DRAFT ENVIRONMENTAL ASSESSMENT

REPLACEMENT OF MANOWAIOPAE RESERVOIR

TMKs: (3rd) 3-6-003:035, 036 and 003 (por.)
Laupahoehoe, North Hilo District, Hawai‘i Island, State of Hawai‘i

August 2009

County of Hawai‘i
Department of Water Supply
345 Kekuanaoa Street, Suite 20
Hilo, Hawai‘i 96720

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PROPOSING/
APPROVING AGENCY:

County of Hawai‘i
Department of Water Supply
345 Kekuanaoa Street, Suite 20
Hilo, Hawai‘i 96720

CONSULTANT:

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PO Box 396
Hilo HI 96721

CLASS OF ACTION:

Use of County Land
Use of County Funds

This document is prepared pursuant to:

The Hawai‘i Environmental Policy Act,
Chapter 343, Hawai‘i Revised Statutes (HRS), and
Title 11, Chapter 200, Hawai‘i Department of Health Administrative Rules (HAR).

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SUMMARY

The County of Hawai‘i, Department of Water Supply (DWS), plans to remove the existing 0.10 million gallon capacity (Mg) Manowaiopae Reservoir and construct a new 0.50 Mg reservoir nearby off Manowaiopae Homestead Road in Laupahoehoe. The improvements are necessary because the existing reservoir has reached the end of its service life, is undersized for current needs, requires expensive maintenance, and does not meet current DWS standards. The new reinforced concrete reservoir will have five times the capacity of the existing tank, and will thus be better able to meet future demands in its water service area. In addition to the reservoir itself, new or relocated improvements will include the following: a new pump building and control, site piping, site asphalt paving, perimeter fencing and a paved driveway along an easement from Manowaiopae Homestead Road to the reservoir site. Once existing water services are reconnected to the new tank, the existing reservoir will be demolished and the site landscaped to match the surrounding area. The improvements will promote public health and safety by improving water storage capacity for the Laupahoehoe area.

The contractor will obtain an NPDES permit and develop and implement a Storm Water Pollution Prevention Plan (SWPPP) to contain sediment and storm water runoff during construction. Implementation of the project would have a minor effect on local traffic, possibly requiring only a short-term single-lane closure during grading and paving of vehicular access points. Hazardous substances will be abated by appropriate measures during construction and demolition. The new reservoir site is a former sugar cane field. Biological surveys and coordination with the State Historic Preservation Division (SHPD) has confirmed that no significant biological, archaeological or cultural resources are present. If archaeological resources or human remains are encountered during land-altering activities, work in the immediate area of the discovery will be halted and SHPD will be contacted.

PART 1: PROJECT DESCRIPTION, PURPOSE AND NEED AND ENVIRONMENTAL ASSESSMENT PROCESS

1.1 Project Description, Location and Property Ownership

As depicted in Figures 1-5, the Hawai‘i County Department of Water Supply (DWS) plans to remove the existing 0.10 million gallon capacity (Mg) Manowaiopae Reservoir on TMK 3-6-003:035 near Manowaiopae Homestead Road in Laupahoehoe and build a new 0.50 Mg reservoir nearby on a portion of a 0.626-acre parcel identified as TMK 3-6-003:036. Both lots are property of DWS. Parcel 36 also includes a DWS deep well. The access road from Manowaiopae Homestead Road to the reservoir site is located within an easement on TMK 3-6-003:003, owned by Robert and Janice Stanga. The new reservoir will be of reinforced concrete and will have a stronger and more durable design than the existing and reservoir. New or relocated improvements also include a new pump building and control, site piping, site asphalt paving, perimeter fencing, and paving of the access road. DWS will also redesign the drainage of the site to retain most of the normal runoff on the property and no longer direct additional drainage to the gulch. During final design, plantings will be installed at the new site to help the site match its surroundings. Once water services are reconnected to the new tank, the existing reservoir will be demolished and the existing tank area will likely be paved to allow pump maintenance equipment and cranes to easily maneuver in the small site.

No firm cost estimates are yet available for construction and demolition, but the cost is expected to be in the range of $2 to $2.5 million. If approvals and funding proceed as planned, design will be finished by late 2009, and construction may start as soon as mid-2010 and will finish within approximately six to eight months. These estimates will be refined as the project proceeds.

1.2 Purpose and Need

The facility is needed to promote public health and safety by improving water service for the Laupahoehoe community. The improvements are necessary because the existing reservoir has reached the end of its service life, is undersized for current needs, requires expensive maintenance, and does not meet current DWS standards. The new reservoir will be five times the size of the existing tank, and thus better able to meet future demands in its water service area.

1.3 Environmental Assessment Process

This Environmental Assessment (EA) is being conducted in accordance with Chapter 343 of the Hawai‘i Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawai‘i Administrative Rules (HAR), is the basis for the environmental impact process in the State of Hawai‘i. According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria.

Figure 1
General Location Map

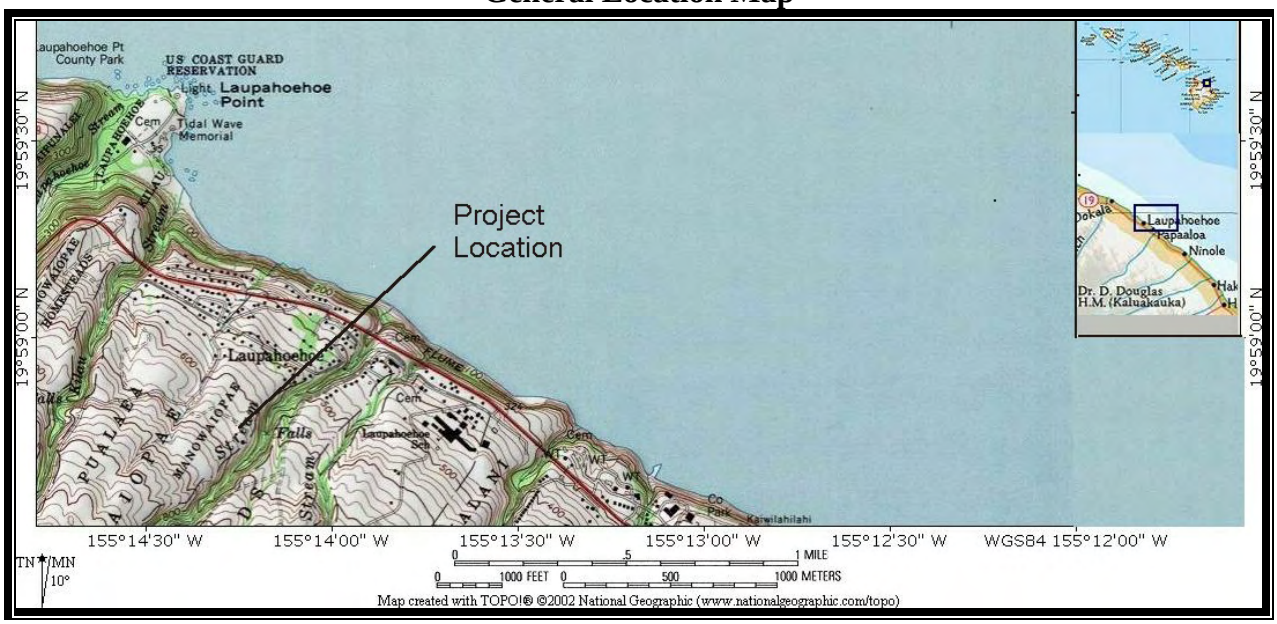
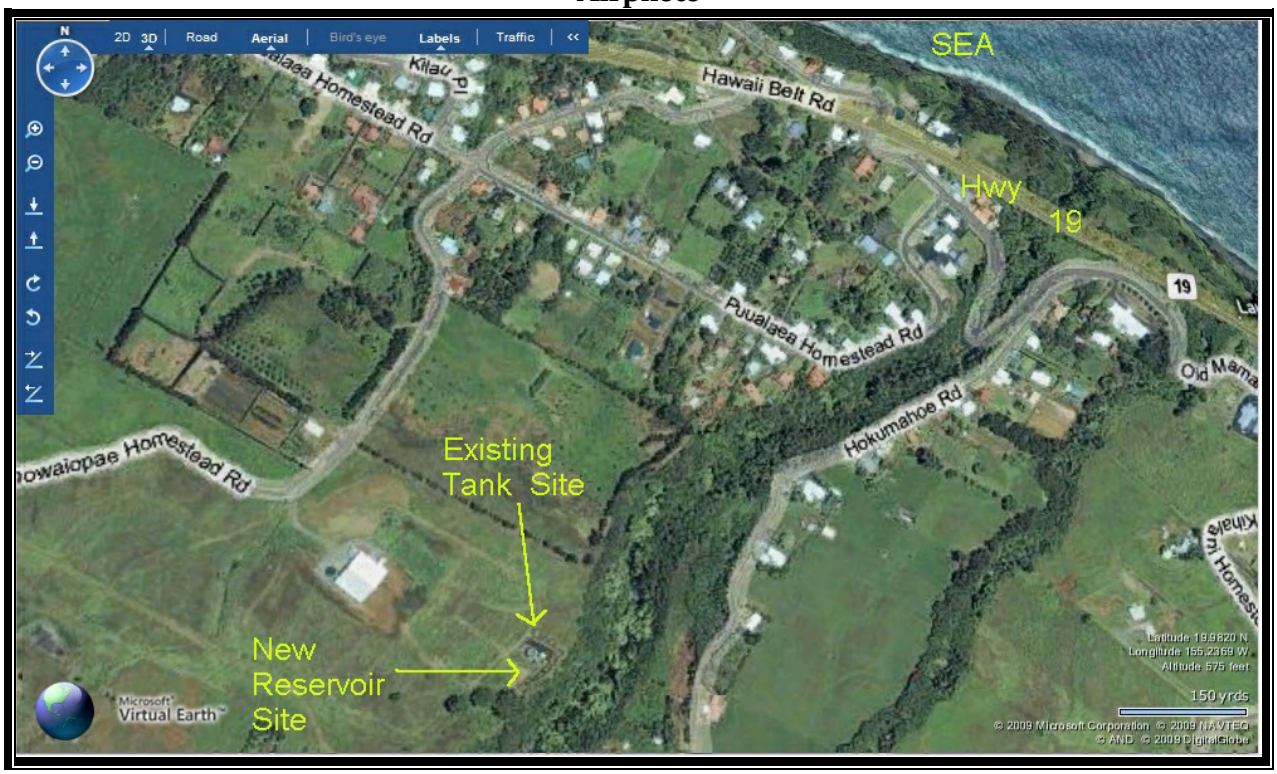


