

1991-06-08-0A-FAA

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Environmental Assessment

* *Kamehameha Hwy* for a
**16-Inch Transmission Main
From Hauula to Kaipapau ***

Island of Oahu, Hawaii



**BOARD OF WATER SUPPLY
Honolulu, Hawaii**

September 1991

ENVIRONMENTAL ASSESSMENT
FOR A 16-INCH TRANSMISSION MAIN
FROM HAUULA TO KAIPAPAU, OAHU, HAWAII

Tax Map Key: Zone 5, Sections 3 and 4 (Por.)

Proposing Agency:

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September 1991

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CHAPTER 1
INTRODUCTION

The City and County of Honolulu, Board of Water Supply (BWS) plans to undertake a construction project to install a water transmission main in the Koolauloa District. The BWS has prepared an environmental assessment (EA) to address plans and implementation, as well as potential environmental impacts and mitigation measures of the proposed project, in accordance with Chapter 343 Hawaii Revised Statutes (HRS) and Chapter 200 of Title 11, Department of Health (DOH) Administrative Rules.

For further reference, the Windward Oahu Regional Water System Improvements Plan of August 1988 provides additional information regarding the relation of this project to the overall scope of the Windward Water System.

CHAPTER 2

PROPOSED ACTION

2.1 INTRODUCTION

The proposed transmission main project is part of a major transmission network being planned to convey water from future potable water sources in Windward Oahu. This action will increase the carrying capacity of the Windward Water Distribution System to allow the assimilation of new wells into the existing water system. The project will also allow for the integration of other eventual water sources, and for the conveyance of any excess water to Honolulu.

2.2 PROJECT LOCATION AND DESCRIPTION

The project is located within the development plan district of Koolauloa on the northeast portion of Oahu. Approximately 9,400 feet (about 1.8 miles) of the 16-inch transmission main will be installed within the 50-foot right-of-way of Kamehameha Highway, a public roadway, under the jurisdiction of the State of Hawaii, Department of Transportation (DOT). The transmission main will extend from Sacred Falls Trail Road in Hauula, to Kawaipuna Street in Kaipapau, and will be installed in five phases, commencing from the southern starting point and progressing in a northerly direction. (See Figures 1 and 2). Phases 1 and 2 will each comprise 2,000 feet (about 0.8 miles combined), Phases 3 and 4 will each continue for 1,900 feet (about 0.7 miles combined), and the final phase will constitute the remaining 1,600 feet (about 0.3 miles).

The water line will be buried within the Kamehameha Highway right-of-way and will have a minimum cover of four feet throughout its length. Figure 3 represents a typical cross section view of the shoulder margin for the water line. Between the 1,300-foot segment from Sacred Falls Trail Road and the Waimanana Bridge, the main will be installed on the makai side of the road and will subsequently traverse to the mauka side for about 2,400 feet until it reaches Maheiwī Bridge. From this point, the water line will negotiate its final crossing to the mauka side for the remainder of its length (approximately 5,700 feet).

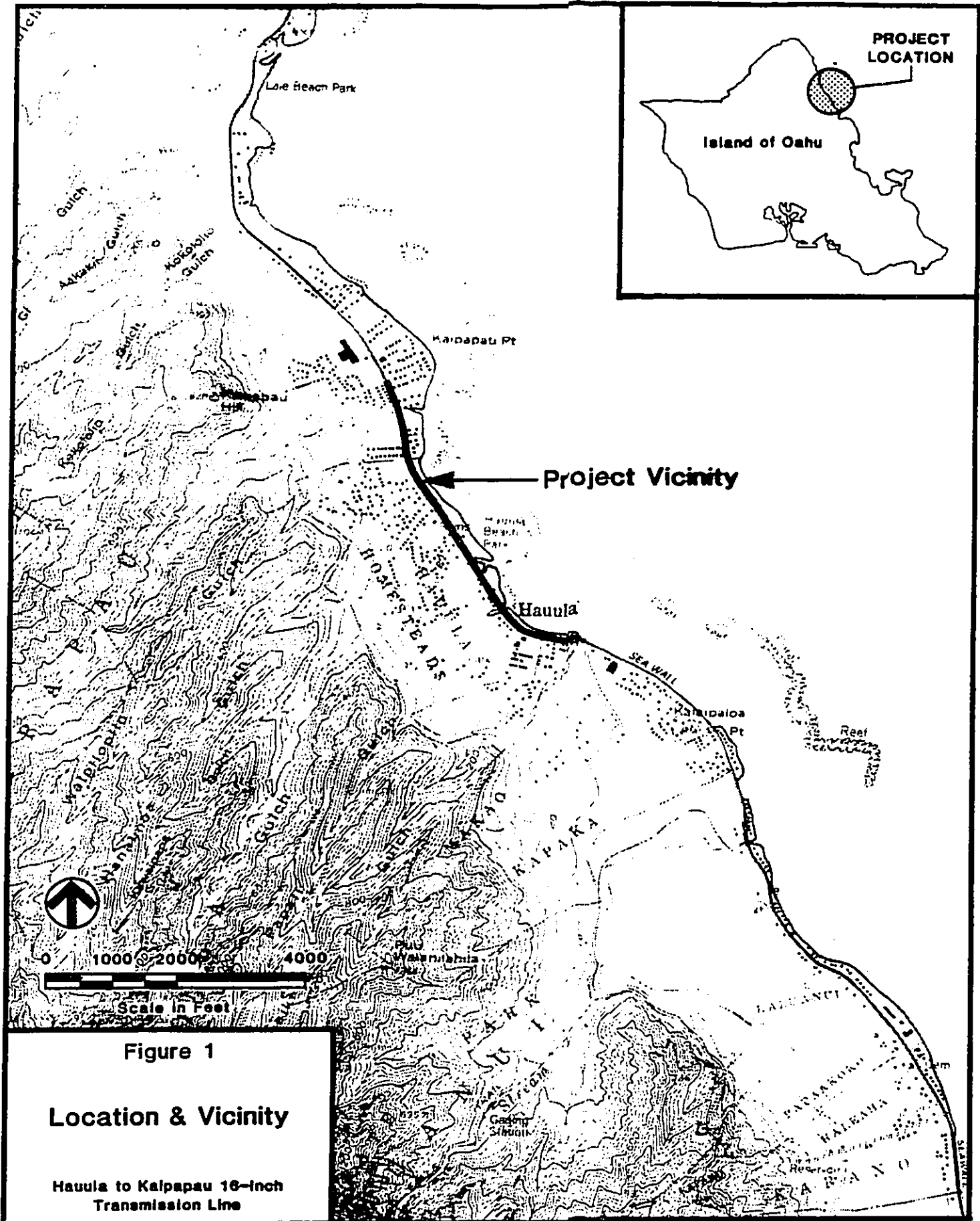


Figure 1
Location & Vicinity
Hauula to Kalpapau 16-Inch
Transmission Line

THE USE OF THIS MAP IS LIMITED TO THE PROJECT DESCRIBED HEREIN.

