendance: Barry Usagawa (Water Resources Division Program Administrator), Glenn Oyama (Hydrogeologist), Honolulu Board of Water Supply (BWS); Steve Serikaku, Department of Environmental Services; Brian Takeda, R. M. Towill Corporation

Purpose of Meeting: Discuss Selected Alternative Landfill Sites with BWS to Assess Potential for Water Resources Issues

Summary:

1. A meeting was held with the Honolulu BWS to discuss selected alternative landfill sites for possible water resource issues that would make the selection of the sites difficult/unlikely.

This evaluation is similar to a prior discussion held with the BWS in the 2002/2003 timeframe pursuant to the filing of the Environmental Impact Statement (EIS) for the Waimānalo Gulch Sanitary Landfill Expansion.

2. Six landfill sites were discussed with the BWS and included: (a) Ohikilolo; (b) Wai'anae Expansion; (c) Nānākuli A; (d) Nānākuli B; (e) Ka'a'awa; and (f) He'eia Uka. A summary of the comments included the following:
  - (a) Ohikilolo – There is an existing well (Mākaha 6) that is located far enough away and upgradient from the site that no adverse effects regarding impacts to water supply are expected.
  - (b) Wai'anae Expansion – There are two wells located downgradient of the site that can be affected (Kamaile Wells). The location of the wells relative to the proposed landfill site is within the *2 year well capture zone* making this site unsuited for a landfill.
  - (c) Nānākuli A and B – There are no BWS wells presently in use in this area. Because the surrounding aquifer possesses a thin freshwater lens the potential for the development of a new potable source is unlikely, although, non-potable wells could be developed (not planned by BWS). It was noted that there are well resources in the area including the Lualualei Shaft (closed) and other locations mauka of the site.
  - (d) Ka'a'awa – The Ka'a'awa Shaft is located north of this site. The drawdown from this resource is relatively low at approximately 30,000 gallons per day (gpd). This resource could be negatively affected by a proposed landfill.
  - (e) He'eia Uka – The Ioleka'a Well is located within the general area of this potential site. However, the site is known to be actively utilized as an ahupua'a resource incorporating a *taro lo'i* and *fishponds* downgradient of the He'eia Uka site.
3. The review of the information furnished by BWS was found to be similar and consistent with prior information collected in the 2002/2003 timeframe for a landfill Environmental Impact Statement.

List of Sites Discussed with BWS  
Department of Environmental Services  
City and County of Honolulu

July 17, 2011

Site Name	BWS Evaluation Notes From 2002/2003	Sites Failing Review
Auloa	Very little to no groundwater resources. Within a rock complex. BWS does not consider feasible for use.	
Ameron Quarry	Dike type rocks associated with caldera complex. Very little groundwater resources.	
Bellows	No potable resources. Non-potable irrigation developed. BWS does not consider feasible for use.	
Hālawā A	Site within BWS groundwater resource.	X
Hālawā B	Site within BWS groundwater resource.	X
<b>He'eia Uka</b>	Site outside BWS designed groundwater resource zone.	
Honouliuli	Site just outside BWS designated groundwater resources zone, but within area considered subject to groundwater impact.	X
<b>Ka'a'awa</b>	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kahe	BWS plans to use site for future desalination facility.	X
Kalāheo (LF reuse)	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kaloī	Groundwater resources present or nearby.	X
Kapa'a No. 1	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kaukonahua	Site within BWS groundwater resource.	X
Koko Crater	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kunia A	Groundwater resources present or nearby.	X
Kunia B	Groundwater resources present or nearby.	X
Mā'ili Quarry	Brackish groundwater present but BWS does not consider feasible for use.	
Makaiwa Gulch	No potable resources. BWS does not consider feasible for use.	
Makakilo Quarry	Groundwater resources present or nearby.	X
Makua	Groundwater resources present or nearby.	X
Mililani	Site within BWS groundwater resource.	X
<b>Nānākuli A</b>	Very little to no groundwater resources. BWS does not consider feasible for use.	
<b>Nānākuli B</b>	Very little to no groundwater resources. BWS does not consider feasible for use.	
<b>Ohikilolo</b>	Only half of site available for development where there is very little to no groundwater resources in the lower half of property. BWS does not consider feasible for use.	
Poamoho	Groundwater resources present or nearby.	X
Punalu'u	Groundwater resources present or nearby.	X
Waiahole	Groundwater resources present or nearby.	X
<b>Wai'anae Expansion</b>	Groundwater resources present or nearby.	X
Waihe'e	Groundwater resources present or nearby.	X
Waikane	Groundwater resources present or nearby.	X
Waimānalo Gulch Expansion	Very little to no groundwater resources. BWS does not consider feasible for potable use.	
Waimānalo North	Very little to no groundwater resources. BWS does not consider feasible for potable use.	
Waimānalo South	Groundwater resources present or nearby.	X
Waipi'o	Very little to no groundwater resources. BWS does not consider feasible for potable use.	

\*Sites in bold text indicate priority sites for discussion with BWS.