Figure 2
Airphoto



Source: Microsoft Virtual Earth ©

Figure 3 TMK Map

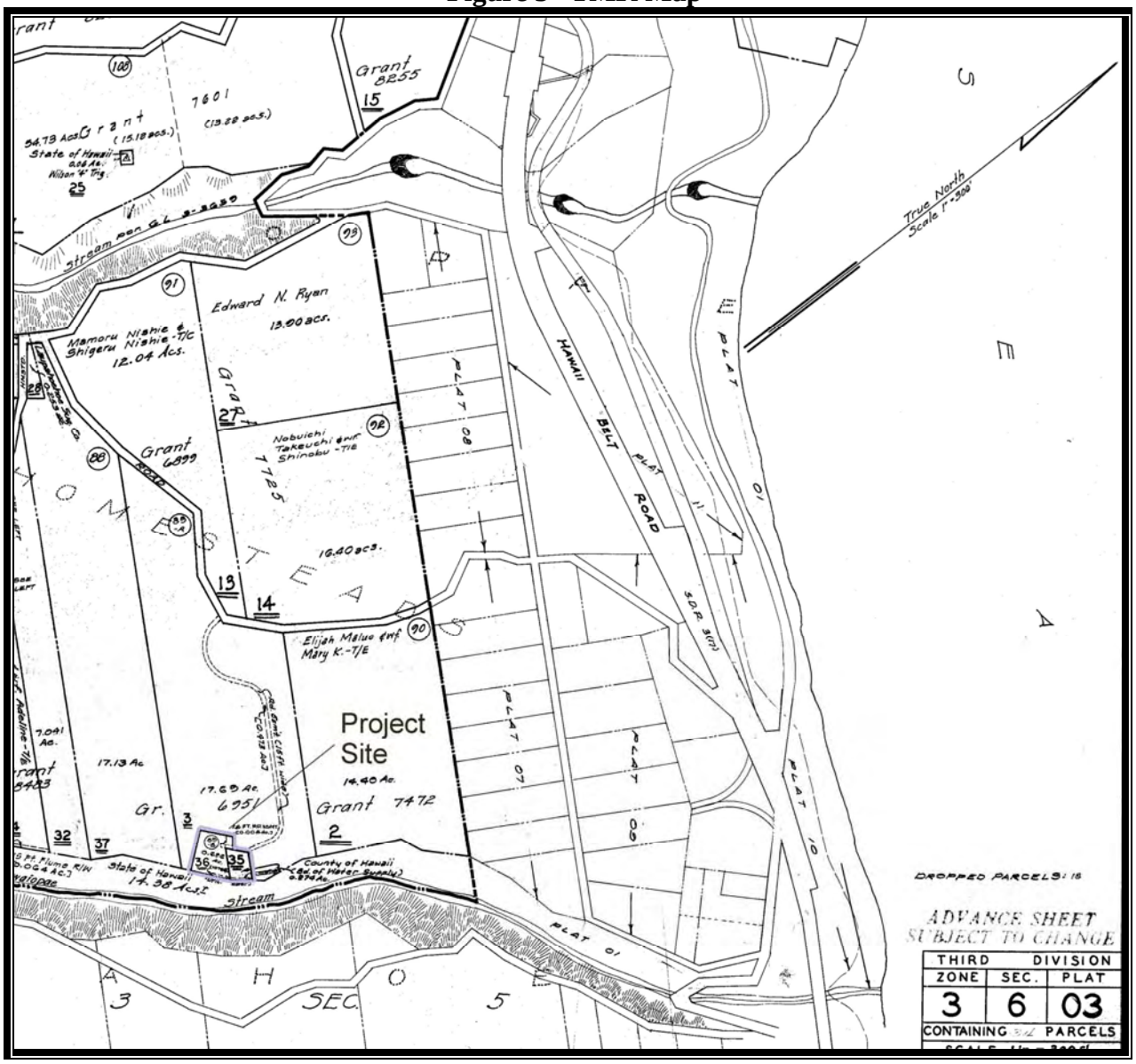


Figure 4 Project Site Photos

Existing Reservoir with New Reservoir Site Above ▲ ▼ Access Road Near Manowaiopae Road

NEW CONCRETE
0.5 M.G. RESERVOIR
O.F. EL. 680.00
BOT. EL. 662.00

EXIST. 0.10 M.G.
CONCRETE TANK
O.F. EL. 673.50
BOT. EL. 659.00

PROPOSED
MCC BLDG
34'X16'

NEW 10' WIDE
PAVED ACCESS ROAD

Exist. Gravel Road

Exist. Access Easement
15-Feet Wide

Robert Mark Stanga
Janice Marie Stanga
TMK: 3-6-003: 003

State of Hawaii
TMK: 3-6-003: 001

Exist. Easement
15-Feet Wide

Exist. Control Bldg.

Exist. Chlorine Bldg.

Gate

Chain Link Fence

ALBECIA TREE

Tel. Box

DEEP WELL 1

DEEP WELL 2

INLET

12" INFLUENT

8" INFLUENT

6" INFLUENT

8" EFFLUENT

12" EFFLUENT

12" CLEANOUT

8" CLEANOUT

8" OVERFLOW

4" Influent

Effluent W6"

2:1 CUT SLOPE

10.0' BENCH

25' SETBACK

15' SETBACK

10' SETBACK

O.H. Elec./Tel.