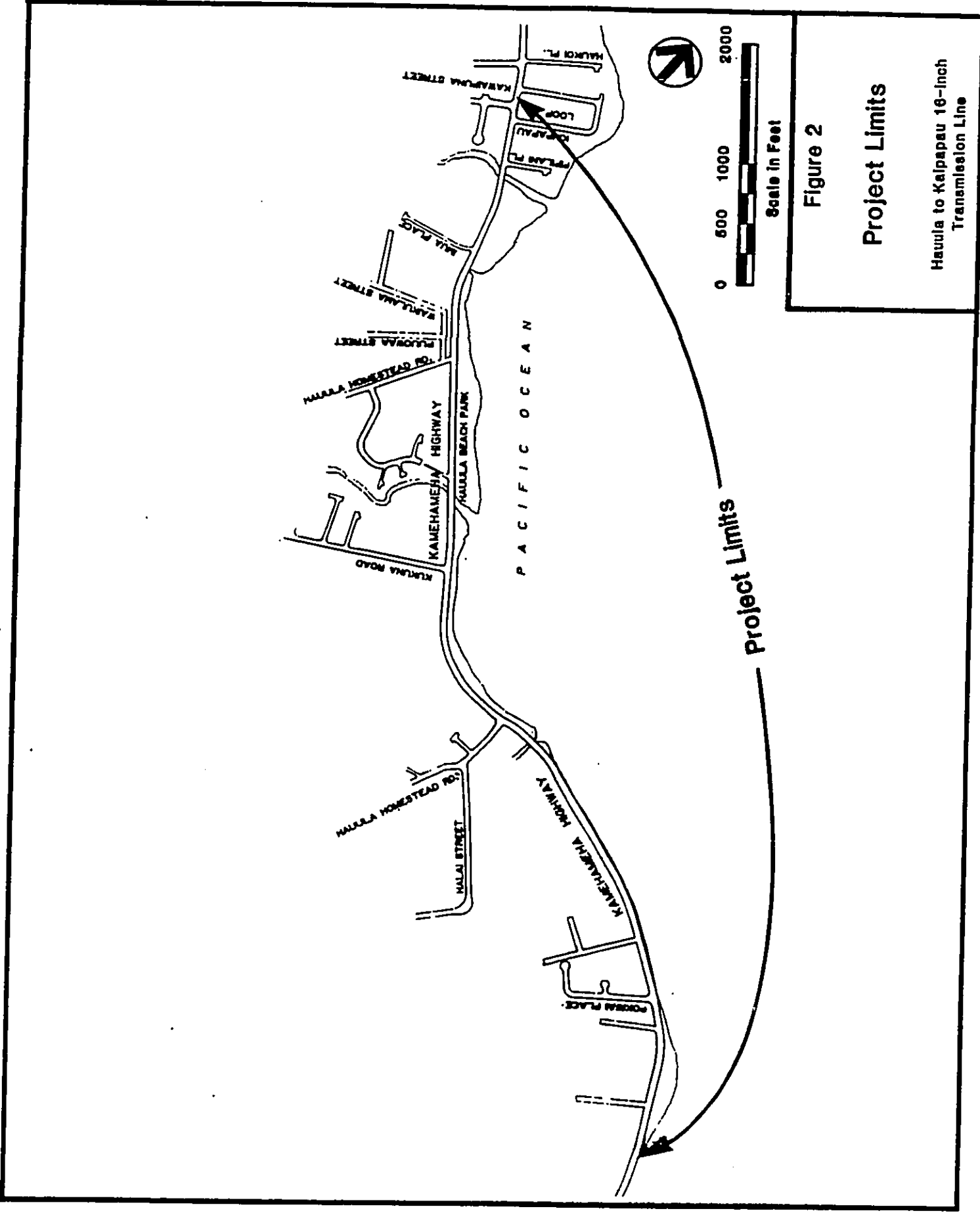


Figure 2
Project Limits
Haula to Kaipapau 16-inch
Transmission Line

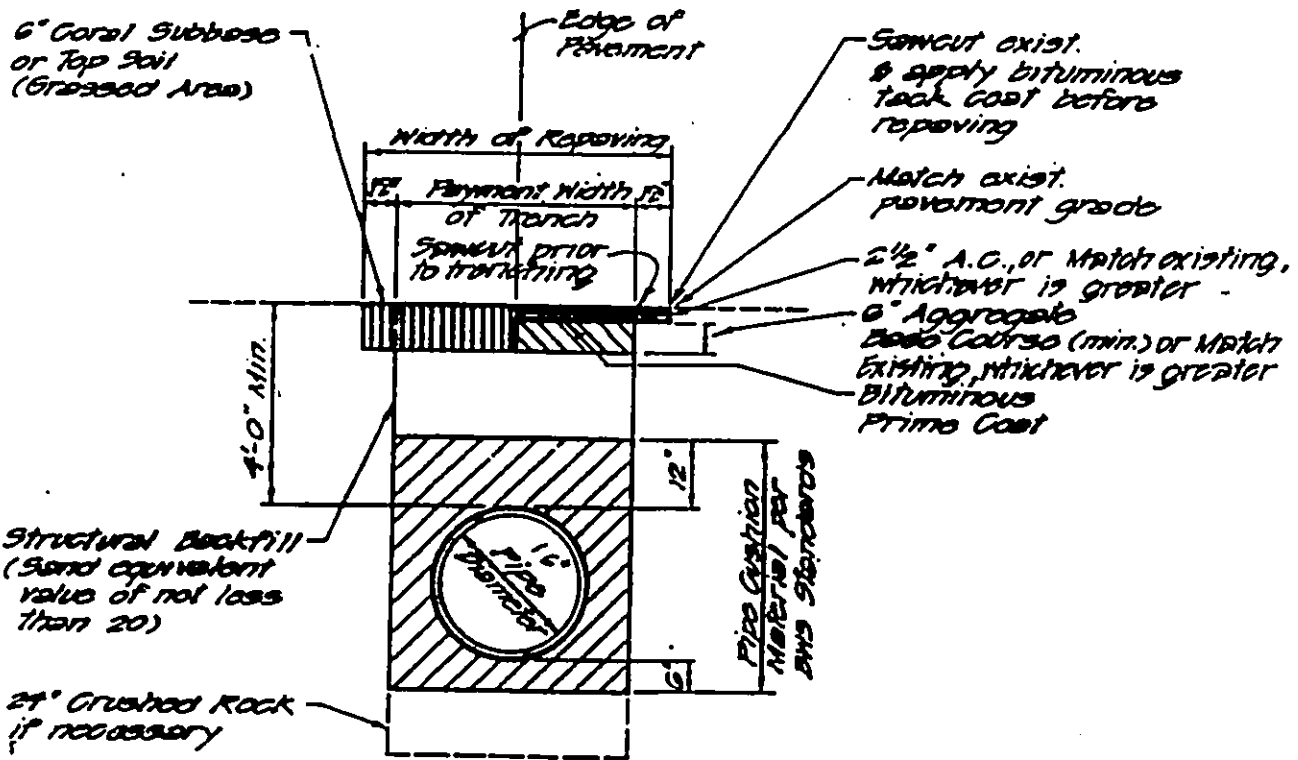


Figure 3

Typical Cross Section of Shoulder Work

Haula to Kaipapau 16-inch Transmission Line

As the transmission main is installed, it will be hydrostatically tested and disinfected. The contractor will subject the transmission main to a hydrostatic test pressure of 250 pounds per square inch (psi). After the main is hydrostatically tested and any leaks repaired, the main will be disinfected with chlorine at a concentration of 50 milligrams per liter (mg/L). This chlorinated water will be retained in the pipeline overnight and disposed of in accordance with applicable Federal, State, and City requirements. Prior to construction, a plan indicating the locations and amounts of chlorinated water to be discharged will be submitted by the contractor for review and approval. Chlorinated water will not be directly discharged into any body of water or stream.

The transmission main will be installed beneath the stream beds of Waimanana, Maheiwai, and Muliwai bridges, and Waipuhi, Hauula, Waipilopilo and Kaipapau streams. None of these streams are perennial. The pipeline installations will be reinforced/concrete-jacketed with the minimum required thickness encasing the pipeline. It is anticipated that all stream crossings will occur on the makai side of Kamehameha Highway. The three northernmost crossings at Muliwai bridge (over Maakua Stream), and Kaipapau and Waipilopilo streams will require the installation of pile foundations, as base conditions at these locations have deemed this action necessary. However, base conditions at all other crossings are considered adequate and will not require pile footings.

Each stream will be temporarily dammed during construction to facilitate installation beneath stream beds, insure the continuity of stream flow (where applicable), protect stream inhabitants, and prevent unnecessary soil erosion from the project into the waterways. Adequate precautions will be taken to accommodate unforeseen flood flows and intermittent lows during the installation of the pipeline across the streams.

A stream alteration permit will be required from the State of Hawaii Department of Land and Natural Resources (DLNR), Division of Water and Land Development, in addition to a general permit from the U. S. Army Corps of Engineers.

The contractor will schedule work activity between the hours of 8:30 a.m. to 3:00 p.m., Monday through Friday, excluding any State holidays. At least one through-lane will be open during all periods of construction. Trenches shall be covered with safe, non-skid bridging material to accommodate all types of vehicular traffic, and not more than the maximum allowable trenching length shall be exposed at any one time. In addition, the

contractor shall provide ingress to and egress from driveways and public streets at all times. Should conditions warrant, the contractor may hire personnel to control the flow of traffic around the construction area.

The contractor shall perform all applicable construction work in accordance with the "Standard Details" (September 1984, as amended) and the Standard Specifications for Public Works Construction" (September 1986) of the Department of Public Works (DPW), City and County of Honolulu, and the Revised Ordinances of Honolulu (ROH), 1978 as amended.

Additionally, construction and restoration of the existing highway within the state right-of-way shall be performed in accordance with all applicable sections of the "Standard Specifications for Road and Bridge Construction" (1976), and "Specifications for Installation of Miscellaneous Improvements Within State Highways" (1974), of the State Highways Division. All work shall also conform with the "Administrative Rules of Hawaii Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways" and the "Manual of Uniform Traffic Control Devices for Street Maintenance Operations." Further, construction plans shall be submitted for review and approval by the State Highways Division.

Construction work for the 16-inch main is tentatively scheduled for fiscal year 1991, which begins in July 1991 and continues through June 1992. The estimated cost of the project is approximately \$3 million. Funding will come from the BWS's Fiscal Year 1991 Capital Improvement Program Budget.

2.3 PROJECT FEATURES

The following table describes the features of this water main project:

<u>ITEM</u>	<u>DATA</u>
Tax Map Key (TMK)	Zone 5, Sections 3 and 4
State Land Use Designation	Agricultural, Urban
State Groundwater Control Area	Windward
Devmt. Plan Land Use Designation	Residential, Agriculture
Devmt. Plan Public Facilities Designation	Determined within 6 years
Zoning Designation	Residential
Flood Insurance Rate Map Designation	Within 100-year flood plain
Length and Diameter of Water Line	9,400 feet, 16 inches
Land Owner	State of Hawaii

CHAPTER 3

AFFECTED ENVIRONMENT

3.1 PHYSICAL ENVIRONMENT

3.1.1 Geology

The project site is located at the northern end of the Koolau Shield Volcano, along the Windward (northeastern) shoreline of Oahu. Windward Oahu is the remnant of a deeply-eroded basaltic shield volcano (the Koolau Volcano) which was initially broad-shaped, like Mauna Loa on the Island of Hawaii. Oahu underwent a series of submergences and emergences resulting from changes in the ocean level during glacial and interglacial phases. Fluvial erosion carved a series of valley in the Koolau shield which, combined with wave erosion of cliffs, may have reduced its height by as much as 1,000 feet. Alluvium accumulated in valley floors and coral reefs grew over low-lying coastal areas during higher stands of the ocean. Along portions of the windward Oahu coast, deposits of terrestrial and marine sediments formed a relatively impermeable wedge of sedimentary material known as caprock. (Source: Final Environmental Impact Statement for Windward Oahu Regional Water System Improvements, BWS, August 1988)

3.1.2 Soils

Most of Windward Oahu, including the project site, is covered by clay soils originating from old alluvium and colluvium from the Koolau Range or residuum from the ridges between streams.