E/Pole

TOP

TRUE NORTH

SECTION "A"

PRELIMINARY
SITE LAYOUT PLAN
SCALE: 1"=10'

DEPARTMENT OF WATER SUPPLY
COUNTY OF HAWAII

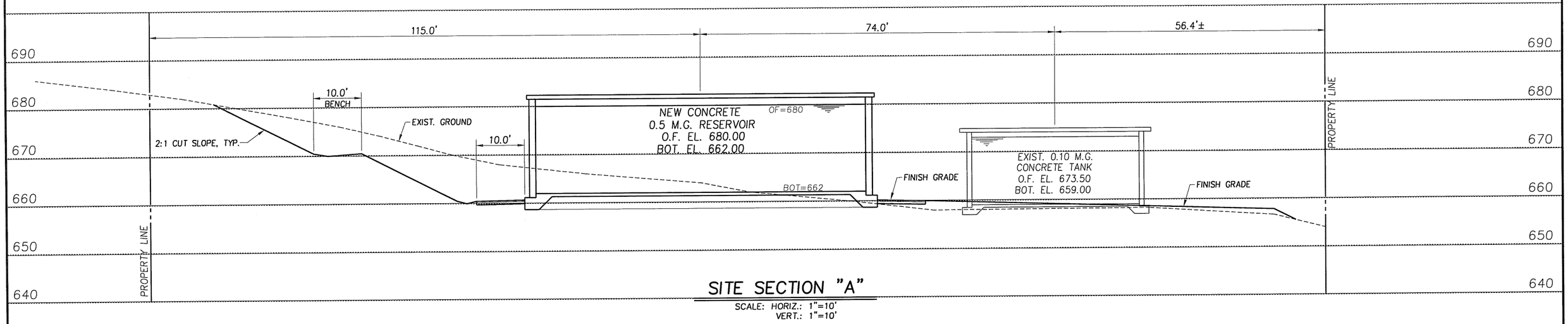
PROJECT: LAUPĀHOEHOE (MANOWAI'ŌPAE)
0.5 MG RESERVOIR

PRELIMINARY LAYOUT PLAN
TANK SITE

JOB NO. 2005-870

SHEET NO.

OF SHEETS



SITE SECTION "A"

SCALE: HORIZ.: 1"=10'
VERT.: 1"=10'

DEPARTMENT OF WATER SUPPLY
COUNTY OF HAWAII

PROJECT: LAUPĀHOEHOE (MANOWAI'ŌPAE) 0.5 MG RESERVOIR

PRELIMINARY
SITE SECTION "A"

JOB NO. 2005-870

SHEET NO.

OF SHEETS

Part 4 of this document states the anticipated finding that no significant impacts are expected to occur; Part 5 lists each criterion and presents the preliminary findings for each made by the Hawai‘i County Department of Water Supply, the proposing/approving agency. If, after considering comments to the Draft EA, the agency concludes that, as anticipated, no significant impacts would be expected to occur, then the agency will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to occur. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) will be prepared.

1.4 Public Involvement and Agency Coordination

The following agencies and organizations were consulted in development of the environmental assessment:

State:

Department of Health
Office of Hawaiian Affairs
State Historic Preservation Division

County:

Environmental Management Department
Public Works Department
Police Department
County Council

Private:

Hawai‘i Island Chamber of Commerce
Neighboring landowners

Copies of communications received during early consultation are contained in Appendix 1a.

PART 2: ALTERNATIVES

2.1 No Action

Under the No Action Alternative, the existing reservoir would not be replaced. At some point in the future the quality of water service in this part of Laupahoehoe may not be adequately dependable nor able to meet the normal growth in demand. Because of its mandate to provide reliable and high-quality water service to all its customers, the Hawai‘i County Department of Water Supply considers the No Action Alternative unacceptable.

However, the No Action Alternative would also avoid disturbance of land and temporary construction-related impacts to air quality, noise and traffic, and is thus an important baseline for evaluating environmental impacts of the proposed project.

2.2 Alternative Locations or Strategies

During early phases of project planning, DWS examined the Laupahoehoe area and determined that the Manowaiopae Homestead Road area provides the best overall location for the required function, as existing water main facilities are already in place, is adjacent to the deep well, already supports DWS uses, and would be most economical to acquire and use. The new reservoir would receive water from the 2 existing on-site deep wells, and if any other site was chosen new water mains would need to be installed to bring the water from the wells to the new reservoir site. This could affect pump efficiencies and lead to wasted electricity or the need to resize the existing pumps. Furthermore the site is the proper elevation to provide optimum service. When replacing tanks, DWS usually tries to keep the overflow elevations similar so as not to alter the total system and require installation of appurtenances such as pressure reducing valves. The Laupahoehoe area is steeply sloping and there are very few alternative properties in the proper elevational range, and none with the site’s other advantages. As there do not appear to be any environmental or other disadvantages associated with the specific proposed site, which has good access, existing facilities, and no apparent environmental issues, no alternative sites have been advanced in the Environmental Assessment. There is no other approach to water storage and transmission that would accomplish the goals of the project.

PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Basic Geographic Setting

The properties upon which the new reservoir would be constructed and from which the old reservoir would be removed are referred to throughout this EA as the project site. The term project area is used to describe the general environs of Laupahoehoe.

The project site is located at approximately 700 feet in elevation. It is on a 15-foot-wide, roughly 1,000 feet long easement that extends to the southeast from Manowaiopae Homestead Road, which turns off Mamalahoa Highway (State Highway 19) about six-tenths of a mile east of the Laupahoehoe Gulch (see Figures 1-4). The climate in the area is mild and moist, with an average annual rainfall of 150 inches (U.H. Hilo-Geography 1998:57). Adjacent land use is primarily residential with some scattered residential and undeveloped lots closer to the highway.

3.1 Physical Environment

3.1.1 Geology, Soils and Geologic Hazards

Environmental Setting

Geologically, this part of Laupahoehoe is located on the lower flank of Mauna Kea volcano. The surface consists of weathered basalt soils on Pleistocene-era lava flows from the Hamakua Volcanics series from Mauna Kea (Wolfe and Morris 1996). Nearly all of the project site soil is classified by the Natural Resource Conservation Service (formerly Soil Conservation Service) as O‘okala silty clay loam (OoD), a well-drained soil up to 55 inches deep underlain by up to five inches of extremely cobbly material. This type of soil was formerly used mostly for sugarcane cultivation (U.S. Soil Conservation Service 1973), and now supports diversified agriculture, secondary forest, or pasture. The soil immediately to the east of the project site is classified as rough broken land (RB), as the topography of the land reaches into the Manowaiopae Stream gulch. Rough broken land is also well-drained, and consists of silty clay loam up to 30 inches deep underlain by bedrock. The project site appears to be located on an appropriate substrate for construction of a reservoir, and no geotechnical or groundwater seepage concerns are anticipated.

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the United States Geological Survey in this area of North Hilo is Zone 8, on a scale of ascending risk from 9 to 1 (Heliker 1990:23). The low hazard risk is based on the fact that Mauna Kea is presently considered a dormant volcano. Only a few percent of Zone 8 areas have been covered by lava in the past 10,000 years and they are therefore considered among the least hazardous areas on the island. As such, there is negligible risk of lava inundation over relatively short time scales in the project area.

In terms of seismic risk, the entire Island of Hawai‘i is rated Zone 4 Seismic Hazard (Uniform Building Code, 1997 Edition, Figure 16-2). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built, as the 6.7-magnitude quake of October 15, 2006, demonstrated. The moderate slopes and stable soils at the project site indicate that the area exhibit no evidence of subsidence or rockfall, landslides or other forms of mass wasting.

Impacts and Mitigation Measures

In general, geologic conditions impose no constraints on the proposed action, and the proposed water system improvements are not imprudent to construct. The standard reinforced concrete reservoir will be designed in accordance with applicable American Water Works Association and American Concrete Institute standards for Seismic Zone 4, as well as all applicable County Building Department requirements.

3.1.2 Drainage, Water Features and Water Quality

Existing Environment

Flood Insurance Rate Maps (FIRM) have not been prepared for the project site, which is thus located entirely within Zone X, areas not known to be within the 500-year flood plain. The project area has perennial surface water bodies in the form of subparallel streams that deeply incise the general north-facing slope. Directly adjacent to the site is Manowaiopae Stream (see Figures 1-3), the bottom of which is about 60 feet below the existing reservoir’s elevation. Because of this topography, the project site is not affected in any way by this or any other stream or drainage way. No known areas of local (non-stream related) flooding are present. Local ephemeral drainages may overflow after very heavy rains.

Impacts and Mitigation Measure

Because of the limited scale of construction and the environmental setting, the risks for flooding or impacts to water quality in the adjacent Manowaiopae Stream or coastal waters are very minor. The project includes the redesign of site drainage to retain normal runoff on the property and no longer direct drainage to the gulch.

In order to minimize the potential for sedimentation and erosion, the contractor shall perform all earthwork and grading in conformance with Chapter 10, Erosion and Sediment Control, Hawai‘i County Code. Because the project will disturb more than one acre of soil, a National Pollutant Discharge Elimination System (NPDES) permit must be obtained by the contractor before the project commences. This permit requires the completion of a Storm Water Pollution Prevention Plan (SWPPP). In order to properly manage storm water runoff, the SWPPP will describe the emplacement of a number of best management practices (BMPs) for the project. These BMPs may include, but will not be limited to, the following:

- Minimization of soil loss and erosion by revegetation and stabilization of slopes and disturbed areas of soil, possibly using hydromulch, geotextiles, or binding substances, as soon as possible after working;
- Minimization of sediment loss by emplacement of structural controls possibly including silt fences, gravel bags, sediment ponds, check dams, and other barriers in order to retard and prevent the loss of sediment from the site;
- Minimizing disturbance of soil during periods of heavy rain;
- Phasing of the project to disturb the minimum area of soil at a particular time;
- Application of protective covers to soil and material stockpiles;
- Construction and use of a stabilized construction vehicle entrance, with designated vehicle wash area that discharges to a sediment pond;
- Washing of vehicles in the designated wash area before they egress the project site;
- Use of drip pans beneath vehicles not in use in order to trap vehicle fluids;
- Routine maintenance of BMPs by adequately trained personnel; and
- Proper cleanup and disposal at an approved site of material from significant leaks or spills, if they occur.

3.1.3 Flora, Fauna and Ecosystems

Existing Environment

The natural vegetation of this part of North Hilo was most likely lowland rain forest dominated by ʻohiʻa (*Metrosideros polymorpha*) and koa (*Acacia koa*) (Gagne and Cuddihy 1990). These original communities, however, have been destroyed or heavily degraded by sugar cane cultivation, cattle grazing, and clearing for small farms and residences, and the vegetation of Laupahoehoe is now either managed vegetation (i.e., farms, pasture or landscaped grounds) or adventive "communities" of various alien weeds, with only small areas of remnant forest, mainly present in the more mauka areas of the North Hilo and Hamakua district and in limited areas on cliffs of the shoreline and gulches.

The current vegetation of the project site is mainly guinea grass (Panicum maximum) with emergent albizia (Falcataria moluccana) trees (see Figure 3a). Although up to 30 feet tall in places, these rapidly growing invasive trees are probably less than two decades old. Other common plants include mainly introduced species, including the grasses California grass (*Brachiara mutica),* bush beardgrass (*Schizachyrium condensatum)* and Hilo grass (*Paspalum conjugatum*); the sedges *Kyllinga* sp. and *Cyperus polystachyos*; the forbs *Desmodium triflorum, Sida rhombifolia*, *Malvastrum coromandelium, Ageratum conyziodes*, *Hyptis pectinata,* and *Crassocephalum crepidioide*s; and the shrubs or trees guava (*Psidium guajava*) and sourbush (*Pluchea symphytifolia*). A few individuals of the common native shrub neneleau (*Rhus sandwicensis*) are also present. Vegetation on the side of the access road is mostly guinea grass.

A large variety of alien birds makes up the avifauna of this area. Cats, dogs, mice, rats and mongooses probably all visit the site occasionally. The endangered Hawaiian Hawk (*Buteo solitarius*) and Hawaiian hoary bat (*Lasiurus cinereus semotus*) are present in the general area, as they are in most windward lowland areas of the island of Hawai‘i, but would not find the mostly grassy area dominated by alien plants suitable habitat.

Impacts and Mitigation Measures

Because of the lack of native ecosystems, as well as or threatened or endangered species, in this partly developed and formerly plantation agricultural area, no adverse impacts to biological resources would occur as a result of building the new reservoir or demolishing the existing one. A planting plan (see major discussion in Section 3.1.4) will be implemented to preserve not only the scenic values of the area but also to mitigate any impact to the erosion control functions of the existing vegetation.

3.1.4 Air Quality, Noise, and Scenic Resources

Environmental Setting

Air pollution in East Hawai‘i is minimal, and is mainly derived from volcanic emissions of sulfur dioxide, which convert into particulate sulfate and produce a volcanic haze (vog) that occasionally blankets the district. The persistent tradewinds keep the project area relatively free of vog for most of the year.

Noise on the project site is low and derived mainly from agricultural and some residential activities, with occasional noise from motor vehicles on the adjacent homestead road and Highway 19, which lies about 2,000 feet away.

The project area contains several sites considered significant for their scenic character in the Hawai‘i County General Plan, primarily the view from Highway 19 of several stream gulches, including the Manowaiopae, Kilau, Kuwaikahi and Laupahoehoe gulches.

Impacts and Mitigation Measures

The proposed action would not measurably affect air quality or noise levels except minimally during construction. Operationally, noise levels should remain similar, as there is already an existing pump. In order to minimize noise impacts to nearby sensitive receptors, construction should be conducted only during reasonable hours. Development would entail limited excavation, grading, compressors, vehicle and equipment engine operation, and construction of new infrastructure. These activities may generate noise exceeding 95 decibels at times, impacting nearby sensitive noise receptors, including residences. In cases where construction noise is expected to exceed the Department of Health’s (DOH) “maximum permissible” property-line noise levels, contractors would obtain a permit per Title 11, Chapter 46, HAR (Community Noise Control) prior

to construction. DOH would review the proposed activity, location, equipment, project purpose, and timetable in order to decide upon conditions and mitigation measures, such as restriction of equipment type, maintenance requirements, restricted hours, and portable noise barriers.

As the gulches recognized as scenic sites in the Hawai‘i County General Plan are listed from the perspective of the highway, and the project sites are not visible from that vantage point, none would be affected. No scenic impacts are anticipated.

During final design, a landscape plan will be developed plantings will be installed at the new site to help the site match its surroundings and to visually shield the reservoir from a nearby residence. Once water services are reconnected to the new reservoir, the existing reservoir will be demolished and the existing tank area will likely be paved to allow pump maintenance equipment and cranes to easily maneuver in the small site. The plantings will emphasize indigenous or Polynesian-introduced species adapted to the wet climate of Laupahoehoe.

3.1.5 Hazardous Substances, Toxic Waste and Hazardous Conditions

Environmental Setting, Impacts and Mitigation Measures

EnvironMETeo Services, Inc. inspected the reservoir and associated facilities for asbestos-containing material and for lead-containing paint. A report detailing the inspection is attached to this EA as Appendix 2. Asbestos-containing materials and lead-containing paint were detected.

When lead-containing paint or asbestos-containing materials are disturbed during demolition work, regulations including those of the Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and the State Department of Health (DOH), among others, must be complied with. All lead-containing paint must undergo testing to determine if it may be disposed of in a municipal landfill. Metal debris coated with lead paint (less than 0.5% or 5000 ppm) may be sent to recyclers as scrap metal without removing the paint may be sent to recyclers as scrap metal without removing the paint. For asbestos, an abatement crew will set up a containment and wearing personal protective equipment will abate the asbestos. The material will be double-bagged and then shipped off-island in appropriate containers for disposal in a landfill permitted to receive this substance.

Based on onsite inspection and information on file, it appears that the project sites contain no other hazardous or toxic substances and exhibit no other hazardous conditions. No permanent or temporary land use that would tend to result in these conditions appears to have ever occurred on the project site, which is former sugar cane land.

3.2 Socioeconomic and Cultural

3.2.1 Socioeconomic Characteristics

The project would affect and benefit the district of North Hilo and more specifically Laupahoehoe. Table 1 provides information on the socioeconomic characteristics of Laupahoehoe along with those of Hawai‘i County as a whole for comparison, from the United States 2000 Census of Population.

Table 1: Selected Socioeconomic Characteristics

CHARACTERISTIC	ISLAND OF HAWAI‘I	LAUPAHOEHOE
Total Population	148,677	473
Percent Caucasian	31.5	30.2
Percent Asian	26.7	28.3
Percent Hawaiian	9.7	6.1
Percent Two or More Races	28.4	33.6
Median Age (Years)	38.6	42.9
Percent Under 18 Years	26.1	22.6
Percent 65 Years and Over	13.5	24.3
Percent Households with Children	21.3	24.7
Average Household Size	2.75	2.66
Percent Housing Vacant	15.5	9.2

Source: U.S. Bureau of the Census. May 2001. Profiles of General Demographic Characteristics, 2000 Census of Population and Housing, Hawai‘i. (U.S. Census Bureau Web Page).