The primary soil series found along the proposed transmission main alignment is described as Jaucus Sand (JaC) by the U. S. Soil Conservation Service. This type of soil consists of excessively-drained, calcareous soils that occur as narrow strips on coastal plains adjacent to the ocean. Slopes associated with JaC soil type range from 0 to 15 percent but generally do not exceed 7 percent. Its coloration is pale brown to very pale brown or sandy, extending to depths of more than 5 feet, and its composition is neutral to moderately alkaline throughout its profile.

Small patches of the Kawaihapai (KIA and KIB) soil series have also been identified near the northern project limit in Kaipapau. This series consists of well-drained soils in drainage ways and on alluvial fans, and are considered nearly level to moderately sloping. Elevations range from nearly sea level to 300 feet. Its surface layer is identified as dark brown clay loam, and its texture is silty clay.

According to the classifications set forth in the Agricultural Lands of Importance to the State of Hawaii (ALISH) rating system, the project site is not located within "Prime", "Unique", or "Other" important agricultural lands.

The project site has also been classified in the Detailed Land Classification - Island of Oahu published by the University of Hawaii Land Study Bureau (LSB). This study evaluated the quality, or productive capacity, of certain lands on Oahu in two ways: (1) for selected crops or uses, and (2) for overall suitability in agricultural use. A five-class productivity rating system, ranging from A to E, was established with A representing the highest productivity and E the lowest. According to this classification, the project site is classified as "U" or Urban since it is not included in the LSB rating system.

3.1.3 Climate and Air Quality

Temperatures along the Windward coast are equitable throughout the year. The variation between the coldest and warmest months averages about 7 degrees Fahrenheit (°F). Average annual temperatures given for the Kahuku monitoring station located to the north of the project, ranged from 72°F to 79°F with extreme temperatures of 49°F and 95°F. (Source: State of Hawaii Data Book, 1990).

Rainfall occurs sporadically throughout the year with most of the precipitation occurring during the months from November to March. Median rainfall along the coastal areas is about 60 inches and increases to over 200 inches at the crest of the Koolau Range.

Air quality on most areas of Oahu is generally affected by vehicular traffic and stationary sources. The general lack of high volumes of both sources, combined with the normal fresh tradewind conditions, indicates the air quality is good for the North Shore area.

3.1.4 Coastal Hazards

According to the Civil Defense "Tsunami Inundation Maps", the project site is located within a vulnerable inundation area, and thus, may be subject to periodic flooding and tsunami inundation.

The U.S. Army Corps of Engineers has indicated that the project site is located within several flood zones, as determined by the Federal Emergency Management Agency (FEMA). These flood zones include: Zone X, unshaded ("Other Areas" determined to be outside of the 500-year flood plain); Zone AE, with base flood elevations ranging from 9 to 13 feet mean sea level (MSL); Zone VE (coastal flood areas with velocity hazard) with base flood elevation 10 feet MSL; Kaipapau Stream floodway; Waipilopilo Stream floodway; Hanaimoa Stream floodway; and Maakua Stream floodway.

3.1.5 Hydrology

3.1.5.1 Surface Water

As mentioned, there are streams located in the project area. None of these stream are classified as perennial but instead are either intermittent or tidal (influenced by tidal action). The nearest significant natural coastal wetlands to the project site are in Kahuku and Kahana, about 5 miles to the northwest and about 3 miles to the southeast, respectively.

3.1.5.2 Groundwater

Most of Oahu, including the North Shore area, is underlain with permeable volcanic rock which readily transmits water. As a result, the base of the island below sea level is saturated with water comprised of the same salinity as that encountered in ocean water. At low elevations along Oahu's coasts, sedimentary deposits comprise part of an extensive coastal "caprock" which inhibits basal groundwater from moving seaward. Any fresh water penetrating the surface will accumulate and float above the saline water as a fresh water lens in a condition known as basal groundwater or the Ghyben Herzberg basal lens condition.

3.1.6 Noise Quality

The existing ambient noise levels within the project area are dominated by vehicular travel along Kamehameha Highway. Vehicular use of the highway during the weekdays is sporadic and contributes relatively insignificant levels of noise, with the exception of occasional trucks or vans. During the weekends, however, noise levels may increase with the influx of beach and park users to the windward and north shore areas.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Flora

Although a detailed botanical survey for the project site was not undertaken, review of the FEIS and information provided by the U.S. Department of the Interior Fish and Wildlife Service (USFWS) indicate there are no Federal or State listed or candidate threatened or endangered plant species within the road right-of-way. However, introduced species of plants used for landscaping can be found along the pipeline alignment. Typical plants include the kamani tree, ironwood tree, norfolk pine tree, coconut tree, spider lily, croton, hibiscus, fern, hao, plumeria, aloe, widelia, palm tree, taro vine, and other various exotic plants.

3.2.2 Fauna

Introduced animal species such as dogs, cats, mongoose, rats, mice, chickens/roosters, cows, horses, sandpipers, mynah birds, sparrows, doves, cardinals, and bulbuls exist within or near the project site. None of these species is a Federal or State listed or candidate threatened or endangered species.

3.2.3 Stream Fauna

A biological survey of 21 major streams in Windward Oahu was prepared in August 1983 in conjunction with the Final EIS for the Windward Oahu Regional Water System Improvements. Three streams, Maakua, Waipilopilo and Kaipapau, were included in the biological survey. Three species of marine biota were recorded in abundance at the

higher elevations (approximately 600 feet above sea level) of Waipilopilo and Kaipapau streams during the survey: the native o'pae kala'ole (*Aryoida bisulcata*); the introduced tahitian prawn (*Macrobrachium lar*); and the native o'opu nakea (*Awaous stamineus*). Maakua Stream was surveyed at about 800 feet elevation, and included the above three marine biota species, in addition to an abundance of hihiwai (*Neritina granosa*). Survey samples were not taken at lower elevations, where the transmission main will be installed, although no threatened or endangered species of marine biota are thought to exist here, according to the USFWS.

3.3 SOCIAL ENVIRONMENT

3.3.1 Population

In 1988, the regional population of Koolauloa was 12,417 persons, an increase of about 13.1 percent from the 1980 population figure of 10,983 persons. These data compare to about 838,500 persons on Oahu in 1988, an increase of 10 percent from the 1980 population figure of 762,534 persons. (Source: U.S. Bureau of the Census, 1980 Census of Population and Housing, Neighborhood Statistics Program, Hawaii, Department of General Planning). The project site lies within Census Tract No. 102.01 which encompasses the more defined area between Kaipapau and Kaaawa. Resident population for this tract in 1980 was 3,952 persons, followed by a slight increase in 1988 to 4,029 persons.

3.3.2 Surrounding Land Uses

Most of the North Shore of Oahu along Kamehameha Highway within the area of the project site can be characterized as rural. Low density residential and light commercial areas with varying setbacks from the coastline are interspaced with agricultural uses. In addition to private residences located alongside the Kamehameha Highway corridor, land uses within the project vicinity include the Hauula Kai Shopping Center, Hauula Beach Park, Hauula Fire Station, and Hauula Elementary School. A few small neighborhood businesses are also in close proximity to the project.

3.3.3 Scenic and Visual Resources

The project site is highly visible to nearby residents, as well as vehicular traffic on Kamehameha Highway and other nearby roadways. During the short-term construction period, views from these vantage points may be impacted by construction equipment and operation. However, as any waste material will be removed from the premises, and the project site restored to its pre-construction condition, no significant visual impacts are anticipated in the long term.

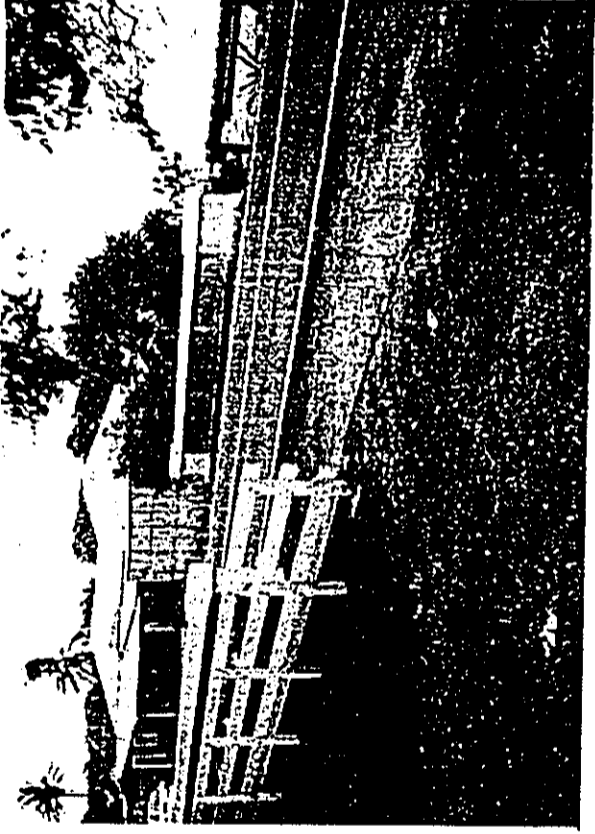
3.3.4 Archaeological and Historical Resources

According to the State Historic Preservation Division (SHPD) of the DLNR, there is one known historic site near the transmission main route. Site No. 50-80-05-289 is recorded as the Luaalii Heiau at the south end of the planned transmission main route, although the site was destroyed in the early 1930's. The SHPD has indicated that, as most of the project site has not been catalogued for historic sites, this inventory of one site is incomplete and additional sites are expected to be encountered during trench excavation.