The proposed project would benefit public health and welfare in Laupahoehoe through improvements in water supply, a basic and required public service for a community.

3.2.2 Archaeology and Historic Sites

The area was cultivated in sugar cane for over a hundred years and thus experienced intensive grubbing and grading. In addition, much of the site was reworked later as part of preparing the land for the existing reservoir and well site. Based on this context, the State Historic Preservation Division (SHPD) was requested by letter to concur with the determination that the project will have no effect on historic properties. By letter of July 13, 2008, (see Appendix 1a), SHPD provided this concurrence. In the unlikely event that historic resources, including artifacts, human skeletal

remains, lava tubes, and lava blisters/bubbles, are encountered during future development activities within the current study area, work in the immediate area of the discovery will be halted and DLNR-SHPD contacted as outlined in Hawai‘i Administrative Rules 13§13-275-12.

3.2.3 Cultural Resources

Existing Environment

Manowaiopae Ahupua‘a lies within the North Hilo District. This ahupua’a extends from the sea to about 1,800 feet in elevation, a distance of about two miles. Like all the area between Hilo and Kohala, the cliffs, steep valleys and streams here presented major obstacles to foot travel in traditional times. According to Cordy (1994), the ahupua‘a in Hamakua were probably centered on the main drainages and the boundaries typically followed natural features such as ridges and drainages The many small ahupua‘a along the coast probably arose because land units became divided in the lower elevation areas where traditional agriculture and settlement were concentrated. Smaller units of land, the ili, which like ahupua‘a were oriented perpendicular to the shoreline and provided access to a diverse range of natural resources, were significant for their association with the ‘ohana as the family land holding unit, an important social element in the traditional Hawaiian land use system. The same was probably true in this adjacent region of the Hilo moku. King David Kalakaua (1972) described the region between Hilo and Waipio as follows:

> “In the time of Līloa [c. 1400s], and later, this plateau was thickly populated, and requiring no irrigation, was cultivated from the sea to the line of frost. A few kalo patches are still seen, and bananas grow, as of old, in secluded spots and along the banks of the ravines; but the broad acres are green with cane, and the whistle of the sugar cane-mill is heard above the roar of the surf…(1972:284).”

Cordy (1994) developed a settlement model for the adjacent region of Hamakua using a variety of early historic records and accounts, which probably applies to the Laupahoehoe area as well. The model posited four basic zones: the seashore, seaward upland slopes, ‘ohi’a-koa forest, and gulches. The shoreline, which in most places is just a pile or rubble at the base of the cliff but in the Laupahoehoe region also includes a “leaf of land” created by a late volcanic eruption of Mauna Kea, was used to gather shoreline resources and fish. Ahupua’a boundary markers in the form of ahu (stone cairns) were placed on the shore. Most of the habitation and agriculture happened on the seaward upland slopes (where the project site is located), which were transected by the main trail paralleling the coast between 0.3 and 1.3 miles inland. Three to four families lived in the residential structures. The families farmed mainly dryland taro, with bananas, sweet potatoes, sugar cane, and livestock in the form of pigs, chickens and dogs. The area also held heiau, or temples, and smaller shrines. Trails led to the ohi’a-koa forest zone, where wood, bark, feathers, fruit that could be used for dye, and scattered banana plots were utilized. Stone cairns marking ahupua’a boundaries were present in gulches.

One of the earliest western visitors to the rugged windward coast was British missionary William Ellis, who wrote of his stop at Laupahoehoe during a visit around the island in 1823 (Ellis 1979).

He visited the village at the bottom of the 500-foot-deep Laupahoehoe gulch traveling by canoe from Hilo. He landed at a beach guarded by rocks as the vessel was guided to shore by steersmen with "uncommon address and precision." According to Ellis, the village represented typical habitation along the North Hilo and Hamakua coast where native inhabitants lived mainly in clusters at the opening of valleys and occasionally scattered in mauka areas. Ellis was provided with a few fish and some potatoes by an unnamed prominent person in the community before proceeding on foot to villages to the west.

The dozens of gulches that lie in the 21-mile journey between Hilo and Laupahoehoe were the reason that Ellis chose a canoe for transport, and they also presented a significant challenge to another 19th century traveler, Isabella Bird (1964). Making the trip on the back of a mule in 1873, Bird described how the methods of traversing the gulches had evolved from the use of ropes and mountaineering methods to four-legged mounts, which were somewhat less physically taxing but no less exciting as the animals would "slip, jump and scramble" up and down steep pathways, with rivers or streams to be crossed in nearly every ravine. The difficulties meant that such travel was not taken lightly, and only those with good reason would attempt the journey to areas made remote by geography. Those included paniolo, who would round up several dozen of the many semi-wild bullocks roaming the slopes of Mauna Kea and drive them to Hilo. Bird described the south side of the Laupahoehoe Gulch as "the worst pali of all." Bird said her group had planned to travel six miles further to find comfortable lodging, and described what she found at Laupahoehoe:

> "A number of disastrous-looking native houses are clustered under some very tall palms in the open part of the gulch, but it is a most wretched situation; the roar of the surf is deafening, the scanty supply of water is brackish, there are rumours that leprosy is rife, and the people are said to be the poorest on Hawaii."

A few years later, in 1880, the Laupahoehoe sugar company was founded by Theophilus H. Davies and William Lydgate. The new plantation, which employed 70 men and made use of 50 mules and 70 oxen, extended roughly 10 miles along the coast and up to the 1,850-foot elevation and contained 22 gulches. A 15-ton mill was erected in 1881 at the shoreline near a high bluff two miles south of Laupahoehoe where a landing for interisland ships was available. The company's operation included another mill at Kaiwilahilahi, although both the Laupahoehoe and Kaiwilahilahi mills were closed in 1890 and their operations transferred in 1890 to the Papa‘aloa mill. In 1909, 360 acres of the plantation were set aside for homesteads to which another 950 acres were added five years later under the Homestead Act. Homesteaders grew cane which was sold under contract to Laupahoehoe Sugar. By 1918, 900 laborers were housed in 12 plantation camps. There were 6,400 acres of cane under cultivation by the Laupahoehoe Sugar Company by 1937, with three-quarters of its 881 workers consisting of immigrant workers. A hospital was completed that year by the plantation, which was known for its model camps that included water piped to each dwelling, clubhouses, parks and a gym. From 1909 to 1913, the Hamakua Division of the Hilo Railroad was built to service sugar mills north of Hilo (http://www.thetrainmuseum.com/history.htm). The cost of expanding the railway from Hilo and Puna, which included the building of 13 trestles and more than

a half-mile of tunnels spanning gulches and streams, proved to be too much for the railroad company, which was sold in 1916 and reorganized into the Hawaii Consolidated Railway. In addition to the conveyance of sugar, the new company also operated a sightseeing service called the Scenic Express that provided passengers with views of the rugged Hamakua Coast. During World War II, Laupahoehoe Sugar leased housing and recreational facilities to the Army, and the railroad carried battle-weary troops bound for Camp Tarawa in Waimea.

The tsunami that struck the island on April 1, 1946 killed 25 people in Laupahoehoe, including 16 students and five teachers. It also collapsed the bridges and trestles, which proved a fatal blow to the rail line. The Territory of Hawai‘i later acquired the rights-of-way, some of which are still used for the current highway. (http://www.oralhistory.hawaii.edu/pages/historical/tsunami.html).

As part of the current study an effort was made to obtain information about any potential traditional cultural properties and associated practices that might be present, or have taken place in this area of Laupahoehoe. The Office of Hawaiian Affairs was contacted by letter. Lucille Chung and the household of Leimomi Mauhili, both officers in the Laupahoehoe Hawaiian Civic Club, were contacted by phone. None had any knowledge of cultural sites or practices that would be affected by the project. Mrs. Chung indicated that she might contact other individuals to see if they might have any information; to date, no information has been received.

As discussed in the previous section, no significant archaeological remains reflecting cultural history or supporting cultural values are present. The context of the project site is an existing water supply reservoir on small lots that are bounded by a private agricultural property and a steep gulch. The vegetation is weedy regrowth from sugar cane agriculture and does not contain the quality and quantity or resources that would be important for native gathering. Furthermore, no caves, springs, pu‘u, native forest groves, gathering resources or other natural features are present on or near the project site. The project site does not support any traditional resource uses, nor are there any Hawaiian customary and traditional rights or practices known to be associated with the property. In summary, it would appear that no known valuable natural, cultural or historical resources are present.

Impacts and Mitigation Measures

Although there are no indications so far from literature review or consultation with State Historic Preservation Division, the Office of Hawaiian Affairs, or local residents knowledgeable about Hawaiian cultural practices that there are any traditional cultural properties or practices on or near the project site, various parties are being supplied a copy of the EA in order to help finalize this finding.

As it currently appears that no resources or practices of a potential traditional cultural nature (i.e., landform, vegetation, etc.) appear to be present on or near the project site, and there is no evidence of any traditional gathering uses or other cultural practices, the proposed construction and maintenance of the facility would not likely impact any culturally valued resources or cultural practices.

3.3 Infrastructure

3.3.1 Utilities

Existing Facilities and Services

Electrical power to the facility is supplied by Hawai‘i Electric Light Company (HELCO), a privately owned utility company regulated by the State Public Utilities Commission, via their island-wide distribution network. Electrical service is available at the project site. The water source is the network operated and maintained by the County of Hawai‘i’s Department of Water Supply. Telephone service is available from Hawaiian Telcom. No wastewater system is available or necessary for the project.

Impacts and Mitigation Measures

The proposed action would not have any substantial impact on existing electrical facilities. Appropriate coordination with HELCO and Hawaiian Telcom will be conducted during design and construction. No other utilities will be affected in any way.

3.3.2 Roadways

Existing Facilities

Manowaiopae Homestead Road, a one-lane street maintained by the County of Hawai‘i, will continue to provide access to the reservoir and well site for maintenance vehicles through a roughly 1,000-foot-long easement across TMK 3-6-003:003 (see Figures 1-5).

Impacts and Mitigation Measures

The proposed action would require construction vehicles to access the site during a period of several months for grading, hauling fill and materials, building the new reservoir, and demolishing the old one. Because the project site is located on an easement that is separate from even locally used roadways, implementation of the project would have a negligible effect on local traffic. Construction plans will include provisions to provide access to all properties during this period. The new driveway will require a permit from the Hawai‘i County Department of Public Works (DPW) and must comply with Chapter 22 of the Hawai‘i County Code. Construction plans will be submitted for review and approval signature by DPW prior to bidding.

Operationally, as there is already an existing reservoir off Manowaiopae Homestead Road, no increase in traffic related to occasional DWS visits is expected.

3.4 Secondary and Cumulative Impacts

The proposed project will not involve any secondary or cumulative impacts, such as population changes or effects on public facilities, because it simply fulfills the mandate of the Department of Water Supply to provide high-quality service to its customers in existing service areas. Although the project would provide some short-term construction jobs, these would almost certainly be filled by local residents and would not induce in-migration.

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures. The adverse effects of the project – very minor and temporary disturbance to air quality, noise, visual quality during construction – are very limited in severity, nature and geographic scale. At the current time, according to files at the Planning Department, there do not appear to be any roadway, utility or development projects being undertaken in the Laupahoehoe area that would combine in such a way as to produce adverse cumulative effects or involve a commitment for larger actions.

3.5 Required Permits and Approvals

The following permits and approvals would be required:

- Hawai‘i County Building Division Approval and Building Permit
- Hawai‘i County Planning Department Approval and Consolidation-Resubdivision Permit (in process)
- Hawai‘i County Public Works Department Grading Permit and Permit to Construct Within Right of Way
- National Pollutant Discharge Elimination System Permit (NPDES)

3.6 Consistency With Government Plans and Policies

3.6.1 Hawai‘i State Plan

Adopted in 1978 and last revised in 1991 (Hawai‘i Revised Statutes, Chapter 226, as amended), the Plan establishes a set of themes, goals, objectives and policies that are meant to guide the State’s long-run growth and development activities. The three themes that express the basic purpose of the Hawai‘i State Plan are individual and family self-sufficiency, social and economic mobility and community or social well-being. The proposed project would promote these goals by modernizing and improving water service for the North Hilo district.

3.6.2 Hawai‘i County General Plan and Zoning

The General Plan for the County of Hawai‘i is a policy document expressing the broad goals and policies for the long-range development of the Island of Hawai‘i. The plan was adopted by ordinance in 1989 and revised in 2005 (Hawai‘i County Department of Planning). The General

Plan itself is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific applicability of each element to the nine judicial districts comprising the County of Hawai‘i. Most relevant to the proposed project are the following Goal and Policies, and Courses of Action:

PUBLIC UTILITIES

Goals
(a) Ensure that properly regulated, adequate, efficient and dependable public and private utility services are available to users.
(b) Maximize efficiency and economy in the provision of public utility services.
(c) Design public utility facilities to fit into their surroundings or concealed from public view.

Policies
(a) Public utility facilities shall be designed to complement adjacent land uses and shall be operated to minimize pollution or disturbance.
(b) Provide utilities and service facilities that minimize total cost to the public and effectively service the needs of the community.
(c) Utility facilities shall be designed to minimize conflict with the natural environment and natural resources.
(d) Improvement of existing utility services shall be encouraged to meet the needs of users.
(f) Develop short and long-range capital improvement programs and plans for public utilities within its jurisdiction that are consistent with the General Plan.

Public Utilities – Water

Policies
(a) Water system improvements shall correlate with the County’s desired land use development system.
(b) All water systems shall be designed and built to Department of Water Supply standards.
(c) Improve and replace inadequate systems.
(e) Water system improvements should be first installed in areas that have established needs and characteristics, such as occupied dwellings, agricultural operations and other uses, or in areas adjacent to them if there is need for urban expansion.

Standard
(a) Public and private water systems shall meet the requirements of the Department of Water Supply and the Subdivision Control Code.

Courses of Action – North Hilo
(a) Replace old, substandard, or deteriorating lines and storage facilities

Discussion: The proposed project satisfies relevant policies, standards and courses of action related to water systems in the North Hilo District.

The Hawai‘i County General Plan Land Use Pattern Allocation Guide (LUPAG). The LUPAG map component of the General Plan is a graphic representation of the Plan's goals, policies, and standards as well as of the physical relationship between land uses. It also establishes the basic urban and non-urban form for areas within the planned public and cultural facilities, public utilities and safety features, and transportation corridors. The project site is classified as Important Agricultural Lands in the LUPAG. As the project is a public purpose use, it is consistent with this designation.

Hawai‘i County Zoning. The existing two reservoir parcels as well as the privately owned parcel to be subdivided for the new reservoir site are all zoned A-20a (Agriculture, minimum lot size 20 acres). The proposed project is a permitted use within this designation. TMKs 3-6-003:035 and 036 are in the process of being consolidated as one property as part of the project, bringing all the facilities within one TMK. The property is not situated within the County's Special Management Area (SMA).

3.6.3 Hawai‘i State Land Use Law

All land in the State of Hawai‘i is classified into one of four land use categories – Urban, Rural, Agricultural, or Conservation – by the State Land Use Commission, pursuant to Chapter 205, HRS. The new reservoir site is in the State Land Use Agricultural District. The proposed use is consistent with intended uses for this Land Use District.

PART 4: DETERMINATION

The Hawai‘i County Department of Water Supply has preliminarily determined that the proposed project will not significantly alter the environment, as impacts will be minimal, and the agency intends to issue a Finding of No Significant Impact (FONSI). This determination will be reviewed based on comments to the Draft EA, and the Final EA will present the final determination.

PART 5: FINDINGS AND REASONS

Chapter 11-200-12, Hawai‘i Administrative Rules, outlines those factors agencies must consider when determining whether an Action has significant effects:

1. *The proposed project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources*. No valuable natural or cultural resources would be committed or lost. The surrounding area is largely agricultural, with residential areas that would directly benefit from the project.
2. *The proposed project will not curtail the range of beneficial uses of the environment*. The proposed project expands and in no way curtails beneficial uses of the environment.