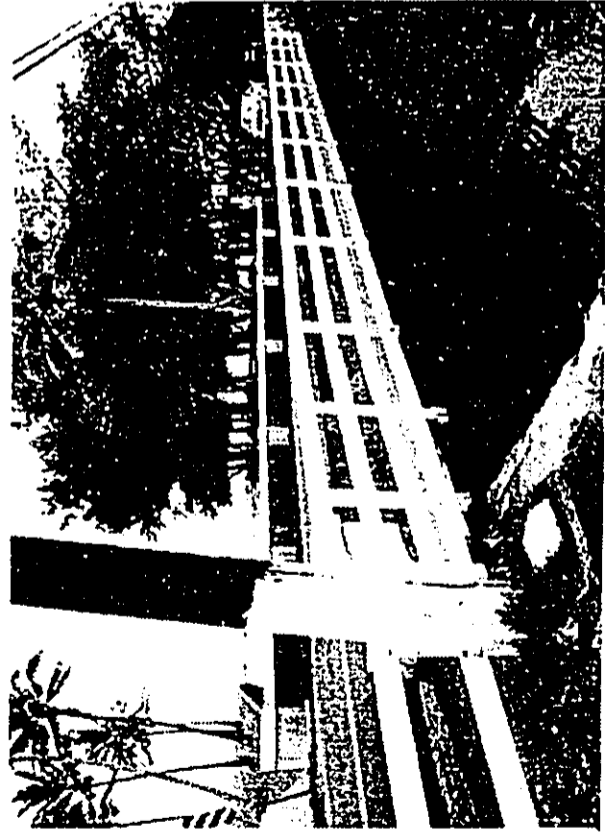
3.4 TRAFFIC AND TRANSPORTATION SYSTEMS

Kamehameha Highway is a two-lane asphaltic concrete roadway under the jurisdiction of the State of Hawaii DOT. The right-of-way width is about 50 feet, with about 30 feet of paved roadway. The speed limit throughout the entire length of the project site is 35 miles per hour. Photographs of existing roadway conditions at three of the seven bridge crossings are included in Figure 4.

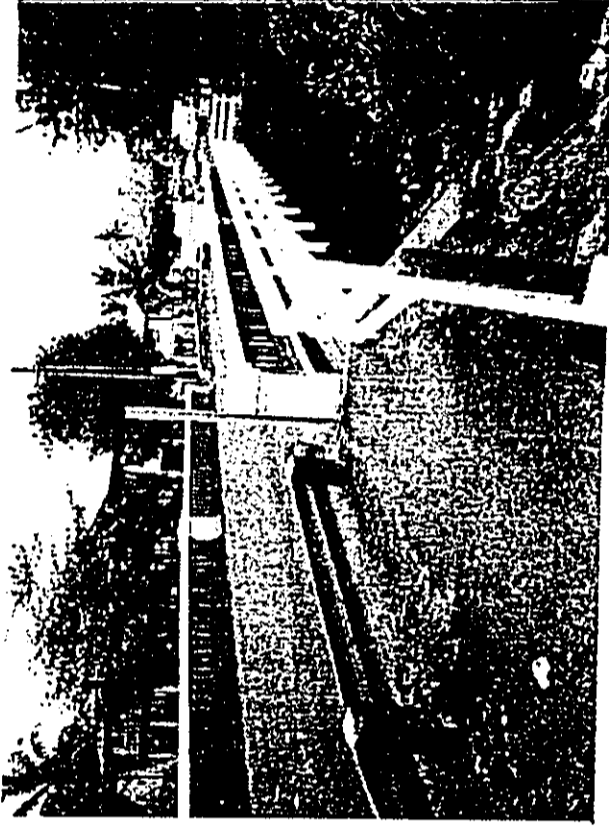
Traffic on the highway is a mixture of automobiles, trucks, and buses. The Bus, Oahu's public transportation system, operates a regular schedule along this route. Private tour companies also use this route to transport tourists to and from the Polynesian Cultural Center and other scenic attractions along the North Shore area. Various improvements by abutting landowners have moved toward the highway right-of-way. Some of these improvements include concrete rubble masonry (CRM) walls, hedges, chain link fences, and other barriers or obstructions.



Waihilopilo Bridge, Facing Makai.



Mullwai Bridge, Facing Makai.



Kaipapau Bridge, Facing Makai.

Figure 4
Existing Roadway Conditions at Bridge Crossings.

CHAPTER 4

POTENTIAL IMPACTS AND MITIGATIVE MEASURES

4.1 PHYSICAL ENVIRONMENT

4.1.1 Geology

The installation of the 9,400-foot length of transmission main will involve excavation to a depth of approximately 5 to 6 feet below grade over most of the project. Where the transmission main is installed beneath the four stream beds, excavation depths will be from 5 to 15 feet below the stream bed level. Upon completion of the installation, the ground surface will be returned to preconstruction conditions. There will be no significant impact to the geology of the project area.

4.1.2 Soils

No significant negative impact to soils in the project site is anticipated. Disturbance will be limited to that required for the project, and any waste material will be removed from the project site. The project site is not classified either by the ALISH rating system or the Land Study Bureau as important or productive agricultural land, and as such, will not pose any significant negative impact in this regard. The soil along the proposed transmission main alignment consists of excessively-drained, calcareous soils that occur as narrow strips on coastal plains adjacent to the ocean. Excavation of this soil is necessary to install the 16-inch transmission main, and will be replaced with structural fill and pipe cushion to BWS standards. Additionally, soil in the stream beds which is removed for the installation of concrete jackets and pile foundations shall be restored to the original stream bed elevation.

4.1.3 Air Quality

Some deterioration of air quality associated with road trenching and preparation activity is anticipated. These actions will create increased fugitive dust and pollutant emissions from the operation of vehicles and equipment. However, normal tradewind patterns

along the windward shore area should disperse pollutant emissions generated by activities at the project site. Periodic water sprinkling or other approved methods will be implemented to mitigate the potential impacts from dust generation should this become a problem during the pipeline installation.

The contractor will be required to maintain internal combustion equipment in excellent working condition to minimize the emission of exhaust fumes. Additionally, the contractor is required to comply with Title 11, DOH, Chapters 59 and 60, Air Pollution Control. Once the transmission main has been installed, there will be no long-term impact to air quality once construction is completed.

4.1.4 Hydrology

4.1.4.1 Surface Water

Although the proposed pipeline will cross under several intermittent streams along its length, construction work is not anticipated to significantly affect stream flow in the long-term. The following bridges and intermittent streams have been noted within the project vicinity: Waimanana, Maheiwi, and Muliwai bridges and Waipuhi, Hauula, Waipilopilo and Kaipapau streams. These stream ways will be temporarily dammed during construction to facilitate installation of the piles and transmission main beneath stream beds, insure the continuity of stream flow (where applicable), and prevent unnecessary soil erosion from the project into the waterways. Adequate precautions will be taken to accommodate unforeseen flood flows and intermittent flows during the installation of the pipeline across the streams.

A Stream Channel Alteration Permit (SCAP) will be required from the State of Hawaii DLNR, Division of Water and Land Development, in addition to a General Permit from the U. S. Army Corps of Engineers for work performed within waterways.

During the back flush process, the main will be disinfected with chlorine at a concentration of 50 milligrams per liter (mg/L) after being hydrostatically tested and checked for leaks. This chlorinated water will be retained in the pipeline overnight and disposed of in accordance with applicable Federal, State, and City environmental

requirements. Prior to construction, a plan indicating the locations and amounts of chlorinated water to be discharged will be submitted by the contractor for review and approval.

4.1.4.2 Groundwater

The entire project will occur along the shoreline and will entail excavating at depths between five and fifteen feet. However, this is not anticipated to have any negative effect on the caprock or basal aquifer below. Moreover, there will be no impact to groundwater from the project.

4.1.5 Noise Quality

Noise from construction equipment and other activities will temporarily increase ambient noise levels for the duration of the construction work. To minimize adverse noise levels from the construction equipment, the contractor will be required to install or maintain sound attenuating devices on equipment. Construction activities will be limited to the hours of 8:30 a.m. and 3:00 p.m. to minimize disturbance to nearby residences. In addition, the contractor shall conform to the various Public Health Regulations in Title 11, DOH, Chapters 42, 43, 44A, and 44B regarding noise control for Oahu.

4.2 BIOLOGICAL ENVIRONMENT

4.2.1 Flora

None of the plant species noted within the project site are Federal or State listed or candidate threatened or endangered species. To the extent possible, vegetation removal will be kept to a minimum, and the project site is not expected to have a significant adverse effect on the flora of this locality. If necessary, the proposed alignment of the main will be adjusted to avoid the removal or damage to trees along the pipeline route.

4.2.2 Fauna

None of the aforementioned animal species are categorized as, nor are a candidate for, the Federal or State threatened or endangered species lists. Some wildlife species may be displaced into surrounding areas during construction as a result of the increased activity and noise in the area, but could return to the site upon completion of the project. Thus, the project will not have a significant adverse effect to the fauna of this area of Hawaii.

4.2.3 Stream Fauna

There are no species of stream fauna, as earlier noted, which are classified under, or considered a candidate for, the threatened or endangered species list by Federal or State agencies. To minimize the potential for adverse impacts to the various stream biota, construction activity within the waterways will be scheduled for completion in the shortest possible time. During the interim, State Water Code and Instream Flow Standards should ensure that stream flows and wetlands are preserved, and the project will comply with requirements imposed by these regulations, such as stream flow monitoring and wetland water level monitoring. Additionally, stream beds and flood plains will be restored to their pre-project contour, including the complete removal of the material used for temporary dams. No waste materials from construction activity will be discarded in the stream beds or flood plains.

Chlorinated water used for pipeline disinfection will not be directly discharged into any body of water or stream. Discharge of this water will be undertaken so that it will not adversely impact aquatic resources.

4.3 SOCIO-ECONOMIC ENVIRONMENT

4.3.1 Population

The pipeline construction will be contracted by the BWS to a contractor who will be responsible for all aspects of the project, including supplying a construction crew. Crew members will most likely come from all areas of Oahu, including some workers from the

Windward area. However, the crew size is not significant when compared to the population of the Windward area, and hence, no adverse effects to the population of the Windward area are anticipated as a result of the project.

Demand for water in Windward Oahu is projected to increase from 19.0 million gallons per day (mgd) in 1990 to 19.7 mgd in the year 2010 -- an estimated increase of about 4 percent. The proposed water line is expected to provide the extra capacity to accommodate the demand in the Windward area, thereby alleviating the growing dependence by the existing populace on the aging water system and insuring adequate long-term service of potable water to the area.

4.3.2 Surrounding Land Uses

Any effect to surrounding land uses will be temporary. Disruption to individual businesses and residences will last only as long as it takes to install each phase of the transmission main. The contractor shall provide ingress to and egress from driveways and public streets at all times.

4.3.3. Scenic and Visual Resources

Visual impact of the excavated roadside corridor for the proposed water line is anticipated during the short-term construction period. However, no addition of permanent structures such as fire hydrants, pumping stations, or other appurtenances are included as part of this project, and therefore, long-term impacts to scenic and visual resources are not expected.

4.3.4 Historical and Archaeological Resources

According to the SHPD, the excavation of the transmission main trench will expose a long stratigraphic profile in areas which were heavily populated in ancient times. As this area has not been thoroughly studied from an archaeological perspective, the SHPD will be notified at the initiation of trenching activities, to record information and recover samples from the trench walls. In the event that any previously unidentified human burials, artifacts, other cultural remains or deposits are encountered after the initial

documentation has occurred, the contractor will contact the SHPD. Work in the immediate area will be suspended until the SHPD is able to assess the impact and make further recommendations for mitigative measures if warranted.

4.3.5 Public Health, Safety and Convenience

Necessary measures to assure public health, safety, and convenience will be provided throughout all phases of construction. The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones and other protective facilities. Such safety precautions shall conform with the "Rules and Regulations Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways", as adopted by the Highway Safety Coordinator and the U.S. Federal Highway Administration.

4.4 LAND USE PLANS, POLICIES, AND CONTROLS

The project site is within two State of Hawaii Land Use Districts designated as Agricultural and Urban. Public facilities are a permitted use on both designated lands, and as such, the project site is consistent with State of Hawaii land use plans and policies.

The project lies within the City and County of Honolulu Special Management Area (SMA) and will comply with the provisions set forth in Chapter 33, ROH as amended.

The project site is consistent with the City and County Development Plan Public Facilities (DPPF) Map which indicates water system improvements "determined for construction within 6 years". Additionally, the designation for the project as dictated by the Development Plan Land Use (DPLU) Map is primarily Residential, with a marginal area being Agriculture. Thus, amendments to either DP maps are not required. Under the City and County Zoning map, the project site is zoned Residential (R-5) which permits the use of public facilities such as water lines. Hence, the water main project is consistent with City and County of Honolulu land use plans and policies.

4.5 TRAFFIC

Some traffic congestion is expected once construction work begins. To minimize traffic impacts, the contractor will schedule work activity between the hours of 8:30 a.m. to 3:00 p.m., Monday through Friday, excluding any State holidays. This construction schedule will help to minimize conflict with morning and afternoon peak traffic periods. During construction, at least one through-lane will be open to traffic. Should conditions warrant, the contractor may hire personnel to control the flow of traffic around the construction area. The contractor shall provide ingress to and egress from driveways and public streets at all times.

As Kamehameha Highway is a public highway, a permit is required from the State DOT prior to any construction work performed on the project. In addition, a construction permit must be obtained prior to commencement of construction for work performed within the highway right-of-way.

It should be noted that the State DOT has future plans to widen and realign Kamehameha Highway in the project vicinity. Accordingly, the location of the proposed main will be coordinated with the Highways Division of the DOT.

CHAPTER 5

POSSIBLE ALTERNATIVES

5.1 NO ACTION

The proposed project is part of an overall groundwater development program to meet anticipated consumer demands for potable water within the State Windward Groundwater Control Area. The objective of the main is to allow the assimilation of new wells being developed in the Windward area. Under a "no action" alternative, this objective would not be achieved. The no action alternative is not considered a feasible option to the proposed project.

5.2 DELAYED ACTION

Although the proposed project is not currently scheduled, once budgeted, delay of the project would only serve to increase the cost when construction ultimately begins. In addition, delaying the project would not rule out its necessity in the near future. Thus, the delayed action alternative is not considered a feasible option to the proposed project.

5.3 ALTERNATIVE ALIGNMENTS

No consideration was given to install the pipeline outside of the highway right-of-way as it would require the displacement of residents and remove land from the tax base. Another alternative alignment was to install the main in the center of Kamehameha Highway. However, this would affect both lanes and may also require constructing a temporary bypass roadway for non-local traffic.

5.4 ALTERNATIVE MAIN SIZES

The proposed main size is based on the estimated optimum yield from all new sources planned between Punaluu and Malaekahana, and as such, there will be no advantage in installing a larger or smaller sized pipe. Installing a larger pipe will involve a higher construction cost, may have low pressure problems and may also have water quality

problems such as air entrainment. Although overall construction costs may be lower, installing a smaller pipe may result in a higher than normal line pressure and may require an additional pipeline if the yield from the proposed sources is much greater than the designed capacity of the pipe.

5.5 ALTERNATIVE SOURCES

The BWS has considered a number of alternatives to potable groundwater sources, such as desalination, development of surface and brackish water sources, and the recycling of treated waste water. However, until these alternatives become acceptable from a technical, health, and/or cost perspective, BWS will continue its emphasis on the development of groundwater sources.

CHAPTER 6

DETERMINATION

In accordance with the provisions set forth in Chapter 343, Hawaii Revised Statutes, and the significance criteria in Section 11-200-12 of Title 11 Chapter 200, this assessment has determined that the project will have no significant adverse impact to archaeological sites, water quality, air quality, noise, existing utilities, or wildlife habitat, and that an Environmental Impact Statement is not required. However, there will be moderate impacts to traffic for the duration of the project, but mitigative measures will be implemented to minimize traffic congestion. All other anticipated impacts will be temporary and the environmental quality of the area will return to preconstruction conditions.

**CHAPTER 7
AGENCIES CONSULTED**

FEDERAL AGENCIES

1. Department of the Interior
Fish and Wildlife Service
2. Department of the Interior
Geological Survey
3. Department of Agriculture
Soil Conservation Service
4. Environmental Protection Agency Region IX
5. Department of the Army
Corps of Engineers

STATE OF HAWAII AGENCIES

1. Department of Health
2. Department of Land and Natural Resources
3. Department of Agriculture
4. University of Hawaii at Manoa
Environmental Center
5. University of Hawaii at Manoa
Water Resources Research Center
6. Department of Transportation

CITY AND COUNTY OF HONOLULU AGENCIES

1. Department of Land Utilization
2. Department of General Planning
3. Department of Public Works

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Appendix A
COMMENTS TO THE
ENVIRONMENTAL ASSESSMENT



United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE

P.O. BOX 50167
HONOLULU, HAWAII 96850

April 22, 1991

Mr. John L. Sakaguchi
Project Manager
Wilson Okamoto & Associates
P. O. Box 3530
Honolulu, Hawaii 96811

Dear Mr. Sakaguchi:

This responds to your April 5, 1991 request for our review of the proposal to install water transmission mains from Waiahole to Waikane, Hauula to Kaipapau, and Kaipapau to Laie, Oahu. The three lengths would be placed within the 50-foot right of way along Kamehameha Highway.

Our main concern is that the installations do not adversely affect wetlands which can be found near Kamehameha Highway or streams which must be crossed. It appears from the Environmental Assessment that was included with your letter that adequate precautions will be taken for the stream crossings and the Corps of Engineers approval will be sought prior to any other wetland activity. To the best of our knowledge, there are not endangered or threatened species of plants or animals which would be expected to be found along the proposed route. However, should the pipeline be placed farther than 50 feet from the highway in certain locations, such as makai of the roadway in the vicinity of Moli Pond at Kualoa Regional Park or mauka of the highway at Waihee Road, endangered waterbirds may be affected. We request that we be contacted again should such modification of waterbird habitat be anticipated.

Thank you for the opportunity to comment on the proposals.