3. *The proposed project will not conflict with the State's long-term environmental policies*. The State's long-term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. The project is minor, environmentally beneficial, and fulfills aspects of these policies calling for an improved social environment. It is thus consistent with all elements of the State's long-term environmental policies.
4. *The proposed project will not substantially affect the economic or social welfare of the community or State*. The project would not have any adverse effect on the economic or social welfare of the County or State, and would improve the water system infrastructure of the Laupahoehoe area.
5. *The proposed project does not substantially affect public health in any detrimental way*. The facility would promote public health and safety by improving water storage capacity for the Laupahoehoe area, and would thereby enhance the quality of water service.
6. *The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities*. No secondary effects are expected to result from the proposed action, which would simply improve water system facilities for an existing service area and would not induce in-migration or affect public facilities.
7. *The proposed project will not involve a substantial degradation of environmental quality*. The project is minor and environmentally benign, and would thus not contribute to environmental degradation.
8. *The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat*. The project site supports overwhelmingly alien vegetation. Impacts to rare, threatened or endangered species of flora or fauna would not occur.
9. *The proposed project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions*. The project is not related to other activities in the region in such a way as to produce adverse cumulative effects or involve a commitment for larger actions.
10. The proposed project will not detrimentally affect air or water quality or ambient noise levels. No adverse effects on these resources would occur. Mitigation of construction-phase impacts would preserve water quality. Ambient noise impacts due to construction will be temporary and restricted to daytime hours.
11. *The project does not affect nor would it likely to be damaged as a result of being located in environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal area*. Although the project is located in an area with volcanic and seismic risk, the entire Island of Hawai‘i shares this risk, and the project is not imprudent to construct, and employs design and construction standards appropriate to the seismic zone.
12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies*. No scenic vistas or viewplanes would be adversely affected by the project.
13. The project will not require substantial energy consumption. The construction and operation of the reservoir would require minimal consumption of energy. No adverse effects would be expected.

For the reasons above, the proposed action will not have any significant effect in the context of Chapter 343, Hawai‘i Revised Statues and section 11-200-12 of the State Administrative Rules.

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DRAFT ENVIRONMENTAL ASSESSMENT

REPLACEMENT OF MANOWAIOPAE RESERVOIR

TMKs: (3rd) 3-6-003:035, 036 and 003 (por.)
Laupahoehoe, North Hilo District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Department of Water Supply
345 Kekuanaoa Street, Suite 20
Hilo, Hawai‘i 96720

Appendix 1a
Comments in Response to Pre-Consultation

William P. Kenoi
Mayor

Harry S. Kubojiri
Police Chief

Paul K. Ferreira
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8865

June 5, 2009

Mr. Ron Terry
Principal
Geometrician Associates, LLC
P. O. Box 396
Hilo, HI 96721

Dear Mr. Terry:

Subject: Comment on Early Consultation for Environmental Assessment for Manowaiopae 0.5 mg Reservoir by Department of Water Supply to Replace a 0.1 mill-gallon concrete tank on DWS property, Laupahoehoe; TMK: 3-6-003:035, 036, and 003 (Por.), North Hilo, HI

Staff, upon reviewing the provided documents and visiting the proposed site, does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for allowing us the opportunity to comment.

If you have any questions, please contact Captain Randy Apele, Commander of the Hamakua District, at 775-7533.

Sincerely,

DEREK D. PACHECO
ASSISTANT POLICE CHIEF
AREA I OPERATIONS

RA:lli

William P. Kenoi
Mayor

Lono A. Tyson
Director

Ivan M. Torigoe
Deputy Director

County of Hawai'i
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
25 Aupuni Street • Hilo, Hawai'i 96720
(808) 961-8083 · Fax (808) 961-8086
http://co.hawaii.hi.us/directory/dir_envmng.htm

June 3, 2009

Mr. Ron Terry
Principal
GEOMETRICIAN ASSOCIATES, LLC
P. O. Box 396
Hilo, HI 96721

RE: Early Consultation on Environmental Assessment for Manowaiopae 0.5 MG Reservoir, TMKs 3-6-003:035, 036 and003 (por.), North Hilo District

Dear Mr. Terry,

We have no comments to offer on this Project.

Thank you for allowing us to review and comment on this project.

Sincerely,

Lono A. Tyson
DIRECTOR

11781A

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD09/4482

June 19, 2009

Ron Terry
Geometrician Associates
PO Box 396 Hilo, Hawai'i 96721

RE: Request for early consultation for environmental assessment (EA), proposed Manowaiōpae reservoir, Hilo, Hawai'i, TMKs: 3-6-003:035, 036 & 003.

Aloha e Ron Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated May 29, 2009. OHA has reviewed the project and offers the following comments.

OHA asks that, in accordance with Section 6E-46.6, Hawaii Revised Statutes and Chapter 13-300, Hawaii Administrative Rules, if the project moves forward, and if any significant cultural deposits or human skeletal remains are encountered, work shall stop in the immediate vicinity and the State Historic Preservation Division shall be contacted.

We do note that fencing is proposed and as such inquire as to the possibility of the area being used by our beneficiaries and having their constitutionally protected traditional and customary access rights be impacted.

OHA would like to suggest that the project area be landscaped with drought tolerant native or indigenous species that are common to the area. Any invasive species should also be removed. Doing so would not only serve as practical water-saving landscaping practices, but also serve to further the traditional Hawaiian concept of mālama 'āina and create a more Hawaiian sense of place. This would also help to reduce the amount of impervious surfaces in the project area, thereby reducing runoff as well.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Administrator

C: OHA CRC Hilo

DRAFT ENVIRONMENTAL ASSESSMENT

REPLACEMENT OF MANOWAIOPAE RESERVOIR

TMKs: (3rd) 3-6-003:035, 036 and 003 (por.)
Laupahoehoe, North Hilo District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Department of Water Supply
345 Kekuanaoa Street, Suite 20
Hilo, Hawai‘i 96720

Appendix 2
Lead and Asbestos Survey of Existing Reservoir (Portion)

EnvironMETeo Services, Inc.
Environmental / Industrial Health & Safety

Asbestos and Lead Survey Report

For

Inaba Engineering, Inc.
273 Waianuenue Ave.
Hilo, Hawaii 96720

Facility Surveyed:

County of Hawaii Department of Water Supply
Laupahoehoe (Manowaipoae) 0.5 MG Reservoir
Manowaiopae Homesteads, Hawaii

Project:

Department of Water Supply, County of Hawaii,
Laupahoehoe (Manowaipoae) 0.5 MG Reservoir, Job No. 2005-870,
Manowaiopae Homesteads, North Hilo, Hawaii,
TMK: 3-6-03:035

Conducted by

EnvironMETeo Services, Inc. (EMET)
94-520 Ukee Street, Suite A
Waipahu, Hawaii 96797

Date of Report: May 19, 2009

EMET ID: 0508307

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EnvironMETeo (EMET) Services, Inc. Waipio Gentry Business Park 94-520 Uke'e Street, Suite A Waipahu, Hawaii, USA 96797-4200
(808) 671-8383...Telephone (808) 671-7979...Facsimile

Certification of Report

We certify that this report is based on a physical survey of the Laupahoehoe (Manowaiopae) 0.5 MG reservoir, located in Manowaiopae Homestead, North Hilo, Hawaii for asbestos-containing materials (ACM) and lead-painted surfaces/building components.

The survey was conducted by EnvironMETeo Services, Inc. (EMET) on April 30, 2009 and was limited to the following scope of work:

Asbestos/Lead Paint Investigation and Asbestos/Lead Paint Bid Document Preparation

(1) Facility inspection and sample collection for asbestos and lead containing painted surfaces by EPA-accredited inspector(s), from Laupahoehoe (Manowaipoae) 0.5 MG Reservoir watertank and pump station building prior to planned renovation activities.

The survey results are based on analyses of samples of suspect materials collected from visually- and physically-accessible areas/materials.

Bulk samples of suspect ACM taken during the survey were analyzed for asbestos content by a National Institute of Standards and Technology (NIST)-accredited laboratory under the National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos fiber analysis. Laboratory analyses performed by Polarized Light Microscopy (PLM) for asbestos identification are in accordance with U.S. Environmental Protection Agency (EPA) Test Method 600/R-93/116.