Sincerely yours,

William R. Kramer
Section 7 Coordinator
Pacific Islands Office

CC: BWS



United States Department of the Interior



GEOLOGICAL SURVEY

WATER RESOURCES DIVISION
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

April 25, 1991

Mr. John Sakaguchi
Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Mr. Sakaguchi:


Subject: Environmental Assessment for Transmission Mains, Waiahole-
Waikane, Hauula - Kaipapau, and Kaipapau - Laie

We have reviewed the subject project descriptions and suggest that the Environmental Assessment for the placement of the three Board of Water Supply (BWS) water transmission mains discuss the impact of this construction on the quality and quantity of the stream environments they traverse. We believe the Environmental Assessment should also address the potential impact on the near-shore ecosystem of Kaneohe Bay which is the receiving water for this area.

As mentioned in each project description, the temporary damming of streams during construction will be needed to facilitate the installation of the mains beneath stream beds. Because of the flashy nature of these windward streams great care should be taken so that the impact of this work does not cause or enhance localized flooding by altering the course of flood flows or contribute to the blocking of bridge openings or culverts.

We appreciate the opportunity to comment.

Sincerely,


William Meyer
District Chief



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

April 26, 1991

REPLY TO
ATTENTION OF:

Planning Division

Mr. John Sakaguchi
Wilson Okamoto & Associates, Inc.
1140 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Mr. Sakaguchi:

Thank you for the opportunity to review the separate preliminary environmental assessments for three water transmission mains proposed for the windward side of Oahu: 16-inch main from Kaipapau to Laie; 30-inch main from Waihee to Waikane; and 16-inch main from Hauula to Kaipapau. The following comments are offered:

a. Department of the Army permits will be needed for these projects. For more information about permit requirements, please contact Operations Division at 438-9258.

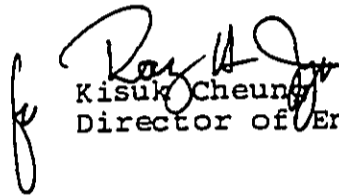
b. According to the Flood Insurance Study for the City and County of Honolulu, the project sites are in the following flood zones:

Kaipapau to Laie. Zone AE (areas inundated by 100-year flood), with a base flood elevation of 13 feet MSL; and Zone X, unshaded ("Other Areas" determined to be outside of the 500-year flood plain as determined by the Federal Emergency Management Agency).

Waihee-Waikane. Zone X, unshaded; Zone X, shaded (areas inundated by 500-year flood); Zone AE, with base flood elevations ranging from 5 to 16 feet MSL; Zone AH (areas of 100-year shallow flooding), with a base flood elevation of 7 feet MSL; Waikane Stream floodway; Waihole Stream floodway; Kaalaea Stream floodway; and Haiamoa Stream floodway.

Haaula-Kaipapau. Zone X, unshaded; Zone AE, with base flood elevations ranging from 9 to 13 feet MSL; Zone VE (coastal flood areas with velocity hazard), with base flood elevation 10 feet MSL; Kaipapau Stream floodway; Waipilopilo Stream floodway; Hanaimoa Stream floodway; and Maakua Stream floodway.

Sincerely,


Kisuk Cheung
Director of Engineering

JOHN WAIHEE
GOVERNOR



State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

ILIMA A. PIIANAIA
DEPUTY TO THE CHAIRPERSON

FAX: 548-6100

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96823-2159

April 17, 1991

Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, HI 96814

Attention: Mr. John Sakaguchi

Gentlemen:

Re: EA's for Transmission Mains:
Waiahole-Waikane, Hauula-Kaipapau,
and Kaipapau-Laie

We have reviewed the three EA's and have no comments to offer at this time. May we receive copies of the final EA's for our files when they are completed.

We are returning the preliminary review copies.

Sincerely,


YUKIO KITAGAWA
Chairperson, Board of Agriculture

Enclosures

c: Paul Matsuo
Paul Schwind

cc: BWT



JOHN WAIHEE
GOVERNOR OF HAWAII



JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
EMD / SDWB

April 19, 1991

Ref. No. 91-2-114X

Mr. John L. Sakaguchi
Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814


Dear Mr. Sakaguchi:

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR TRANSMISSION MAINS
FROM WAIHEE-WAIKANE (30-INCH);
FROM HAUULA-KAIPAPAU (16-INCH); AND
FROM KAIPAPAU-LAIE (16-INCH)
(Board of Water Supply, City & County of Honolulu)

Thank you for the opportunity to review and comment on the subject documents. We have examined the Environmental Assessments and have no comments to offer at this time.

If you should have any questions please contact the Safe Drinking Water Branch at 543-8258.

Very truly yours,


JOHN C. LEWIN, M.D.
Director of Health

JOHN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

April 26, 1991

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
AL PANG
JOYCE T. OMINE
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

HWY-PS
2.6619

Mr. John Sakaguchi
Project Manager
Wilson Okamoto & Associates
P.O. Box 3530
Honolulu, Hawaii 96811

Dear Mr. Sakaguchi:

Environmental Assessment for Transmission Mains
Waiahole-Waikane, Hauula-Kaipapau, and Kaipapau-Laie

Thank you for your letter of April 5, 1991, requesting our review of the subject project.

We have the following comments:

1. The waterline should be placed as close as possible to the highway rights-of-way line.
2. The applicant should be informed that we have future plans to widen and realign Kamehameha Highway in the project vicinity. Our widening and realignment schemes will most likely be on the mauka side of the highway. The location of the waterline should be coordinated with our Highways Division.
3. The applicant should abide and conform to applicable current rules/laws governing the use of Traffic Control Devices at Work Sites, especially on sites adjacent to public streets and highways. Safety should be a prime consideration during construction.
4. Construction plans for work within our State highway right-of-way must be submitted for our review and approval.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Edward Y. Hirata".

Edward Y. Hirata
Director of Transportation



University of Hawaii at Manoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawaii 96822
Telephone: (808) 956-7361

April 30, 1991
RN:0288

Mr. John Sakaguchi
Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Mr. Sakaguchi:

Preliminary Environmental Assessment
Water Transmission Mains
From Waiahole to Waikane, Hauula to Kaipapau, and Kaipapau to Laie
Windward, Oahu

The referenced Environmental Assessments (EAs) were forwarded to the Environmental Center, by Roger Fujioka of Water Resources Research Center, for our review. The projects involve installation of new water transmission mains within the 50-foot right of way of Kamehameha Highway between Waihee and Laie. The preliminary EAs were reviewed in-house by our staff.

We have serious reservations concerning the procedures for compliance with Chapter 343, HRS, being followed by the Board of Water Supply in this instance. In our 1984 review of the Environmental Impact Statement (EIS) Preparation Notice for the Windward Oahu Regional Water System, of which these transmission mains are a component, we recommended that the BWS prepare "either separate EIS's for the individual developments or a general EIS on the group of developments with supplementary EIS's on the individual developments" (letter of October 3, 1984, from Doak Cox to Kazu Hayashida). The BWS stated in the referenced EIS that they intended "to prepare Supplemental EAs as each of the projects are programmed for possible construction." Although this appears to be the procedure being followed, we suggest that it is inappropriate to consider these three projects separately, since they constitute segments, or phases of a larger project. Accordingly, pursuant to Title 11 Chapter 200 Section 7, HAR, it would seem more proper to combine these development projects for consideration in a single EA.

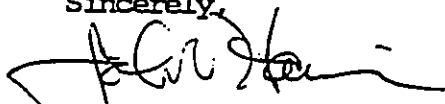
Our particular concerns with regard to the proposed work are applicable to each of the phases of the project. Given existing traffic congestion along Kamehameha Highway and the prolonged duration of construction, we suggest that it would be appropriate for the BWS to

Mr. John Sakaguchi
April 30, 1991
Page 2

provide a traffic impact study. Similarly, even though the pipe will be laid within the roadway right of way, much of the route lies within coastal areas known to be archaeologically sensitive, and an archaeological study would be appropriate. Also, in those areas where construction is undertaken immediately adjacent to the shoreline, special care should be exercised to minimize or mitigate impacts to the sensitive coastal environment. Finally, although discharge of chlorinated disinfectant solution will be performed "in accordance with applicable Federal, State, and City requirements," specifications of procedures to be followed will allow for more comprehensive review of the project.

Thank you for the opportunity to comment on these preliminary EAs, and please don't hesitate to contact me if further questions arise.

Sincerely,

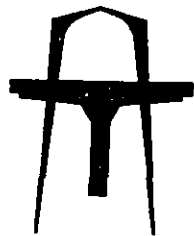


John T. Harrison, Ph.D.
Environmental Coordinator

cc: OEQC
Roger Fujioka

August 5, 1991

**WILSON
OKAMOTO**
& ASSOCIATES, INC.



ENGINEERS
ARCHITECTS
PLANNERS

1150 SOUTH KING STREET
HONOLULU, HAWAII 96814
PHONE: (808) 531-5281

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. John T. Harrison, Ph.D.
Environmental Coordinator
Environmental Center
University of Hawaii
Crawford 317, 2550 Campus Road
Honolulu, HI 96822

Dear Mr. Harrison:

Subject: Environmental Assessment for Transmission Mains
Waihee to Waikane, Hauula to Kaipapau, and Kaipapau to Laie

Thank you for your letter of April 30, 1991. The following has been prepared in response to your concerns:

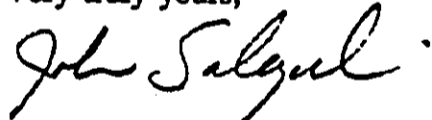
1. The suggestion that development projects be combined in a single environmental assessment (EA) is noted. However, the Board of Water Supply (BWS) feels that the cumulative impacts and implications of the larger project, which encompasses the three subject projects, were adequately addressed in the Windward Oahu Regional Environmental Impact Statement. Separate supplemental EA's are being prepared for the three water main projects as was previously done for other segments of the Windward transmission main. Although the mains are interconnected, these are individual projects in the BWS capital improvements program and will be funded, designed, and constructed as such. Individually prepared EA's will also minimize confusion during application for permits which require EA attachments.
2. The suggestion for a traffic impact study due to the existing volume of traffic along Kamehameha Highway is also noted. The BWS has a 20-inch water main project along Kamehameha Highway from Punaluu to Hauula which is currently under construction, and as a result, has had the opportunity to directly observe the impacts on traffic in the area. Necessary measures will be taken to minimize traffic congestion during construction of the water mains. Each water main project will include a traffic control plan which will incorporate all current rules and regulations governing the use of traffic control devices. The BWS will also comply with all applicable Department of Transportation requirements regarding these projects.

Mr. John T. Harrison, Ph.D.
Page 2
August 5, 1991

3. We are aware that much of the coastal areas in the vicinity of the project area archaeologically sensitive. The BWS has been in contact with the State Historic Preservation Division of the State Department of Land and Natural Resources (DLNR) and will comply with their requirements and concerns.
4. Adequate precautions will be taken in those areas where the construction of the pipelines may impact the sensitive coastal environment. The BWS will comply with all requirements of the U.S. Corps of Engineers General Permit, DLNR's Stream Channel Alteration Permit, and the Department of Land Utilization's Special Management Area Permit.
5. The discharge of chlorinated water used for pipeline disinfection will be undertaken so that it will not adversely impact aquatic resources. Prior to construction, a plan indicating the locations and amounts of chlorinated water to be discharged will be submitted by the contractor for review and approval. Chlorinated water will not be directly discharged into any body of water or stream.

Should you have any questions, please contact Bert Kuioka of the BWS at 527-5235.

Very truly yours,



John Sakaguchi
Project Manager

JS:lf

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96808

REF:OCEA:JN

MAY 14 1991

WILLIAM W. PATTY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DÉPUTÉS

KEITH W. AHUE
MANABU TAGOMORI
Dan T. Kochi

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

File No.: 91-416
Doc. No.: 0708E

Mr. John L. Sakaguchi, Project Manager
Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Mr. Sakaguchi:

Subject: Comments on 3 Environmental Assessments for Board of
Water Supply Transmission Mains: Waiahole-Waikane,
Hauula-Kaipapau, and Kaipapau-Laie Koolaupoko and
Koolauloa, Oahu

Thank you for giving our Department the opportunity to comment on
this matter. We have reviewed the materials you submitted and have
the following comments.

Our Department's Historic Preservation Division comments that there
can be little doubt that excavation of several miles of trenches
along Kamehameha Highway will have an effect on numerous subsurface
historic sites, including burials. Most of the project area has
not been inventoried for historic sites, but inadvertent
discoveries of human burials and a program of systematic auguring
of sandy soils at Laie Beach Park in 1980 give a rough indication
of the kinds of historic sites that will likely be encountered
during excavation for the transmission main. Known historic sites
near the transmission main routes are listed and briefly described
below. It should be stressed that this list is undoubtedly very
incomplete and that many similar sites are likely to be uncovered
during trench excavation.

Excavation of the transmission main trench will expose a long
stratigraphic profile in areas that were thickly populated in
ancient times, but that have been studied little from an
archaeological perspective. The information gleaned from the
stratigraphic description of the trenches and the analysis of
samples taken from the trench walls has the potential to be
important to the history and prehistory of Hawaii.

WAIHEE TO WAIKANE

Two known historic sites:

- 50-80-10-2512 - grindstones near the beach at Waiahole. These may be associated with the adze quarry located on the ridges above the south side of the valley.
- 50-80-10-1086 - prehistoric house sites near the south end of Waiahole Beach Park. These are likely to be remnants of a once substantial settlement at this location.

KAIPAPAU TO LAIE

Six known historic sites:

- 50-80-02-3749 and -4309 - burials at Kakela Beach Park.
- 50-80-02-4308 - buried remains of prehistoric fisherman's camp sites at Kakela Beach Park.
- 50-80-02-4049 - human burials at the south end of Laie Beach Park.
- unnumbered - extensive subsurface evidence of habitation in sandy soils at Laie Beach Park
- 50-80-02-4219 - human burials mauka of Kamehameha Highway at the north end of Laie Beach Park

HAUULA TO KAIPAPAU

One known site, now destroyed:

- 50-80-05-289 - Luaalii Heiau at the south end of the proposed transmission main. This site had been destroyed when McAllister inventoried sites here in the early 1930s, though local residents remembered the location well at that time.

The two outstanding Historic Preservation concerns that should be addressed in the Environmental Assessment are 1) the treatment of human burial remains discovered inadvertently during routine construction activities, and 2) provision for archaeological recording of trenches and the analysis of charcoal and other samples recovered. In the first instance, it may be possible to establish in advance procedures for the proper treatment of human remains in consultation with the Oahu Island Burial Council. If these concerns are properly addressed, then we believe that a "no adverse effect" is likely to result.

The Division of Aquatic Resources suggests that the restoration of the stream beds and flood plains to their pre-project contour should be required, including complete removal of the material used for the temporary dams. No waste materials from the construction activity should be discarded in the stream beds or flood plains. Any disturbance of the stream beds beyond that required for the project should be avoided: for example, fill material for a dam should not be bulldozed from the stream bed. Work should be scheduled to complete all instream work within the shortest possible time period in order to limit the unavoidable damage to the stream biota.

Mr. John L. Sakaguchi

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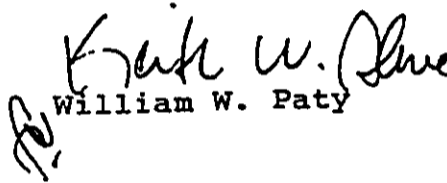
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The Division of Water Resource Management notes that the Board of Water Supply has recognized the need to apply for stream channel alteration permits covering those streams traversed by the water transmission main. Stream-related impacts have been addressed and mitigating measures spelled out.

The Division of Land Management has no objections as long as the proposed transmission mains are located within existing road right-of-ways.

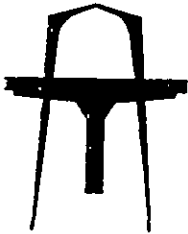
Thank you for your cooperation in this matter. Please feel free to call me or Roy Schaefer at our Office of Conservation and Environmental Affairs, at 548-7837, if you have questions.

Very truly yours,


William W. Paty

August 5, 1991

WILSON
OKAMOTO
& ASSOCIATES, INC.



ENGINEERS
ARCHITECTS
PLANNERS

1150 SOUTH KING STREET
HONOLULU, HAWAII 96814
PHONE: (808) 531-5261

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. William W. Paty, Director
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, HI 96809

Dear Mr. Paty:

Subject: Environmental Assessment for Transmission Mains
Waihee to Waikane, Hauula to Kaipapau, and Kaipapau to Laie

Thank you for your letter of May 14, 1991. The following has been prepared in response to your concerns:

1. The information regarding known historic sites will be utilized accordingly in the determination of sensitive areas in which we may encounter historic sites. We understand the areas of known historic sites include: Waiahole Beach Park, Kakela Beach Park, Laie Beach Park, and Luaalii Heiau near Hauula. We also note that the information is very incomplete and there is a high possibility of encountering similar sites during trench excavation that have not been inventoried.
2. The Board of Water Supply (BWS) will hire a professional archaeologist prior to construction to provide all archaeological services determined to be necessary. The archaeologist will conduct all required fieldwork, recover samples, conduct analyses, record information, and prepare reports for submittal to the Historic Preservation Office.
3. If inadvertent discoveries of human burials are encountered during construction, all work will cease in the area until appropriate mitigation measures are determined and input from the Oahu Burial Council is received.
4. Stream Channel Alteration Permits will be submitted for each of the three phases of the transmission main projects. Stream beds and flood plains will be restored to pre-project contours and disturbance will be limited to that required for the project. All waste materials will be removed from the project area. Instream construction work will be completed in the shortest possible time period to limit adverse effects to the stream biota.

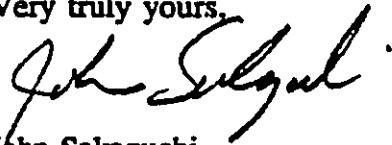
WILSON
OKAMOTO
A ASSOCIATES, INC.

Mr. William W. Paty
Page 2
August 5, 1991

5. The transmission mains will be located within the public right-of-way.

Should you have any questions, please contact Bert Kuioka of the BWS at 527-5235.

Very truly yours,



John Sakaguchi
Project Manager

JS:lf

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 8TH FLOOR
HONOLULU, HAWAII 96813

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

KEITH W. AHUE
MANABU TAGOMORI
DAN T. KOCHI

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER RESOURCE MANAGEMENT

June 14, 1991

Ms. Laura Fujioka
Wilson, Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Ms. Fujioka

SUBJECT: Archaeological Sites Along the Board of Water Supply
Transmission Mains: Waiahole-Waikane,
Hauula-Kaipapau, and Kaipapau-Laie
Ko'olaupoko and Ko'olauloa, O'ahu
TMK: 4 & 5 Various

This is to follow-up your telephone conversation with Carol Kawachi, Assistant Archaeologist for O'ahu on Tuesday May 28, 1991, regarding the maps she had faxed to you on the previous Friday.