EnvironMETeo (EMET) Services, Inc. Waipio Gentry Business Park 94-520 Uke'e Street, Suite A Waipahu, Hawaii, USA 96797-4200
(808) 671-8383...Telephone (808) 671-7979...Facsimile

Painted surfaces were tested for lead concentrations using an X-Ray Fluorescence (XRF) spectrum analyzer; a testing methodology approved by the EPA and the U.S. Department of Housing and Urban Development (HUD).

EMET makes no warranty and assumes no liability for the inappropriate use or misuse of this document.

Submitted by:

Peter Pascal
Building Inspector
State of Hawaii Certification No. HIASB-0584

EnvironMETeo (EMET) Services, Inc. Waipio Gentry Business Park 94-520 Uke'e Street, Suite A Waipahu, Hawaii, USA 96797-4200
(808) 671-8383...Telephone (808) 671-7979...Facsimile

Summary

EnvironMETeo Services, Inc. (EMET) conducted a survey for asbestos-containing materials (ACM) and lead-painted surfaces/building components at the Laupahoehoe (Manowaiopae) 0.5 MG reservoir, located in Manowaiopae Homestead, North Hilo, Hawaii, on April 30, 2009. The survey was conducted by Peter Pascal and Andrew Uyeda of EMET in accordance with Hawaii Administrative Rules (HAR) 11-501 and EMET's scope of work.

The survey was requested and authorized by Mr. Jason Inaba of Inaba Engineering, Inc. and performed in preparation for planned renovations.

The water was not drained from the tank prior to EMET's field investigation for the interior of the water tank to be surveyed. Also, no ladder was provided for the inspectors to access the roofs of the Pump Room and Chlorinator Building. Suspect material found on the roofs or within the water tank should be assumed to be ACM until properly sampled, analyzed, and proven to be non-ACM.

The following three (3) materials were identified as ACM during this survey:

- beige caulking at door frame, found around the interior and exterior sides of the door frame of the Pump Room (± 34 lf)
- beige caulking at window frame, found around the interior and exterior sides of the window frames of the Pump Room (± 88 lf)
- tan caulking at conduit pipe, found at the top of the conduit pipe just inside the doorway of the Pump Room (± 0.25 lf)

No lead-based paint was found. Lead-containing paint was found

EnvironMETeo (EMET) Services, Inc. Waipio Gentry Business Park 94-520 Uke'e Street, Suite A Waipahu, Hawaii, USA 96797-4200
(808) 671-8383...Telephone (808) 671-7979...Facsimile

Asbestos-Containing Material

The State of Hawaii and the EPA define ACM as any material containing more than one percent (>1%) asbestos by area. This definition can be found in the following regulations:

- HAR, Title 11, Department of Health, Chapter 501 (11-501), Asbestos Requirements

- HAR, Title 12, Department of Labor and Industrial Relations, Subtitle 8, Hawaii Occupational Safety and Health Division (HIOSH), Part 3, Construction Standards, Chapter 145.1 (12-145.1), Asbestos

- EPA 40 CFR Part 61, Subpart M- National Emission Standards for Hazardous Air Pollutants (NESHAP), revised July 1, 1990, Asbestos NESHAP Revision Final Rule

Asbestos Bulk Sampling

One hundred fourteen (114) samples of suspect ACM were collected and analyzed. The samples were placed in plastic containers with an unique identification number assigned to each sample and entered on a field data sheet. The sample locations were indicated on field drawings.

Samples were collected of the following suspect asbestos-containing material observed.

Water Tank

gray caulking at lid on roof	light green skim coat

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Pump Room

beige caulking at door frame	gypsum wallboard/mudjoint ceiling system
beige caulking at window frame	tan caulking at conduit pipe

Chlorinator Building

white caulking at window frame	white caulking at door frame
gray caulking at window frame	gypsum wallboard/mudjoint ceiling system

Asbestos Analyses

The samples were analyzed for asbestos using Polarized Light Microscopy (PLM) for the identification of asbestos, in accordance with EPA Test Method 600/R-93/116.

The following building materials were found to be ACM:

Pump Room

Material Description	Quantity	Material Location	Condition
beige caulking at door frame	± 34 lf	around the interior and exterior sides of the door frame of the Pump Room	good, non-friable
beige caulking at window frame	± 88 lf	around the interior and exterior sides of the window frames of the Pump Room	good, non-friable
black mastic on floor	± 0.25 lf	found at the top of the conduit pipe just inside the doorway of the Pump Room	good, non-friable

See Table 1 for a summary of PLM analytical data.

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Lead Paint

HUD regulations, 24 CFR Parts 35, 200, 881, and 886, guidelines for the evaluation and control of lead-based paint (LBP) hazards in housing, revised April 1, 1999, define LBP as paint with a lead content of 1.0 mg/cm^2 or greater by XRF analyzer, or 0.5% wt. or 5000 ppm by Atomic Absorption (AA) analysis. The EPA regulations 40 CFR Part 745, revised July 1, 1999, similarly defined LBP as stated in HUD regulations.

However, the Occupational Safety and Health Administration (OSHA) and HIOSH regulate any activity disturbing paint that contains lead (referred to as lead-containing paint or LCP), even if the lead content is below the EPA/HUD standard for lead-based paint.

XRF test results of painted surfaces equal to or greater than 1.0 mg/cm^2 are defined as LBP in accordance with EPA and HUD regulations.

Lead Paint Sampling and Analyses

Painted surfaces were analyzed for lead using an XRF analyzer. A total of forty (40) analyses of painted surfaces/building components and calibrations were performed. A unique identification number was assigned to each test location and entered on a field data sheet and a field drawing. The ID number, location, description, and lead concentration of each sample are indicated in the XRF Analyzer Test Results, which are provided in Appendix B.

The test results indicate that none of the sampled painted surfaces/building components contained a lead content equal to or greater than 1.0 mg/cm^2. However, the sampled painted surfaces/components showed a lead content of less than 1.0 mg/cm^2 and are considered to contain lead-containing paint (LCP)

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Painted surfaces may vary in paint type, color and condition, and any damaged painted surfaces may vary significantly from area to area in terms of the condition and degree of damage. The LBP and LCP results provide the lead content of all paint layers in a tested surface, as there may be more than one layer of paint on the tested surface.

Limitations

This asbestos and lead survey was performed to identify suspect materials in areas scheduled for planned renovations. Original building plans and specifications and those for past renovations, if any, were not available for review. Therefore, because of these limitations, the highly variable nature of building construction, and the limits to the survey as defined by EMET's scope of work, the potential remains for undiscovered hazardous materials.

This report is not a specification for the removal of ACM or lead and should not be used as such.

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Table 1

Summary of PLM Analytical Data

Water Tank

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
307-TANK-1a1 307-TANK-1a2 307-TANK-1a3	gray caulking at lid	around tank lid on roof	ND ND ND
307-TANK-1b1 307-TANK-1b2 307-TANK-1b3	light green skim coat	throughout sides of tank	ND ND ND

Pump Room

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
307-PUMP-1a1 307-PUMP-1a2 307-PUMP-1a3	beige caulking at door frame	around interior and exterior sides of door frame	chrysotile 3% chrysotile 2% chrysotile 2%
307-PUMP-1b1 307-PUMP-1b2 307-PUMP-1b3	beige caulking at window frame	around interior and exterior sides of window frames	chrysotile 2% chrysotile 3% chrysotile 2%
307-PUMP-1c1 307-PUMP-1c2 307-PUMP-1c3	gypsum wallboard/ mudjoint ceiling system	throughout ceiling	ND ND ND
307-PUMP-1d1 307-PUMP-1d2 307-PUMP-1d3	tan caulking at conduit pipe	top of the conduit pipe just inside the doorway of the Pump Room	chrysotile 3% chrysotile 2% chrysotile 3%

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Chlorinator Building

SAMPLE NUMBER	MATERIAL TYPE	MATERIAL LOCATION	ASBESTOS CONTENT
307-CB-1a1 307-CB-1a2 307-CB-1a3	white caulking at window frame	around interior sides of window frames	ND ND ND
307-CB-1b1 307-CB-1b2 307-CB-1b3	gray caulking at window frame	around exterior sides of window frames	ND ND ND
307-CB-1c1 307-CB-1c2 307-CB-1c3	white caulking at door frame	around interior and exterior sides of door frame	ND ND ND
307-CB-1d1 307-CB-1d2 307-CB-1d3	gypsum wallboard/ mudjoint ceiling system	throughout ceiling	ND ND ND

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