Dr. Tom Dye had previously written a letter commenting on three environmental assessments for the BWS Transmission Mains for the northeastern shore of O'ahu. In his letter, he noted that there were several archaeological sites along the route of the transmission main. You called to ask for maps indicating the location of the various sites.

In the Waihee to Waikane area, sites 2512 (grindstones) and 1086 (prehistoric house sites) were circled on your maps. Site 2876, the Waihole Poi Factory was not circled on your map as it is an obvious surface structure.

Sites in the Kaipapau to Laie area included site 3749. This was misread and should have been 3744 (burials). Dr. Dye included sites 4308 (burials) and 4309 (subsurface prehistoric fisherman's camp site) at Kakela Beach Park even though they were not on the map but he was familiar with the sites. Site 4050 is not circled on your map because it will not be affected by the project. Laie Beach Park (unnumbered subsurface habitation site) is also site 4049 (burials). Site 4219 (burials) is circled on your map.

Ms. Laura Fujioka
June 14, 1991
Page Two

Site 289 in the Hauula to Kaipapau area is not indicated anywhere because we do not know its exact location or if it still exists.

If you have any more questions regarding the location or descriptions of any of the above sites, please contact Carol Kawachi at 587-0047.

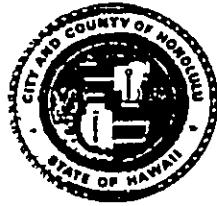
Sincerely,



DON HIBBARD, Administrator
State Historic Preservation Division

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

BENJAMIN B. LEE
CHIEF PLANNING OFFICER
ROLAND D. LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

MM 4/91-1206

April 19, 1991

Mr. John L. Sakaguchi
Project Manager
Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814


Dear Mr. Sakaguchi:

Preliminary Environmental Assessment for
Transmission Mains - Waiahole - Waikane,
Hauula - Kaipapau, and Kaipapau - Laie

This is in response to your request of April 5, 1991 for
comments on Preliminary Environmental Assessments for
transmission mains in areas of Koolaupoko and Koolauloa.

The proposals are consistent with the Development Plan
Public Facilities Maps for those areas which show water system
improvements in the "within six years" category.

Sincerely,


BENJAMIN B. LEE
Chief Planning Officer

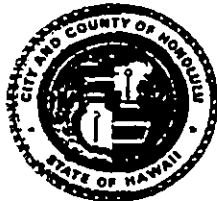
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cc: BWS

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F FASI
MAYOR



SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

In reply refer to:
ENV 91-91(449)

April 24, 1991

Mr. John Sakaguchi
Wilson Okamoto & Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Mr. Sakaguchi:

Subject: Environmental Assessment for Transmission Mains
Waiahole - Waikane, Hauula - Kaipapau, and
Kaipapau - Laie

We have reviewed the subject EA and have the following comments:

1. We have two projects, Kahaluu Sewers, Section 3, I.D., and Kaalaea Wastewater Pump Station and Force Main (see attached maps), which may conflict with the proposed 30-inch transmission main from Waihee to Waikane. The Kahaluu Sewers, Section 3, I.D., project is tentatively scheduled for construction in FY 1994 and is expected to take about 18 months for completion. The Kaalaea Wastewater Pump Station and Force Main project is also tentatively scheduled for construction in 1994 and is expected to take 24 months to complete.
2. We have no objections to the two 16-inch transmission mains from Hauula to Kaipapau and from Kaipapau to Laie since we have no municipal sewers in those areas.

Very truly yours,


SAM CALLEJO
Director and Chief Engineer

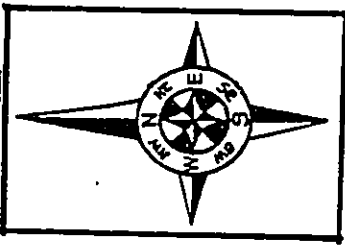
Att.

DOCUMENT CAPTURED AS RECEIVED



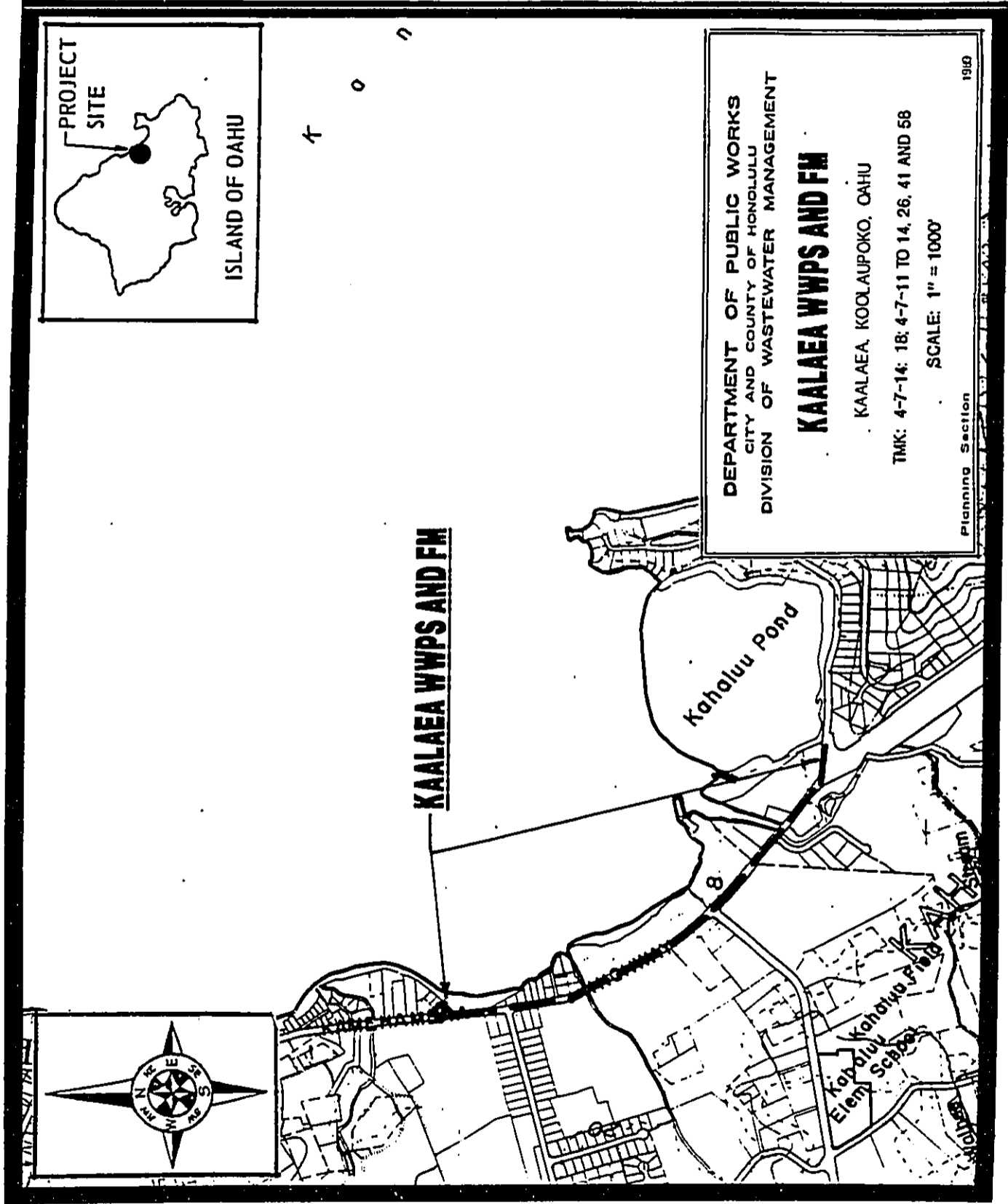
KAHALUU SEWERS SECTION 3, I.D.

PROJECT SITE
ISLAND OF OAHU



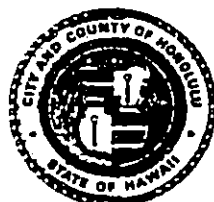
DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
DIVISION OF WASTEWATER MANAGEMENT
KAHALUU SEWERS SECTION 3, I.D.
KAHALUU, KOOLAUPOKO, OAHU
TMK: 4-7-11, 13, 14, 16, 17, 18, 24, 26, 41, 43 AND 58
SCALE: 1" = 1000'
1968
Planning Section

DOCUMENT CAPTURED AS RECEIVED



DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432



FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

LU 04/91-2106(DJK)

April 24, 1991

Mr. John Sakaguchi, Project Manager
Wilson Okamoto and Associates, Inc.
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Dear Mr. Sakaguchi:

Project Descriptions (PD) for Proposed Transmission Mains
from Waihee to Waikane, Hauula to Kaipapau,
and Kaipapau to Laje

We have reviewed the above three PD's and have no objections at this time. Topics that should be included in the Environmental Assessment are: Coastal hazards, alteration to land forms, solid and liquid waste disposal, water quality, flora and fauna, recreation resources, shoreline access, historical resources, and scenic/open space. We do note that the projects are within the Special Management Area (SMA) and that prior to construction, a SMA permit will be required.

If you should have any questions, please contact Dana Kohama of our staff at 523-4648.

Thank you for the opportunity to comment.

Very truly yours,

A handwritten signature in cursive script, reading "Donald A. Clegg".

DONALD A. CLEGG
Director of Land Utilization

DAC:lg